Index

Abernathy, W. J. 228
accounting services 267–8
actor–network theory 2, 15, 18–21, 23, 24, 39, 77, 85, 91, 122, 158, 160–61
de-scription concept 77–8
implicated actors 75
present actors 75
translation concept 115, 117–20, 123–5, 128–30
see also innovation process; users
advertising industry 267, 273
Ahlstrom, D. 33
Akrich, M. 77–8, 246–7
Allsop, M. 118
Almeida, A. L. de O. 290
Amato, I. 116
American Society for Gene Therapy 64
Amsalem, M. A. 288–9, 293
appropriate technology 10, 280, 282–3, 291–5
see also technological change
Armstrong, A. 171
Aspa Bruk 142–3, 148
Auer, M. 145
Baltic Exchange, London 162, 165
Bellemare, G. 249
Beniger, J. 29
Benjamin, R. I. 171
Bhalla, A. S. 292
Bijker, W. 74–5, 85
biomass gasification 95, 98, 105–6, 107
see also renewable energy technologies
biotechnological innovation 294, 295
black box concept of innovation process 13, 71, 73, 113, 130
Blume, S. 39, 79, 85
Bosch-Siemens 127
Bourdieu, P. 22
Bower, J. L. 33
Braudel, F. 26
Brazil
educational system 286
knowledge acquisition 287–8
labour supply 290
social inequality 286
technological change 286–91
business growth 90, 91, 109
business services see information services
business structure 264–8, 269
businesses
environmental strategies 17–19, 20
external influences on 15
as innovators 177–8, 188
short-termism by 15–17, 20, 21, 22
stakeholder theory of 13, 14–15, 20, 33
transnational (TNCs) 9–10, 254, 255, 261, 270–77
university links 102, 109
Callon, M. 13, 14, 22, 114
Calor Gas (UK) 127
capital 22, 92, 95, 281
types of 22
venture capital 91, 92
capital inflows
to less developed countries 281
capital to labour ratio 10, 280, 281
Carlsson, B. 109
cars see electric vehicles
Carson, R. 118, 141
Centers for Disease Control and Prevention (CDC) (US) 79, 80, 81
Chandler, A. D. 33
chemical industry
chlorine production 5–6, 112–35
chlorine chemistry 116
chlorine use 5–6, 112–35
alternatives to 126–8, 132–3, 136–55
CFCs 126–8, 132
Greenpeace's attitude to 117–20, 122–3, 125–33, 146–7, 148–9, 153
industry defence of 120–26, 128–33
organochlorines 118–20, 122–4, 128–33
policy issues 141–9
in pulp/paper industry 6, 136–55
PVC 128
world use of 117, 124
Chlorophiles (pressure group) 121–2, 123, 124, 130–33
choice see customer choice
Christensen, C. M. 33
Citroën 219, 221, 225
Clark, K. B. B. 228
Clarke, A. E. 75, 76
Cochoy, F. 249
Coleman, J. S. 13, 23
Combris, P. 249
combustion technology 95, 98
see also renewable energy
technologies
communication flows see information
flows
communication technology see
information and communication
technologies
competitive advantage
of environmental strategies 18, 33
of transnational corporations 276–7
competitive disadvantage
in less developed countries 263, 270
computer productivity paradox 204–5
computer software see software
computer systems see information and
communication technologies;
Internet technology
conceptual networks 157
confidentiality criteria 172
constitutional authority 24, 25, 64
consumer groups 17
see also pressure groups
consumers see users
cost efficiencies 165
from information and communication
technologies 255
from Internet use 166–7, 172
Cowan, R. S. 76–7, 85
CTA agents 15, 33
cultural influences 91
customer choice 94, 249
customer competence 101, 103–4
customer loyalty/lock-in 3, 104–5
customer orientation see user-centred
innovation
customer services 201
customers
users as 77–8
data comparison 247, 251
decision making 165
see also policy issues
demand side economics 1–2, 5–6, 70, 71, 85, 132–3, 188–9, 197
see also users
deregulation see trade deregulation
de-scription concept 77–8
see also actor–network theory
design see product design
disabled
information and communication
technologies for 202, 205, 206,
209–14
discourse coalition theory 23, 24
distribution channels 157, 158–9, 247–8, 251
Dolfsma, W. 33
Dosi, G. 70–71
drink see food and drink industry
Dubuisson, S. 250
Dupuy, F. 251
economic growth
Kondratieff cycles 28–9
everal systems 91, 95, 284, 286
EFUD programmes 99, 101
Eka Nobel 143
elderly
information and communication
technologies for 202, 205–6,
209–14
electric vehicles 217, 218–22, 228–30
lightweight (LEVs) 217–18, 222–30
Twikcs 27–8
Index

electricity supply industry 27–8
see also renewable energy
technologies
e-mails 168, 169, 171
see also Internet technology
energy markets
development of 5, 28
for renewable energy 5, 89–111
Enos, J. L. 292–3
entrepreneurial activities
innovation and 2, 20, 90
Internet based 7, 178, 198
Environmental Defense Fund (US) 147
environmental issues 12, 14, 29
chlorine use 5–6, 112–35, 136–55
green markets 139, 141, 146, 152–3
greenfreeze technology 126–8, 132–3, 230
in innovation process 113–14
policy issues and 141–9
precautionary principle 125–6
renewable energy 101
resource limitations 29
solutions campaigning 126–8
sustainable development 12, 17–19, 20
environmental pressure groups 137, 146–7, 153, 217
see also Greenpeace
Environmental Protection Agency (EPA) (US) 146
environmental regulations 139–41
ergonomics
in product design 205, 208
Euro Chlor Federation 6, 120–21, 122–5, 130–33
European Chemical Industry Council (CEFIC) 120
evaluation see testing
Evans, P. 170, 171
evolutionary economics 1, 2, 22, 112–15, 177
evolutionary theory
quasi-evolutionary 13, 17, 23, 27
of socio-technological change 22, 23, 112–15
of technological change 5–6, 26–33, 89–95, 99–101, 112–35
Eymard-Duverney, F. 251
familiarity 241–4
definition 250
see also taste
fax technology 168
see also information and communication technologies
financial services 264, 267–8, 271, 272–3
Finland 144, 145–6, 149, 150–51, 154
firms see businesses
Fonk, G. 17
food and drink industry
genetically modified food 16
processed food 290–91
taste, importance of 234–5
tasting sessions 8–9, 234–53
Food and Drug Administration (FDA) (US) 79–80, 81
food safety 234, 249
Foucault, M. 30
France
electric vehicles, use of 217, 218–82, 228–30
Freeman, C. 28–9, 90
funding
EFUD programmes 99, 101
of gene therapy firms 42–3, 48, 57–8, 61
of innovation process 17
investment subsidies 99, 101
venture capital 91, 92
Galvao, C. 286
Garud, R. 14, 33
gene medicines 58–9, 61–2
gene therapy 4, 38–9
clinical trials 54, 56, 63–4
definition 41–2
development of 41–58
disease targets 50–53
ex vivo 42, 53–8, 61, 63, 64
in vivo 42, 58–9, 61, 64
market creation in 48–9, 50, 53–8, 61, 62–3
platform technologies in 59
regulatory framework 54
safety issues 41
gene therapy firms 44–7, 51–2, 58–9, 65
corporate partnerships 46–8, 49–50, 57, 61–2, 64
funding 42–3, 48, 57–8, 61
research and development 50, 58–9, 61, 62
start-up strategies 43–8
GeneMedicine 55, 59
General Agreement on Tariffs and Trade (GATT) 274–5
GeneSys 56
Germany 148–9
green issues see environmental issues
greenfreeze technology 126–8, 132–3, 230
Greenpeace 116–17
chlorine debate and 6, 117–20, 122–3, 125–33, 146–9, 153, 230
industry responses to 120–26, 128–33
solutions campaigning 126–8
Grint, K. 157–8
Groen, A. J. 14, 22
Grübler, A. 29–30
Hagel, J. 171
Hall, J. M. 185, 194
‘The Halloween Documents’ (Microsoft memos) 184, 198
Hart, S. L. 17–19, 33
Helsinki Commission (HELCOM) 142, 145, 146
Hennion, A. 250
Hoffman, A. J. 13
Hoogma, R. 33, 230
Hughes, T. 114
Hughes, T. P. 30–31, 157
ideographs
uses of 24
industrial associations 103, 115, 143
Euro Chlor 6, 120–21, 122–5, 130–33
industrial design 250
see also product design
industrial network theory 15, 23, 90, 102–3
industrial structure 264–9
industry standards 21, 113
information asymmetries 170–71, 210
information and communication technologies (ICTs) 7–8, 29, 91, 167–9, 217
cost of 169, 255
definition 255
development of 254, 255
for the disabled/elderly 202, 205–6, 209–14
primacy in 202
in service sector 9–10, 254–79
user-centred design in 201–15
users of 202–5, 214
see also Internet technology
information flows
increases in 170
linguistic issues in 210, 214
in market creation 156–9, 160–61
in ship-broking 161–73
information industry 271, 274
information networks 160–61, 257
informal 162, 164, 165–6
open source 186
information quality 170, 171
information services 9–10, 254–79
access to 9
development of 255, 259–63
employment levels 261
impact of 255, 263–76
importance of 254–5
as international 270–77
knowledge-intensive 261–2
organization/structure 263–70
policy issues 276–7
transnational corporations (TNCs) as suppliers of 9–10, 254, 255, 261, 270–77
as transportable 260, 269–70
types of 254–9, 264–9
information society 203, 214
innovation
business based 177–8, 188
definition 2, 10
process of 281
success of 2, 68, 72
types of 10
innovation diffusion 89–90, 107–8, 281, 294
innovation process
appropriateness criteria 10, 280, 282–3, 291–5
black box theory of 13, 71, 73, 113, 130
demand-pull 1–2, 5–6, 70, 71, 85, 132–3, 188–9, 197
<table>
<thead>
<tr>
<th>Index</th>
<th>301</th>
</tr>
</thead>
<tbody>
<tr>
<td>environmental issues and 113–14</td>
<td>investment in 17, 42–3, 48, 57–8, 61, 71</td>
</tr>
<tr>
<td>market identification and 3, 4, 12–37, 40</td>
<td>market applications 6–7, 156–7, 170–73</td>
</tr>
<tr>
<td>market structure and 3, 4, 12–37, 40, 112–13</td>
<td>technology pull 158</td>
</tr>
<tr>
<td>national 90, 92</td>
<td>types of 157</td>
</tr>
<tr>
<td>nature of 4, 70–76</td>
<td>user-centred innovation via 177–98</td>
</tr>
<tr>
<td>promise-requirement cycles 16</td>
<td>see also information and communication technologies</td>
</tr>
<tr>
<td>radical 3</td>
<td>investment</td>
</tr>
<tr>
<td>regional 90</td>
<td>in innovation process 17, 42–3, 48, 57–8, 61, 71</td>
</tr>
<tr>
<td>short-termism in 15–17, 20, 21, 22</td>
<td>investment subsidies 99, 101</td>
</tr>
<tr>
<td>technology-push 2, 70, 85, 188–9, 202</td>
<td>see also funding</td>
</tr>
<tr>
<td>threat-requirement cycles 16</td>
<td>invisible earnings 270</td>
</tr>
<tr>
<td>user needs see user needs</td>
<td>see also service sector</td>
</tr>
<tr>
<td>user-centred innovation</td>
<td>see also Greenpeace; pressure groups</td>
</tr>
<tr>
<td>see also technological change</td>
<td></td>
</tr>
<tr>
<td>institutional influences 79–80, 91, 95</td>
<td>Japan</td>
</tr>
<tr>
<td>institutional structure 21–5, 32, 90</td>
<td>educational levels 284</td>
</tr>
<tr>
<td>industrial associations 6, 103, 115, 120–21, 122–5, 130–33</td>
<td>knowledge acquisition 283</td>
</tr>
<tr>
<td>interactions/dependencies in 23–4</td>
<td>labour supply 284–5</td>
</tr>
<tr>
<td>weaknesses in 103</td>
<td>technological change 283–5</td>
</tr>
<tr>
<td>see also Greenpeace; pressure groups</td>
<td>Jervan, H. 217</td>
</tr>
<tr>
<td>institutions</td>
<td>Johnson, A. 109</td>
</tr>
<tr>
<td>hard 91</td>
<td>Kamyr AB 141</td>
</tr>
<tr>
<td>roles of 91, 94, 95</td>
<td>Kantrow, A. M. 228</td>
</tr>
<tr>
<td>soft 91</td>
<td>Kemp, R. 26</td>
</tr>
<tr>
<td>as users 79–82</td>
<td>knowledge</td>
</tr>
<tr>
<td>insurance industry 265, 272–3</td>
<td>explicit 91</td>
</tr>
<tr>
<td>Intel operating systems 183</td>
<td>importance of 281</td>
</tr>
<tr>
<td>intellectual property rights (IPR) 3, 276</td>
<td>as a production factor 281</td>
</tr>
<tr>
<td>internationalization see transnational corporations</td>
<td>tacit 91</td>
</tr>
<tr>
<td>Internet entrepreneurship concept 7, 178, 198</td>
<td>knowledge acquisition 92</td>
</tr>
<tr>
<td>Internet technology</td>
<td>in Brazil 287–8</td>
</tr>
<tr>
<td>access to 203</td>
<td>in Japan 283</td>
</tr>
<tr>
<td>cost efficiencies from use of 166–7, 172</td>
<td>in less developed countries 280–81, 287–8</td>
</tr>
<tr>
<td>as demand driven 158, 170–71</td>
<td>proprietary knowledge 270</td>
</tr>
<tr>
<td>development of 177–200</td>
<td>knowledge creation 92, 177–8</td>
</tr>
<tr>
<td>e-mail 168, 169, 171</td>
<td>knowledge-intensive services 261–2</td>
</tr>
<tr>
<td>impact of 156–9, 171, 172–3</td>
<td>see also information services</td>
</tr>
<tr>
<td>investment in 172</td>
<td>knowledge technologies 258</td>
</tr>
<tr>
<td>legislative framework 172</td>
<td>knowledge transfer 91, 260</td>
</tr>
<tr>
<td>limitations 165, 171, 172</td>
<td>knowledge workers 203</td>
</tr>
<tr>
<td></td>
<td>Kondratieff cycles 28–9</td>
</tr>
<tr>
<td></td>
<td>Kroesa, R. 146</td>
</tr>
<tr>
<td></td>
<td>Kvaerner Chemrec 98</td>
</tr>
<tr>
<td></td>
<td>Kvaerner Turbin 96</td>
</tr>
</tbody>
</table>
Technology and the market

labour supply
Brazil 290
capital to labour ratio 10, 280, 281
division of labour 260, 275
highly-skilled labour 281
Japan 284–5
in less developed countries 275, 280, 281, 290
low-skilled labour 281
Lancaster, K. 249
Landauer, T. K. 204–5
Latour, B. 22
Law, John 77–8
learning-by-doing 216–17, 229, 230
learning-by-using see user-centred innovation
legislative framework 82, 95
for Internet technology 172
Lehtinen, K-J. 150–51
Leonard-Barton, D. 22
less developed countries (LDCs) 280–96
appropriate technologies for 280, 282–3, 291–5
capital inflows 281
competitive disadvantage in 263, 270
food supplies 294, 295
labour markets 275, 280, 281, 290
service sector 262–3, 269–70, 277
technological needs 280–96
technology transfer 287–8
lightweight electric vehicles (LEVs) 217–18, 222–30
see also electric vehicles
Linux operating system 7, 178–200
citation searches for 180–81, 182, 184, 198
compatibility 181–2
development across the Internet 178, 180–81, 183, 185–6
use of 185–6, 187–92, 193–8
user innovation and 177–98
user numbers 181
Lundvall, B.-Å. 72, 113
McKelvey, M. 177, 198
McTaggart, D. 116
Malone, T. W. 171
management consultants 267–8, 273
Marchal, F. 251
market creation 3, 5, 92–3, 94
in gene therapy 48–9, 50, 53–8, 61, 62–3
intermediaries and 3
Internet and 6–7, 156–9, 160–61
relative prices and 101
in renewable energy technologies 107
users and 3, 138–9
market failures see obstacles
market research 2, 3
see also user needs
market structure
agri-food sector 248–9
innovation process and 3, 4, 12–37, 40, 112–13
niche-markets 107
non-market factors 2, 12, 16
selection environment concept 1, 2, 5–6, 112–13, 130–33
Marvin, C. 24
medical innovations 217
gen therapy 4, 38–67
vaccines 4–5, 68–88
Merleau-Ponty, M. 250
Mialet, H. 250
Microsoft 178
anti-trust suit 184
as dominant 179–80
as inflexible 185
Linux as alternative to 178, 182–98
Millais, C. 126
Mölnlycke 148
monopoly power 276
Microsoft anti-trust suit 184
Montini 75
Morris-Suzuki, T. 283–4
Mowery, D. 70, 71, 72, 76
multinational corporations see transnational corporations
narrative dynamics
in management theory 24
national innovation systems 90, 92
National Institute for Allergy and Infectious Diseases (NIAID) (US) 82
National Organization of Swedish Energy Associations (SERO) 103
Nelson, R. 113
neoclassical economics 1, 2, 90
Netscape operating system 178, 183
Index

network theory 7, 12, 21, 39, 91, 92, 94
conceptual networks 157
industrial 15, 23, 90, 102–3
trust relationships 165–6, 171
see also actor–network theory

NLK Consultants 149, 154
Noori, H. 217
Nooteboom, B. 22
Nordic Council of Ministers 146
Nordic Windpower 96
Norman, D. 204, 205
North, R. 132
nuclear power 104–5, 106, 116
see also renewable energy technologies

obstacles
to technological change 93–5, 99, 101–6, 291–2
open source information 186
organochlorines 118–20, 122–4, 128–33
see also chlorine use
Oslo and Paris Commissions (OSPAR) 125
Oudshoorn, N. 85
Papadopoulos, S. 57
paper industry see pulp and paper industry
Parsons, T. 14, 22
Pavitt, K. 255, 257
pay levels 285, 286
Perez, C. 28–9
pesticides 118–20
see also environmental issues
Peugeot 218, 219, 221, 225
pharmaceutical industry
gene therapy and 46–8, 49–50, 57, 61–2, 64
Pinch, T. 85
platform technologies 59
pleasure 241
definition 250
see also taste
policy issues 23–4, 32
in appropriate technologies 292–3
in information service provision 276–7
see also decision making
policy network analysis 23, 24

pollution see environmental issues
precautionary principle 125–6
pressure groups 6, 16, 20, 26, 33, 115, 230
for the elderly/disabled 206, 209
environmental 137, 146–7, 153, 217;
see also Greenpeace
industrial associations as 6, 120–21, 122–5, 130–33
see also consumer groups
Preston, A. 164
pricing structure 90
new products 94
relative prices 101
privatization process 271
Proctor and Gamble 148
product design
‘Design for All’ concept 8, 202, 206, 210–12, 213
electric vehicles 217–30
ergonomics in 205, 208
food and drink industry 234–53
in information and communication technologies 201–15
universal design concept 206
usability criteria 205–6, 214
user-centred innovation 201–15, 216–33, 234–53
product life cycle 204, 214
product testing 242, 250
tasting sessions 8–9, 234–53
protectionism see trade deregulation
PSA (France) 218–22, 229–30
public interest issues 12–13, 15, 16, 18, 31–3
pulp and paper industry
chlorine use 6, 136–55
elemental chlorine free (ECF) pulp 137–9, 143, 146, 147–52, 153
export markets 140–41
Kraft sulphate process 137, 142, 152, 154
oxygen delignification 140, 141, 149, 154
technology choice in 288–9
totally chlorine free (TCF) pulp 137–9, 140, 141, 143, 144, 146, 147–9, 150, 153
waste treatment 139–40, 142, 144, 145, 146, 150–51, 154
Technology and the market

Z pulp 146
PVC use 128
quality issues 201
Rayport, J. F. 171
Red Hat Software 183
regional inequality 259–60
regional innovation systems 90
regulatory framework 113
environmental 139–41, 142–3, 144–5
governmental 2, 3, 6, 12, 16, 54, 91, 136–7, 139–41, 142–3
pressure groups and 6
Sweden 136–7, 139–41, 142–3
see also trade deregulation
Renault 218
renewable energy technologies (RETs)
development of 5, 89, 95–108
environmental issues 101
inducements for 99–101
market creation for 107
obstacles to 99, 101–6
policy issues 105–8
Sweden 96–108
types of 96–8
research and development 109
in clean technologies 141–2
in gene therapy 50, 58–9, 61, 62
in Internet technology 177–8, 188, 198
in renewable energy 96, 97, 104
in software 177–8, 188, 198
in vaccines 82
research and development funding 17, 42–3, 48, 57–8, 61, 71, 104
for clean technologies 141–2
resource allocation 29, 92, 247, 251
Rip, A. 17, 20, 22, 26
risk assessment 16, 20
Rosenberg, N. 70, 71, 72, 73–4, 76
Saxenian, A. L. 94
Scharpf, F. W. 13
Schmidt, S. K. 13
scientific instrumentation industry 71
scientific practices/processes 73
scientific theories
development of 2
see also innovation process
selection environment concept 1, 2, 5–6, 112–13, 130–33
see also market structure
Semprun, J. 33
service sector
business services 9–10, 254–79
contracted services 261
diversification 275–6
economies of scale in 261–2
franchising 269
growth of 254, 258, 261–2
information based 9–10, 254–79
internationalization of 270–77
in less developed countries 262–3, 269–70, 277
productivity 204–5
public services 261
scale-intensive 257
specialized 258
supplier-dominated 257
technology-intensive 258
trade in 276–7
tradeability in 269
transnational corporations (TNCs) in 9–10, 254, 255, 261, 270–77
types of 254–9, 264–9, 271
services
definition 254–5
Shaw, B. 39
ship-brokers 162–3, 170
advisory role 164–5
house-brokers 167
trust relationships 165–6, 171
use/non-use of 166–7
ship-brokering
information flows 161–73
Internet applications 6–7, 156–7, 170–73
market structure 161–2
ship-broking agencies/agents
informal contacts 162, 164
information/communication flows 161–73
in London 162
in Piraeus 162
Simon, B. 230
Skogsindustrierna 143
social construction of technology (SCOT)
concept 34, 39, 157
socio-technological change 12–14, 21–33, 71, 73–6, 157–8
Evolutionary theory of 22, 23, 112–15
Quasi-evolutionary 13, 17, 23, 27
gene therapy development as 39–41, 64–5
Patterns of 26–31
Prospective structures theory 22
Södergren, A. 144
Södra 149
Software
Commercial 177, 195–7; see also Microsoft below
demand-pull 188–9, 197
development of, across the Internet 177–98
freeware 177, 178, 179, 182, 184, 186, 196, 198; see also Linux below
Linux 7, 178–200
Microsoft 178, 179–80
Netscape 178, 183
solar collectors 96–7, 107; see also renewable energy technologies
Solar Energy Association of Sweden (SEAS) 103
Somatix Therapy Corp. 53–4, 56, 57, 58
stakeholder theory 13, 14–15, 20, 23, 33
Stallman, R. 186
Stanekiewicz, R. 90
Staudenmaier, J. M. 26
Suchman, L. 3
Sun Systems 183, 185
Sunds Defibrator AB 141
supply/demand chain 3
green markets 139, 141, 146, 152–3
supply side economics 1, 2
sustainable development 12, 17–19, 20, 26, 33
Svenska Cellulosa AB (SCA) 148
Sviokla, J. 171
Sweden
industrial structure 96
innovation process 5
nuclear power 104–5, 106
policy issues 105–8, 141–9
pulp/paper industry 136–55
regulatory framework 136–7, 139–41, 142–3
renewable energy technologies 5, 89, 96–108
Swedish Bioenergy Association (SVEBIO) 103
Swedish National Environmental Protection Agency 142
Swedish Wind Power Association (SVIF) 103
Switzerland
lightweight electric vehicles (LEVs), use of 217–18, 222–30
Talma, S. 20
Tana, J. 150–51
taste
changes in 237, 238–40, 249
familiarity and 241–4, 250
importance of 234–5
Patterns of 239
pleasure and 241, 250
sensitive body concept 242, 245, 250
tasting sessions 8–9, 234–53
as collective experiments 243–4
format 235–6
as framed tests 237–8
impact of 244–8
objectives 235, 236–7, 241
proliferation of 235, 238, 239, 242
uncertainty in 238–41
verbalizing responses to 240–41, 243, 249, 250
see also food and drink industry techno-economic networks (TENs) 114–15, 130
technological change
acceptance of 95
as appropriate 10, 280, 282–3, 291–5
Brazil 286–91
bridging functions in 91
definition 90–91
development 89–95, 99–101
evaluation 33
evolutionary theory 5–6, 26–33, 89–95, 99–101, 112–35
as inappropriate 280, 281–3, 288–9
incumbent technologies and 9, 101–2, 217, 281
Japan 283–5
in less developed countries 280–96
obstacles/market failures in 93–5, 99, 101–2, 291–2
pervasive technology 28–9
policy issues 105–6
post-modern 30–31
socio-technological 12–14, 21–33, 39–41, 64–5, 71, 73–6, 157–8
system builders concept 91
technology/product specific 90–92
as a threat 104–5
technological knowledge see knowledge
technological paradigms 70–71
technological trajectories 70–71, 112–13, 114
technology blending 282
technology choice 136
technology transfer see knowledge acquisition
technology-intensive services see information services
technology-push to innovation process 2, 70, 85, 188–9, 202
TechnoTerm 97, 98
telecommunications sector 167–8, 258–9, 263, 265–6, 269–70
mergers and acquisitions 271
privatizations 271
see also information and communication technologies
Telematics for the Integration of Disabled and Elderly people (TIDE) project 206–12
telex technology 167–8
see also information and communication technologies
testing
new products 8–19, 234–53
tasting sessions 8–9, 234–53
textile industry 288–9
Thoenig, J-C. 281
Tolba, M. 127
Torvalds, L. 7, 180, 182, 186, 190
Total Quality Management (TQM) 201
trade deregulation 263, 264, 274–5
TransKaryotic Therapies (TKT) 56, 57–8
transnational corporations (TNCs) as service providers 9–10, 254, 255, 261, 270–77
see also businesses
trust relationships 165–6, 171
Twikes (electric cars) 227–8
universal design concept 206
universities
industrial links 102, 109
UNIX operating systems 185–6, 195
usability criteria
in product design 205–6, 214
user behaviour 239–40, 249
user needs 69
as articulated by others 69, 78–84
in gene therapy 4–5, 38–41, 48–65
identification of 5, 38, 201
innovation and 2–3, 4, 10, 38–41, 48–65, 71, 280–96
in Internet technology 158, 170–71
in IT design 7–8, 201–15
market demand and 70
see also demand side economics
user-centred innovation 17, 77
by the disabled/elderly 202
double-loop learning 228–9, 230
electric vehicle innovation 217–30
food and drink industry 234–53
incentive for 217
in information and communication technologies 201–15
in Internet software 177–98
lead users concept 216–17
process of 216–33
in product design 8–9, 201–15, 216–33, 234–53
single-loop learning 228
user-producer relationship 113, 114
users
as competent/expert 202, 203, 217
as conservative 16, 17
as consumers 72–3, 76–7, 78–9, 80–81, 83–4, 85, 126
as customers 77–8
definition/identification of 5, 49–50, 68–88, 214
early adopters 202, 204
of information and communication technologies 202–5, 214
institutions as 80–82
late adopters 204
lead users concept 216–17
Index

market creation and 3, 138–9, 156–9
non-users 68–9, 79, 82–3, 85, 203–4
as relevant 74–6
as represented by others 69, 73, 74–5, 78–84
role of 39–41, 63–4, 71–8
social status 77, 78–9, 82, 83
of vaccines 68, 69, 78–84
user–supplier relationships 3, 102–3, 108

vaccines
DNA vaccines 85
GBS vaccine 82–3
innovation process 4–5, 68–9
legal issues 82
opposition to use of 79, 85
research and development 82
users of 68, 69, 78–84
Van den Belt, B. 17
Van Kammen, J. 78–9
Van Lente, H. 22

Van de Poel, I. 13, 33
Vattenfall 97, 102, 104, 108
venture capital 91, 92
Vergragt, P. 230
Verheul, H. 230
visible hand concept 12, 13, 23–4, 26, 32, 33
vision concept 40, 58–62
Volkswagen 225
Von Hippel, E. 71, 78, 82, 216–17

Werle, R. 13
Western Electric Company 231
Weyer, J. 13
Wigand, R. 171
wind turbines 96, 107
see also renewable energy technologies
Women’s Environment Network (UK) 147
Woolgar, S. 22, 78
Wurster, T. 170, 171