Index

Abernathy, W.J. 7
absenteeism 75–6, 110, 113
accessories 15
accommodations 118–19, 119–20, 122, 124, 132, 165
agile manufacturing 174
Air War College (US) 176
Allen, G.C. 90
alternative model of capitalism 136
Anglo-Saxon model, free economy 119
annual model changes 37
anthropology of the car 169–70
anti-competitive selling strategy 37
Aoki, Masahiko 34
artifacts, as fictions 169, 170–71
assembly lines
  group-based 112
  linked 111
  mechanically paced 112
  segmented 98–9, 100–107, 111–12, 114, 155
  stoppages see stoppages
  see also sub-assembly lines
assembly operations
  flexibility 16–17
  hybrid systems 111
  reorganization, Toyota 107–10, 155
  single integrated and distinct
    assembly processes 17–18
  see also engine assembly; mixed
    assembly
assembly plants
  IMVP survey 72–3
  labour hours, Europe 93
  lean 177
organizational experiments, Europe 110–11
performance indicators 28
production space, Toyota 108–9
  see also individual plants; volume
  assembly plant
assembly sector, radical change in 1–2
assembly workers
  control over production, Ford 114
  employee working time 75–6
  IMVP data collection 73
  militancy 112
  satisfaction 158, 177
  self-organization 112
technical control 112
  Toyota 98, 101, 176–8
  see also Japanese car assemblers
Austin Motors 21
automation 77–80, 91, 111
available production time 151
average lead times 30, 32, 57
Bannock, Graham 36–7
basic part of car 29
‘batch and queue’ approach 148, 149
best practice 107, 138, 175
bias, IMVP survey 74, 79, 80, 85, 87, 91, 93
bicycle assembly
  ‘batch and queue’ approach 149
takt time 153
BMW
  –Rover Group controversy 44–65
  ‘creaming off’ strategy 53
  customization 157
  quality car image 37
  UK production locations 64
  wide selection 26, 27
body metaphor 146
body shops 72
body-in-white 72
Brady, C. and Lorenz, A. 52, 53, 61, 62
British Leyland 121, 122
‘bubble economy’, collapse of 113, 128
‘build-to-order’ 21, 29, 32, 37, 38, 53,
  55, 62
business cycle, lean production 150–51
capacity utilization 34–5, 87
capitalism
  Japan as alternative model of 136
  and lean thinking 6, 173
resurgence of Western 5
  see also commodity capitalism;
  corporate capitalism; industrial
capitalism; natural capitalism;
  progressive capitalism
car
  anthropology of 169–70
  basic and secondary parts 29
car bodies, ultra-light 175
car industry
  changing patterns of global ownership 123
cultural fiction 169–70
dullness of post-Japanese 157–8
Japan see Japanese car industry
natural capitalism 175
rivalrous asymmetries in world’s 120–25
UK see United Kingdom, car industry
US see United States, car industry
car manufacturing
  improvement, Rover 60
  Japanese transplants 132–3
  radical change in 1–2
  see also production
Cassino (Fiat) 111
Chevy 15
Chicago History of Civilisation 18
Chrysler 37, 167
Cold War 135, 136, 172
collaboration 122, 131, 132
colours 15, 29
crime, and Utopia 173–6
commodity capitalism 170
consumer conditioning 37
counterfactuals 4, 5, 9, 22, 64, 119,
cost, new production system 1
  cost control 56
counterfactuals 4, 5, 9, 22, 64, 119,
cost, new production system 1
cultural anthropology 170
cultural fiction, Japanese efficiency as 168–73
crash work 146, 155–6, 157, 159, 177
car industry
  changing patterns of global ownership 123
cultural fiction 169–70
dullness of post-Japanese 157–8
Japanese see Japanese car industry
natural capitalism 175
rivalrous asymmetries in world’s 120–25
UK see United Kingdom, car industry
US see United States, car industry
car manufacturing
  improvement, Rover 60
  Japanese transplants 132–3
  radical change in 1–2
  see also production
Cassino (Fiat) 111
Chevy 15
Chicago History of Civilisation 18
Chrysler 37, 167
Cold War 135, 136, 172
collaboration 122, 131, 132
colours 15, 29
crime, and Utopia 173–6
commodity capitalism 170
counterfactuals 4, 5, 9, 22, 64, 119,
cost, new production system 1
corporate alliances 132
corporate capitalism 164, 165
corporate practices, Japanese
distinctiveness 136
cost, new production system 1
counterfactuals 4, 5, 9, 22, 64, 119,
cost, new production system 1
cultural anthropology 170
cultural fiction, Japanese efficiency as 168–73
crash work 146, 155–6, 157, 159, 177
car industry
  changing patterns of global ownership 123
cultural fiction 169–70
dullness of post-Japanese 157–8
Japanese see Japanese car industry
natural capitalism 175
rivalrous asymmetries in world’s 120–25
UK see United Kingdom, car industry
US see United States, car industry
car manufacturing
  improvement, Rover 60
  Japanese transplants 132–3
  radical change in 1–2
  see also production
Cassino (Fiat) 111
Chevy 15
Chicago History of Civilisation 18
Chrysler 37, 167
Cold War 135, 136, 172
collaboration 122, 131, 132
colours 15, 29
crime, and Utopia 173–6
commodity capitalism 170
consumer conditioning 37
counterfactuals 4, 5, 9, 22, 64, 119,
cost, new production system 1
corporate alliances 132
corporate capitalism 164, 165
corporate practices, Japanese
distinctiveness 136
cost, new production system 1
counterfactuals 4, 5, 9, 22, 64, 119,
cost, new production system 1
Index

Dore, Ronald 136
Drucker, Peter 20

economic downturn, Japan 113
Edwardes, Sir Michael 121
electrical parts, line segmentation 100–101
emergent asymmetries 120–21
employee working time, IMVP survey 75–6
The End of the Road: BMW and Rover – A Brand Too Far 47–8
enemy, social formation 137–8
genre assembly 111
Environmental Protection Agency (EPA) 174–6
ergonomics 101, 111
Europe
assembly plant automation 79
average working hours 93
labour hours 93
organizational experiments 110–11
‘world car’ debate 126
see also Western Europe
European Community, price–cost margins 123
European consumers 37
exceptionalism 93, 136

factories
changes in Japanese 4
labour saving, Toyota 91
see also consumer–factory relationship
factory order lead times 56, 57–8
factory-fit options 29, 30, 31, 32, 55
factory–market interface 17, 35, 109, 149
The Factory & the City: The Story of the Cowley Automobile Workers in Oxford 64
Fiat, organizational experiments 111–12
fiction
artifacts as 169, 170–71
see also cultural fiction; historical fiction
flexibility/flexible assembly 16–17, 29
Austin Motors 21

myth of Japanese 4, 5, 16, 35–8, 109
new production system 1
stocks, leads and width 28–35, 56
flow metaphor 146–7, 148, 149, 151–2
Ford, Henry 1, 38, 146–7
Ford Motor Company 122
advertising campaign, 1960s 19
flow 147
market positioning 53
ownership structure 167
product development 37
wide selection 27, 126
worker control over production lines, 1970s 114
Fordism 1, 7, 124, 125, 126
see also ‘crisis of Fordism’ narrative
Fordist mass production 3, 4, 15–16, 19, 34, 39, 171
foreign car sales 120
foreign direct investment (FDI)
American era of horizontal 124
Japanese outward introduction of lean production in US and UK 132–4
relaxation of 138–9
US and UK economies as beneficiaries 118
restricted by Japanese domestic policy makers 138
Framingham plant 89
Francaise de Mechanique factory 111
France
average working hours 92
‘crisis of work’, car industry 112–13
productivity and hours of work 93
Freeman, Chris 3, 71, 91

general case, flow 147
General Motors (GM)
distinct assembly processes 18
industrial unrest 114
J-car 125
market positioning 53
mix model specifications 36
mixed assembly 19
ownership structure 167
product development 37
wide selection 15, 19, 27, 126
German technik 156, 157
Germany, average working hours 92

Dan Coffey - 9781781952986
Downloaded from PubFactory at 09/15/2023 08:54:15PM via free access
Gilpin, Robert 22, 124, 125, 127, 130, 132
global consumerism 1, 3
global Fordism 126
global ownership, changing patterns 123
global stresses, lean production as response to 2
global supply logistics 126, 127
global warming, lean production as answer to 6, 173–6
globalization
  hollowing out of Japan’s industrial base 138
  myth about Japanese prowess 118, 140
Gorz, Andre 177–8
governments
  facilitation of corporate accommodations 132
  introduction of lean production in US and UK 132, 133
  Japanese model 128, 130
  see also state interference; state support
Gronning, T. 91
group assignments 111
group hierarchy 101
group work 112
group-based lines 112
growth rates, IMVP survey 86–7, 91–2
hatchbacks 52–3
Henry Ford see Ford, Henry
Henry, Jules 137–8
historical counterfactual, Toyota break from mass production 4
historical fiction, manufacturing 4, 175
historical precedence, introduction of mixed-assembly 21
historical revisionism 38, 39
Honda 123
  –Rover connection 45, 47, 50, 51, 56, 59–62
  accommodation between Leyland and 122
  wide selection 26
Honda Civic 58
Honda Concerto 52, 53, 56, 60
hours of work
  average 92, 93
see also labour hours; shift work and hours
House of Commons Trade and Industry Committee investigation 133
human-made objects, societal beliefs 168
hybrid assembly systems 111
hybrid-electric engines 175
Iaccoca, Lee 126
Ikeda plant 101
import penetration
  UK reaction to Japanese 120–23
  US reaction to Japanese 123–4
IMVP studies 10
IMVP survey 4, 69–71, 175
  formal structures of indices 81–8
  general issues of design and interpretation 71–81
  lean production: critical issues and interpretation 89–93, 163
  questionnaire 87–8
in-process gauging 111
indirect plant labour, IMVP survey 90
industrial capitalism 175
industrial history 37–8
industrial organization, Japanese 166
industrial unrest 114
inflation, lean production 150
Ingersol Management Consultants (IMC) 111–12
international alliances 124
international context, myth making 164
International Motor Vehicle Programme see IMVP survey
intra-process buffers 100, 101, 101–2, 104, 112
investment
  in plants and equipment 90–91, 167–8
  see also foreign direct investment
J-car 125
Jain, Sarah 170
Japan
  average working hours 93
  ‘development by invitation’ 135
  economic downturn 113
  model of government 128, 130
  regional divergence, organization 114
  US foreign policy towards, post-World War II 134–5
Japanese car assemblers
aggressive posture vis-à-vis rival
markets 121
average working hours 92
capacity utilization 34–5
comparative efficiencies 39
domestic car production 139
as harbingers of post-Fordism
manufacture 63
labour hours 93
latecomers to mixed assembly 4, 9,
16, 162
role in change 4
transplant-supported 123
wide selection, eschewal of 4, 9, 16,
17, 19, 127
see also Toyota
Japanese car industry
factories, changes in 4
ownership structures 166
Japanese corporations, failure to
innovate 129–30
Japanese crisis
lean production 127–31
see also reorganization, of work
Japanese production methods
acceptance of counterfactual claims
about 119
key to export success 130
new system 1, 2–4
Rover experimentation with 47,
50–59
short-term reprieve, Rover 62
‘world car’ controversy 126
job enlargement 111
joint ventures 126, 131, 132
Jones, Daniel 64, 65, 145–58, 173, 174,
175
Jurgens, Ulrich 155
just-in-time
intra-process buffers as breach with
102
lack of change in business inventory
data 148
Rover experimentation with 45,
50–59, 60
kaizen 50
Keywords 170
Koito Manufacturing 166

Korea, average working hours 92
Krafcik Automation Index 81–2
Krafcik, J.F. 71, 73, 81, 87, 89
Krafcik Labour Input Index 73, 82–4
Krafcik methodology 88
Kyushu plant 100–107, 108, 111
labour hours, IMVP survey 74, 77–80,
93
labour saving, Toyota factories 91
Le Mans (Renault) 111, 113
lead times
width selection 28–35
see also customer order lead times;
factory order lead times
Lean and Environment Steering
Committee 175
Lean Manufacturing and the
Environment 174–5
lean plants 177
lean production
as answer to global warming 6
architect of see Ohno, Taichii
IMVP survey 89–93, 163
introduction, US and UK 132–4
Japanese car industry 3
Japanese crisis 127–31
as response to global stresses 2
takt time and flow 151–5
use of term 5, 69
lean production dream 177
lean revolution 106, 109, 119, 120, 131,
140, 145, 158, 178
Lean Thinking 145–58, 174
as counterfeit 155–7
global warming 173–4
key features 146–51
takt time and flow 151–5
lean thinking
and untrammelled capitalism 173
US procurement, military equipment
176
literary milestones 6–7
lobbying
against Japanese car entry 117, 121–2,
123
relaxation of Japanese outward
investment 138–9
lock-in, pre-production 58
Lockheed Martin 176
logistics
Rover 54–5, 58–9
see also global supply logistics; product supply
Longbridge plant 47, 50–59, 63
Lordstown plant 114
Lorenz, A. see Brady, C. and Lorenz, A.
Lyddon, D. 20, 70

The Machine that Changed the World
69, 70, 145
management philosophy 3
manufacturing
historical fiction 175
see also car manufacturing
market strategies, Japanese corporations’ failure to innovate 130
marketing strategy, Rover 61
mass customization 21–2, 23, 28, 35, 39, 70
Mass Customization 22
mass markets 1
mass production 149
as cycle enhancing 150
Fordist 3, 4, 15–16, 19, 34, 39, 171
as synonymous with variety as well as volume 163
usage of words 20, 162, 170
material culture 169–73
Mazda 323 58
measurement bias, IMVP survey 93
mechanical technology 8
mechanically paced assembly lines 112
mechanization 101, 111
Mercedes-Benz 37, 155
MG Rover
re-establishing of Longbridge 47
width of selection, selected ranges 26, 27
Milgrom, Paul 168
Miller, Daniel 169
mini-lines 98, 100, 101, 102
Ministry of International Trade and Policy (MITI) 138
mix model specifications 19, 36, 38, 162, 164, 168
mixed-assembly
historical precedence 21
Japanese as latecomers in 4, 9, 16, 162
North America, 1960s 19
mixed-part delivery 54
model customization 21
model derivatives 27, 28, 30, 52, 59
model specification counts 23–8
model specifications
IMVP survey 74–5
width selection 17–19
see also mix model specifications
Model T 38, 147
monopolies, domestic 122
Motomachi plant 108–9
muda 101, 146, 157
Murakami, Yasusuke 22
myth of Japanese efficiency 1–2
BMW–Rover Group controversy 44–65
a brief reprise 162–55
lean production 69–97
rivalrous asymmetries 118–40
thesis and scope 2–8
wide selection 15–40
see also totalizing myth
myth making, as production politics 131–9
national champions 138
nationalisms 171
Natural Capitalism 173–4
natural capitalism 175
neocraftmanship 177
New Keywords 170
new model worker, Toyota 176–8
new system of flow management 147, 148
new system of production, 1970s 1, 2–4
niche marketing 52, 63, 158
niche markets 1
Nissan 123, 132, 167
non-value added activity 175
North America see United States
notation, IMVP survey 85
oligopolies 120, 122, 131
operational effectiveness 129–30
operations management 7–8
options 15, 27, 29, 30, 31, 32, 55, 56
organizational change 3–4
organizational experiments 110–14
overseas sales 92
overtime 81, 92
overwork 178
ownership
  changing patterns in global 123
  structures, Japanese car industry 166–7
perfection metaphor 146, 149–50
Pickens, T. Boone 166
Pine, Joseph B. 22
Pischetsrieder, Hans 62, 65
planned production schedules 148
plasticity of thought 138, 172
Plaza Agreement (1985) 135
political utility, acceptance of
counterfactual claims 11–12, 119
Pontiac 18
Porsche
craft culture 156
customization 157
quality car image 37
Porter, Michael 21–2, 128–30, 136
pre-production ‘lock-in’ 58
premium quality 50, 62
price competition 158
price–cost margins 123, 124, 158
pricing policies 123
prior scheduling 29, 56
pro-rata allowances, IMVP survey 73–4, 75
product combinations 24–5, 26
product development 37
product engineering, selling strategy 37
product marketing strategy, Rover 51–2
product specifications 171
product stocks, width selection 28–35
product supply, Longbridge 50–59, 63
product variety 18, 21, 56, 109, 163
product–price positioning 51–3
production
  consumer demand and pace of 151, 153
  facilities, single integrated and separate 17–18
  methods see Japanese production methods
  modelling 17
  new system, 1970s 1, 2–4
  planned schedules 148
politics, myth making as 131–9
reorganization of 3, 100–107, 155
space, assembly plants, Toyota 108–9
see also assembly operations; car manufacturing; lean production; mass production; pre-production lock-in; volume production
production fantasy 171
production-based advantage 130
productivity
  increases, Rover 60–61
  Japanese approaches 129
  survey see IMVP survey
  UK car industry 133
progressive capitalism, Japan as model of 135, 136
protectionism 122, 128
Prown, Jules David 169
pull metaphor 146, 148
quality
  culture of 50
  new production system 1
quality car producers 155–6, 157
quality cars, customization 37
recruitment difficulties 113
relief, IMVP survey 75–6
Renault
  Nissan acquisition 123
  organizational experiments 111
  response to ‘crisis of work’ 113
reorganization
  product supply function, Longbridge 50–59
  of production 3, 100–107, 155
  of work 4, 107–10
  see also Japanese crisis
repetitive synchronous task cycle 153–4
rivalrous asymmetries, world’s car industry 120–25
Roberts, John 168
Rover see BMW–Rover Group
  controversy; MG Rover
  Rover 200 52, 53, 55, 56, 58, 60
  Rover 400 52, 53, 55, 56, 58, 60
  Rover Metro 58
Saab-Scania, organizational experiments 111
Sakakibara, Masakamo 22, 128–30
sales
performance improvement, Rover 60
Toyota 139
up-market sourcing, Rover 52
see also domestic sales; foreign car sales; overseas sales
scheduling 59–60
see also planned production schedules; prior scheduling
Schonberger, R.J. 53–4
secondary part of a car 29
segmented assembly lines 98–9, 100–107, 111–12, 114, 155
self-organization 112, 177
selling strategy, product engineering 37
shielding 111
shift work and hours (IMVP survey) 81, 85–6
Shingo Award for Excellence in Manufacturing 22, 148, 176
Shingo, Shigeo 147
Simon, Herbert 71
single integrated assembly process 17–18
single-piece flow 148
small-fit parts 54
SMMT see Society of Motor Manufacturers and Traders
social change 4
‘social’ factors, in production 75
social/psychological preparations, war 137
societal beliefs, human-made objects 168–9
societal stresses, material culture 169, 171
Society of Motor Manufacturers and Traders (SMMT) 121, 122
Soete, Luc 3, 71, 91
space congestion, Toyota 108–9
special case, flow 147
standard activities, IMVP survey 73, 75
standard specifications 28–9
state industrial policy, Japan 128
state interference, Japan 128, 129
state support, protection 122
stock–flow ratios 31, 32, 33, 34, 56, 61
stoppages
conventional assembly lines
calculating stoppage times 103–4
frequencies 104–6
temporary, unplanned 102, 114
Ohno’s encouragement of 108
poor working conditions 109
segmented lines 114
strategic choice 37
stress see global stresses; societal stresses
sub-assembly lines 72, 101
substitute specifications 29, 56
synchronicity of work 55, 153–4
Takaoka plant 89, 92, 101
Takeuchi, Hirokito 21–2, 128–30
takt time 146, 151–5
task work 112
Taylorism 177
team work 112, 113
technical control 112
technical stagnation 37
technik 156, 157
technology 7–8
diffusion, decrease in Japanese advantage 130
Termoli (Fiat) 111–12
throughput time, Toyota 102, 103, 104–5
time, new production system 1
total automation index 82
total buffer time 103
total throughput times, Toyota 102, 103, 104–5
totalizing myth 165–8
Toyota 98–115, 123
assembly workers 98, 176–8
beneficiary of cultural process 44
break from Fordist mass production 4
capacity utilization 34
customer choice 16
customization 22, 29, 70, 148
factory scheduling 59
factory–market interface 17, 35, 109, 149
flexibility 2, 5, 39, 70
growth rates 92
as harbinger of post-Fordist state 36
high selling prices 158
IMVP survey 69
Index

investment in plant and equipment 91
just-in-time 148
labour saving 91
lean production see lean production
mixed assembly 9, 19, 21
organizational experiments 110, 111
ownership structure 167
plants see Ikeda plant; Kyushu plant;
Motomachi plant; Takaoka plant
reorganization of operations 4,
107–10
sales and production 92, 139
segmented assembly lines 98–9,
100–107, 155
wide selection 19, 23, 26–7
Toyota City 61
Toyota Corolla 26–7
Toyota Corona 58, 59
Toyota Production System 101, 146,
174
Toyotism 177
trade-off curve, product stocks and lead
times 30–31
transfer machines 111
transformation myth 16
transplantation 123, 131, 132
Tsutsumi site 59
turnover, French crisis of work 113
‘two Japans perspective’ 128
unequal development, emergent
asymmetries 120–21
unitarism 12
United Kingdom
car industry
average working hours 92
Japanese manufacturing transplants 132–3
overall productivity 133
state-supported restrictions on
Japanese imports 122
suffering from EEC imports, 1970s 122
Trade and Industry Committee
investigation 133
efficiency of manufacture 134
government reaping credit for
inculcating lean production 133–4
reaction to Japanese import
penetration 120–23
United States
Air War College 176
car industry
average working hours 92
consumer conditioning 37
mixed assembly 19
reaction to Japanese import
penetration 123–4
wide selection 18, 19, 20, 27–8
commodity violence 170
corporate competitiveness 130
debate, ‘world car’ strategy 125
explosion in lean thinking ventures 176
lean thinking in procurement of
military equipment 176
operational effectiveness 129
organizational experiments 110, 114
post-war foreign policy towards Japan
134–5
renaissance of Japan 137
unplanned stoppages 102, 114
‘up-market’ sourcing 51, 52
Utopian socialism 173

Vauxhall (GM), width of selection,
selected ranges 26, 27
vertical integration 73–4, 81, 166–7,
168
Vietnam War 135, 137
Volkswagen, wide selection 26
volume assembly plant, working model,
width selection 28–9
volume production 16, 163
volume selling 52, 53
Volvo, organizational experiments 111

war, social/psychological preparations 137
warehouses, Rover 54–5
waste 101, 146, 157
Western Europe
organizational experiments 110
wide selection 27–8
worker militancy 112
see also France; Germany; United
Kingdom
Whisler, T.R. 59–60
wide selection, myth of 15–40, 126–7
flexibility: stocks, leads and width 28–35
Japanese flexibility 36–8
model specification counts 23–8
terminology 17–18
Williams, K. 89, 90
Williams, Raymond 170
Womack, James P. 72, 90, 145–58, 173, 174, 175
women workers, Toyota 101
Woollard, F.G. 20–21

work
reorganization of 4, 107–10
synchronicity of 153–4
see also craftwork; crisis of work;
hours of work; overwork
work-form experimentation 110–14
working model, volume assembly plant 28–9
working practices, IMVP survey 86–7, 92
working time per employee, IMVP survey 75–6
‘world car’ controversy 119, 125–7
world’s car industry, rivalrous asymmetries in 120–25