Index

academic and non-academic occupations 120–21, 130
‘accidents’ 3, 10, 76
Achurra, M. 175, 177–8, 180
adjustment policy (Prozesspolitik) 44–5
agglomeration 102
disadvantages 306
economies 2–3, 5, 193, 195, 239–40, 261, 299
critical mass of companies 76
spillover dynamics 191
effects 260
cluster-specific advantages 49
externalities 1
military 304
positive 318
specialised 326
Akron, tyre cluster 5, 240
Alborg, NorCom wireless communications 30, 38
Alborg University 26
allies, broadcasting models in occupied zones 58–9, 65, 106
Amsterdam
banking cluster 192, 207
increase since (1850) 202, 206, see also Dutch Banking
Central Bank location 198, 207
demise of diamond industry 91
hazard rates of banks 205–6
survival curves of spinoffs 206–7
takeovers 209
Twentsche Bank 199–200
WPO closed 208
Amsterdamsche Bank 199–200
Amsterdamsche Bank voor Belgie 80
Andressen, Marc 219, 231–2
Angel, D.P. 103, 104, 127, 303
Anglo-American economic geographers 325
Antwerp 74–6, 83, 92
datasets of registers van aankomst en vertrek 78
diamond cluster 6–7, 80, 92
re-emergence of 74, 78
diamond district until 1940 79–81
evolution of competing centres 83–4
migrants to diamond district (1948–65) 88
some Jews returned (1940s) 81, 92
World War I interruption 80
World War II, still existing growth centres 75 see also diamond bourses
Antwerp City Archive (Stadsarchief Antwerpen) 78
Antwerp diamantaires 84
attracted diamond dealers 88
dispersal of a major problem 85
fled from Nazis 89–90
Antwerp World Diamond Centre 74
APPENDIX 5A 132–9
APPENDIX 11A, case studies 284–90
APPENDIX 12A 300, 323
APSTC 174, 177–9
Arhus, fibreglass wind turbine blades 27
Arhus University 26
Arstiderne organic Food Network 38
Arthur, W.B. 2–3, 75–6, 193–5, 239, 266–7
Asia 27, 180
Association of Chilean Salmon Producers 181
Association of Salmon and Trout Producers of Chile see APSTC
Association of University Technology Managers (AUTM) 224
Audreitsch, D.B. 4, 143, 191, 217, 239, 242
automobile industry, cycle and coach-making 194
automobile and tyre industries 192, 209
AVM clusters in Germany 100, 105–110, 133–4
Cologne and Rhein-Erft 108
employees and directions of labour flow 125–6
employment stock 116
firms and employees (1980 TO 2007) 106–7
industrial origins of job movers 122, 125
intra-industry changes 122
job changes at local level 116
job rankings in cluster regions 111–12, 135
large firms in 138–9
location Kreis 108–9
make-up of employment stock 129
shares of job-changers and non-job-changers 112–15
sub-sectors 106, 132
top occupations, 110–111, see also APPENDIX 5A
Avnimelech, G. 140–41, 143–5, 154, 160
Baden-Baden
academic occupations 122
AVM 108
French occupying army 59
job-changers 112, 114
non-job-changers 112, 114
Baden-Württemberg 23, 244
Basic Constitutional Law 51
Bathelt, H.
competencies in Jena and Berlin 258
emerging clusters 1, 3, 44–5, 48–9, 76, 91, 170
regional clusters 281, 326, 337
Bavaria 336, 337–8
automotive industry, BAIKA 340–41
industrialization 309–310
Offensive Zukunft Bayern and High-Tech-Offensive (HTO) 341
privatisation thrust 339
Tele 5 (later DSF) 63–4
Bavaria and Lower Saxony 335–6
Bavarian Broadcasting (Bayerischer Rundfunk BR) 58
Bayh Dole Act (1980) 215, 225
Beck, H. 52, 57, 61
Be’er Sheva, railway connection 18
Belgian and Antwerp authorities, against anti-Semitism 86
Belgian exile government in London 90
Ben Gurion University, Negev in Israel Cleantech Ventures 18
Berlin 53, 55–7
biochip industry 8, 240, 242, 244, 246–7, 252–5, 261
first phase 254–6
second phase 256–7
third phase 257–8
BioHytec network 243, 256
medicine 258
radio 58–9
Berlin Wall, after fall Jenoptik 100
spin-offs 248
Berlin-Buch 256, 258
Beugelsdijk, S. 45, 295, 326, 331, 339
Beurs voor Diamantandel 79, 82
Beutenberg Campus 248, 249–51, 258
Bi-national Industrial R&D see BIRD
biochip industry, development 248–9
‘biochip’ or ‘microarray’ 244
biochip technology, definition 242
Biodot 268, 271, 272, 276
BioHytec 243–4, 256–7
BioPark incubator 338
biotechnology clusters 105, 219–20
biotechnology industry 4, 19, 141
Birch index, ‘balanced’ index 107–8
BIRD program, US and Israel 148–50
Board of Science and Technology 305
Boggs, J.S. 3, 76, 91, 258
Bone Care International 230–31
born global companies 161
Boschma, R.A.
automotive industries 39
clusters 1, 47, 239, 266, 328
Dutch banking 191–6, 208
economic geography 298
incubators 49–50
path creation 299
Index

Third Italy 20
WLO and 76
Boston 159, 220
bounded rationality, evolutionary policy-maker 327
Box 6.1 New ITP programs in Israel During (1990s) 147
Brachfeld Archive, Jews in diamond trade 79
Brandenburg 243, 252
Braunerhjelm, P. 2, 11, 75, 166, 169, 214, 317
IJP 265–6
Brazil 38, 81, 85
Bremen Broadcasting (Radio Bremen RB) 58–9
Brenner, T. 4, 49, 143, 191, 194, 242
Breschi, S. 105, 140, 166–8, 181
Bresnahan, T. 2, 11
case studies 301, 316–17
cluster development 165, 168, 239
high-tech clusters 295–6
knowledge flows 170
networks and VC 217
regional agglomeration 140
British automobile industry 196
broadcasters under public law market pioneers 65
protected monopolies 59–60
vertical-integrated systems of TV 60, 65
broadcasting, consumers’ freedom 51
Broadcasting Berlin-Brandenburg (Rundfunk Berlin-Brandenburg RBB) 55
broadcasting law of North-Rhine Westphalia, RTL Plus 63
Brunschweig region, transportation 343
Buch 252, 257
cable networks 61
calcitriol, used for osteoporosis 230
California 6, 18–19, 37
agro-food, a key industry 36
Carlsbad, alloy golf cluster 38
cleantech clusters, juxtaposition of 35
Jacobian clusters 25
semiconductor industry 40
windmill blade inferiority 27, 37
Cambridge
Acorn Computers 267
Auto ID Centre 280, 282
centre for R&D 279, 281
IJP cluster 9, 265, 272, 280
M&A 276–7
international marketing of IJP 276
job mobility 104
job turnover 127
Cambridge Consultants Ltd see CCL
Cambridge Display Technology 280–81
‘Cambridge phenomenon’ 301, 307
Cambridge region (UK) 296
high-tech centre 265
Cambridge Science Park 306–7
Cambridge University Engineering Department 268, 279
Cambridgeshire 312–13, 317
case study 306–7
IJP companies 272
SMEs 127
Canada 171, 174
Carbon Capture and Storage (CCS) 35
Cardiff microprocessor firm IQE 35
Carpathian Jews 87
Castells, M. 104, 305–6, 308, 310, 331
Catalonia, SEAT and SME ‘district’-type innovation relations 23
CCL 268, 269–70, 272–3, 280
cell phones, Xennia and CIT 280
Central Fraconia 337–8, 342
Champaign-Urbana, Illinois 220–21, 234
chance 76–7, 87, 91, 92
Charité, the 253, 258
CheckPoint, global ICT firm 154
Chile 166
‘Code of Standards for Salmon’ 178
connecting to advanced country markets 180–81
copper exports 171
CORFO 174–5, 179, 181, 183
diversification of products 181
farmed salmon business (1980s) 7, 171–2
government help 174–6, 183
fish mortality and fish diseases 179
foreign firms as exporters of salmon 173
Fundación 174–5, 177–8, 181, 183
Emerging clusters

IFOP 174, 183
lessons from 181–2
ocean ranching 174–5
quality seal certification 177–8
quality standards 176–9, 182
salmon aquaculture cluster 167
salmon aquaculture in 171–4
SERNAPESCA 174, 175, 178
Sociedad de Pesqueria Lanquihue 175
supermarket chains 180
Tenth Region 172–4, 176, 183
Chile's Economic Development Corporation (Corporacion de Fomento) see CORFO
Chile's National Fisheries Service (Servico Nacional de Pesca) SERNAP 174
China 74, 180
Cité Scientifique de Paris Sud see Ile-de-France
cleantech sectors 18, 22, 35–7, 40, 141
Clement, Wolfgang (NRW minister) 335, 340
cluster development and entrepreneurship 143
cluster effect, MNCs in ICT areas 154
cluster emergence
connected to spin-offs 260
institutional mechanism 182
two insights 239
cluster emergence process 141, 144
cluster firms, core activities 102–3
cluster formation 50, 53, 60, 64
co-evolutionary process 220
cluster growth dynamics 168
cluster initiatives, knowledge-intensive industries 295
cluster mutation, discovery of 18–19
cluster policies
analysis 334
institutional responses 325
sub-State level 341–3
cluster policies (Clusterpolitik) 44
Cluster Policies Whitebook 341
cluster policy
assigned to structural policy 44
case studies 334–5
economic policy 44, 67
industrial policy (Industriepolitik) 44
cluster region, growth stage 102, 160
cluster ‘species’ multiplication 35, 37
cluster structure, patterns of job mobility 102
cluster-life cycles 99–100, 108, 328
cluster-related occupations 110
cluster-specific human capital base 101–2
cluster-specific jobs 110
cluster-specific labour markets 104
clustering processes 55
seedbeds for 65
clusters
definition 1, 241
dynamic approaches rare 266
early phases 168
emergence of 2, 5
accidents, path dependency and strategic action 2–3
human capital base 99
path-dependent phenomenon 75–7
political support of 44
co-evolutionary links, types of 146, 160
co-ordinated economies, Germany and Japan 315
co-ordination problem, five spheres 314–15
codification 332
COFDI 84–7, 89–90, 93
Cognac, relocation from Antwerp to 81, 90
collective behaviour 144
collective knowledge flows 166, 171, 181
collective learning 165–7, 169, 182, 266, 330–31
Cologne 46, 53, 55–7, 59, 64, 66, 108, 342
municipal savings bank 63
non-job changers 112, 114
competence base 266
competencies 248, 258, 260–61
patents and 273
qualitative interviews and 247
spin-offs and 259
competition-oriented cluster concepts 102
competitive advantages 48, 76
competitiveness 170
Competitiveness Institute 331

Compagnie Diamantaire Anversoises SA 80, 92

computer aided design (CAD) drawings 275

Converse (precursor Efrat) 150

Concentration Index (CI) 107–8

core competencies 257, 328

core regions, radical shift of 298

core–periphery model 3

COROP Groot-Amsterdam 201–2

Council for mutual Economic Assistance (COMECON) 248

Cox regressions 203, 205

critical mass 76, 141, 144–5, 151, 161, 193, 328

ICT start-ups 151, 161
‘cumulative causation’ 21–2

cutthroat competition 52

czechoslovakia 89

Dahl, M.S. 104, 194, 217
Danaher IJP (USA) 274, 277, 279
Danish Technological Institutes (DTI) 26, 32
Danish Wind Energy Association database 26

De Beers Consolidated Mines Ltd 84–5

de novo high technology firms 221, 236
decentralization 305–8, 311, 317
decisions in regulation policy, spatial effect 50
decontextualisation 332, 334
deindustrialization 305, 307
DeLuca, Professor Hector, Vitamin D 230–32

Déniau, Michel 

Département Alpes Maritimes 308

Detroit, automobile cluster 5, 240

Deutsche Stunde Gesellschaft für drahtlose Belehrung und Unterhaltung mbH 57

developing country firms 166–7, 170–71

Devisenschutzkommando, raided diamond bourses 82

Dewald, U. 44–5, 337

Diamantclub 79, 82

Diamantkring 79

diamond bourses close on Jewish holidays 81

raided by Devisenschutzkommando and Sipo-SD 82, 93

Diamond Corporation Ltd (Dicorp) 84

diamond polishers 83, 93
diamond sector, monopolistic structures 91
diamond workers before the war and in 1945 83

Flemish origin 81, 89

returning to Antwerp 86–7

differentiation, between cluster and agglomeration 18

diversification, firms in Jena 251
diversifiers 255–6, 258

Domino 268, 270–71, 272, 274–80

purchased laser companies 278

Dorenkamp, Ansgar 47–50, 55, 57, 59, 64, 107

Dortmund area 246, 337, 344

dot matrix printing 269

Dresden 59

drop-on-demand IJP 269, 278

Dulas, green engineering firm mid-Wales 35

Dutch banking 8

906 banks (1850–1993) 198, 209

ABN-AMRO Bank 200

cohorts 205–6

entrants and exits 198–9

evolution of banks (1850–1993) 200, 210

four large banks in Amsterdam 201, 210

Great Depression and 198–9, 209

innovations 199
Emerging clusters

mergers and acquisitions 199, 203, 209
oligopoly (ABN-AMRO, ING and Rabobank) 201
rebirth (1850) 197
related activities 204
spinoff entrants (1850–1993) 204
Dutch Central Bank, network of offices 198
Dutch colonies, new capital needed 197
Dutch diamond district 88–9
dynamic growth
cluster characteristics 75
regions attract mobile production 49

Eastern Europe, anti-Semitism 91
Ecole Nationale Supérieure des Mines de Paris 308
ecological processes 266, 273–8
economic geographers, core competency 325
economic policy framework 67
economies of scale 48, 155
and scope 144
ecosystem 216
effective organizational routines 48–50, 192–3, 261
electronic engineering and computer software (EE&CS) 224–5
ELISA tests 256
elite universities, clusters in Illinois and Wisconsin 8
Elscint Law 149
Embraer (Brazil) 165
embryonic clusters, environment and 91
‘emergence’, definition 2
emergence of clusters, factors of 166
emerging clusters 241
no specialised labour pool 122
emerging markets, one pioneer 47
empirical analysis, cluster emergence and 316–17
empirical evidence, theoretical assumptions 315–16
empirical research, cluster policies 327
endogenous cluster dynamics 4, 7, 10–11
endogenous processes, clusters and 49
Engineering and Physical Sciences Research Council (EPSRC) 279, 281
Enterprise Integration Technologies (EIT) 231
‘entrepreneurial’ (ERIS) 23
entrepreneurship, successful clusters 143
environmental contamination 179
Europe bolt for biofuels 33
cluster concept 44
demand for Danish Wind Systems 27
‘institutional’ (IRIS) 23
IPOS 156
salmon 170, 176–7
Second German Television (Zweites Deutsches Fernsehen ZDF) 55, 59, 62, 107
European Patent Office 268
European Regional Development Fund (ERDF) 337
NRW and 342
European Union 21, 51, 107
evolutionary concept of variety 24
evolutionary economics, state and 327
evolutionary policy-makers bounded rationality 327
learning actors 344
evolutionary process 153
ex-post events 10
external economies 168
externalities 1, 105, 144
extra-regional supply of labour
large firms 127 (Thesis 5) 127–8
West German labour market regions 109–110
face-to-face contacts 170, 178, 298
Federal Agency of Employment (Nuremberg) 106, 111
Federal Constitutional Court 51
private broadcasting 60
Fein, A.J. 192, 197, 209
Feldman, M. 2–5, 11, 75, 214, 220, 260, 267
Feldman, M.P.
biochip industries 239–42
clusters 143–4, 166, 168–9, 191, 265–6, 317
labour pool 102
regional agglomeration 140
university clusters 217, 220, 225, 233
fields of competence, defined as clusters 338, 348
firm founding, quantitative and qualitative effects 143
firm-specific routines 192–3
first-mover advantages 47, 50–51, 53, 65
Fisheries Development Institute (instituto de Formento Pesquero) see IFOP
Flensburg 112, 115
flexible specialization 297
Florida, R. 142, 148, 216, 332
fluid sub-phase (1993–95) 153, 160
foreign firms, source of foreign demand 181
foreign VC companies, Israeli start-up and 157
Forminier and De Beers contract 91
Forminier company (Societe Internationale Forestiere et Miniere du Congo) 85
Fornahl, D. 3
agglomeration 49, 140
clusters 91, 143–4, 191, 239, 241, 328
human capital 100
IJP 265
labour pool 122
networks 104
Fortunia 79, 82
France 9, 87, 93
Archives Nationales 78
Credit Mobilier 197
innovative regions 23
‘Mediterranean ’ type of capitalism 315
Francis, J.L. 52, 168, 169, 191, 217, 220, 233
Frankfurt/Mainz/Wiesbaden 55
Fraunhofer IBMT 244, 253, 256–7
Fraunhofer Institute for Biomedical Engineering see IBMT
French sector, radio Koblenz 58
Frenken, K. 1, 24, 49–50, 191, 195, 241, 299
Frynas 47, 48, 50, 65
Fujifilm 279
Fukuoka silicon sea-belt project 311
Gambardella, A. 140, 295–6, 301, 316–17
Garnsey, E. 265–6, 269, 308
GDR 256
Central Institute (ZIMET) 248, 253
geographical mobility 104
highly-qualified human capital 120–22
geography, concept of path creation 77
German Cancer Research Centre (DKFZ) 243–4
German Democratic Republic, Carl Zeiss Jena 248
German Federal Research Ministry 243
German Human Genome Project, expiration of 251
Germany 9, 39, 45, 316
airship cluster in Friedrichshaften 91
biochip industry 243
spatial pattern 244–5
broadcasting corporations under public law (öffentlichrechtliche Rundfunkanstalt) 52
broadcasting monopoly for military use 57
Bundesarchiv 78
case studies 334–9, 345
clusters in broadcasting industry 6, 55
clusters and spatial systems 46–53
economic development policy 324
economic policy (Wirtschaftspolitik) 44
evolution of spatial pattern of TV 57–64
spatial effects on cluster formation 66
federal states (Bundesländer) focused on TV industry 46
freelancers in 106
generic non-local knowledge 346
global cluster hype 324
infrastructure for telecasts 65–6
Emerging clusters
immigrant Jews, bourse members 80–81
implicit knowledge, local human capital 103
in vivo analysis 261
in-house job careers 102
in-house training, costly for small firms 127
Inbal 147, 152, 154
Inca 268, 270–71, 274, 279
incentives, relocation of new firms 49
incubators 49, 53, 259
CCL 280
failure to become 60
left in Jena 252
networks 259
regions 216
spin-offs and 240
India 85
Tata Steel 35
Wipro and Infosys 165
industrial agglomerations 105, 107
industrial district, definition 142
industrial districts, emblematic examples 124
industrial dynamics 192
industrialisation 337
industries
created regional resources 101
establish remote locations 76
industry life cycle 108
industry-specific clusters, specialization 216
Ink Jet Academy 273
ink jet printing see IJP
InnoProfile 243
InnoRegio 243
innovation finance (VC) 141
innovation platform 20–21
innovation processes 104, 142
innovation and technology policy see ITP
innovative start-ups 143
Institute of Employment Research 105
Institute for Grassland & Environmental Research (IGER) 32–4
Institute for Microbiology and Experiments Therapy (IMET) 248
Institute of Molecular Biotechnology (IMB) 249
Institute of Photonic Technology 249
Institute of Physical High Technologies (IPHT) 249, 251
institutionalisation, variations of 335
Integrated Protein Chips for Point of Care Diagnostics (iPOC) 243
Intel Capital 157
inter-firm job mobility 104
inter-firm networks 181
inter-organizational learning 193
International Institut vor Soziale Geschiedenis 197
International Public Offerings see IPOs
Internet sources 221, 235–6
interregional institutional learning 332–4
interregional labour inflows, human capital base (Thesis 1) 116
interregional labour market, large firms and 129
interregional mobility
cluster-specific human capital 102
definition 110
interregional policy learning 343
interregional policy transfer, institutional learning 325
interregional transfer, sporadic 344
INTEASAL 179
intra-and interregional rates of labour inflow 116–19
intra-cluster diffusion of knowledge 104
intra-regional mobility 102
definition 109
knowledge transfer 99, 106
IPOs in NASDAQ 154, 156, 160
ISO 9000 170
Israel 18, 21, 83, 87, 93
cluster emergence 144–5
coevolutionary processes 149–50, 151–2, 154–5
coevolutionary summary 150–51, 152–3
companies, IPQ in NASDAQ 157
defense industries 151, 153, 158
Dimona nuclear facility Science Park 18
emergence of high tech cluster
Emerging clusters

phase III co-evolutionary processes 154–5, 160
start-up intensive ICT cluster 158–9
VC industry 141, 148, 155–7, 159–60
Government's ITP (1969) 146–7
Grants to Business Sector R&D 147, 161
high-tech clusters 153–4, 158
ICT cluster 7, 145–6, 148
development 141, 143
ICT cluster, co-evolutionary links 145–6
ICT multinational companies 160
immigration from Soviet Union 151, 154, 157, 162
IPOs and M&As 157
ITP programs 141, 146–7
program portfolio 146–7
R&D 141, 143, 146–53, 159–61
Ramat Gan 84
start-ups, foreign VC companies 157
Yozma program 147, 152, 154–5, 156–7, 161
Italy 39
ITP 141, 146–7, 150–51, 160

Jack, A 82, 85, 89
Jacobian
cluster mutation 19, 32
focus on ‘the city’ 21
Jacobian cluster path dependencies 31
Jacobian clusters, assets for 39
Jacobian dimension
product of its emergence 24–5
railroadization and 18, 30
Jacobs, J. 4, 19, 23, 38, 208, 241
Japan 9, 85
Chile and 177, 180
Development Bank of 316
Japan International Cooperation Agency (JICA) 174
Jena 8, 34
attenuated second generation growth 261
biochip industry 240, 242–4, 246–7
development of 248–9, 261
first phase 250
second phase 250–51
third phase 251–2, 251–3
IPHT 249
optics and precision engineering 258
variety generation 255
Jena Biochip Initiative 252
Jewish community, diamond sector and 80, 92
Jewish diamantaires, Antwerp trade and 86
Jewish Museum of Deportation and Resistance 79
job hopping, Motorsport Valley 127
job mobility 100
clusters and 101–2
Germany 105
labour pooling and 116
job movers
academics and 122, 124
definition 106
mobility patterns 129
region-specific origins 127–8
Johns Hopkins University 225
Jutland (Denmark)
350 community schools 17, 32
clusters 37–8
food path dependence 35
social capital SME-based entrepreneurship 32
Wind Industry Association 26–7
wind turbine technology 38
Kaiser-Wilhelm-Institut für Gehirnforschung (institute for brain research) 252
Kaiserslautern, public broadcasting station 116
Karnøe, P. 37, 77, 297
Kenney, M. 1, 142, 148, 216, 224, 302
key knowledge 101, 104–5
Kiese, Matthias 44–5, 316, 327, 335, 338–9, 344
Kinsbergen, A. 79–81, 84, 89
Klepper, S. 4–5, 8–10, 39, 49, 76, 143–4, 261
‘anchor firms’ 267
cluster emergence 239, 241, 260
Detroit automobile cluster 240
Dutch banking 191–2, 194–5, 203–6
hypothesis 247, 258–9, 262
knowledge 194
acquisition 166
asymmetric 347
capabilities 21
capital markets and 153
communities 347
channels for policy transfer 342
related to learning 169
economy 21
flows 166, 170, 177
standards and 182
generation, localization of 4
radical innovations 259
society, Germany 46
transfer 38, 99, 101, 273, 276, 347
knowledge spillovers 1, 24, 26, 37–9, 105, 191
knowledge-intensive industries 142–3
localised 103
knowledge-intensive
activities, face-to-face contacts 142
business services (KIBS) 21–2
clusters 297–300, 317
service sector 208
kompetenzhoch 337, 348
Korean War (1950–53) 88, 91
Kreis, M. 116, 117, 129
local district 107–9
Krugman, P. 2, 103, 239
Kymnella, J. 197–9, 201, 204
Kyushu island (Japan) 296, 302, 310–11, 312–13, 314, 317
labour flows 127–8
labour inflows 116–19
labour market pool 281
labour market region, several districts 109
labour mobility 105, 108, 129, 298
labour poaching 103, 105, 116
labour pooling 103
labour-mobility 99, 101
Lagendijk 333–4, 346
Lambooy, J. 20, 47, 49, 193
laser printing 269
late-mover advantages 48
Laureys, Eric 74, 78–82, 84–6, 88
learning by doing 9, 247, 333
learning processes, developing
countries 170
Lehman Brothers 152
Leibniz Institute for Age Research 249
Leipzig 3, 59, 106, 347
liberal market, US and UK economy 315
licences 52–3, 57, 60–65
Lieberman, M.B. 47, 48, 191
Linton, Bill, Promega of Madison 219
Linx 268, 270–71, 274, 276, 279
literature review, cluster emergence 142–3, 144–5
lobbying and rent seeking 328
local competition 1
local environment 193
local industrial structure, labour
mobility 129
local labor force 4
local labor market pools 7, 99–100
local labour market 103, 120
local mobility
definition 108
strongest in clusters 129
location policies (Standortpolitik) 43
London-based de Beers 84
Longhi, C. 4, 127, 241, 308
Los Angeles, Jacobian clusters 26
Lower Saxony 336, 338–9
Lunar Corporation 230
Lütz, S. 328–31, 344
McCann, P. 1, 103, 191
macropolitical economic stimulus
packages 66
Madison, biotechnology cluster 219
Madison, Wisconsin 221, 234
Maggi, C. 171, 173, 176–9
magnet organizations 267
Magnet Program 147, 154
non-job changers 112–13
Mainz/Wiesbaden/Frankfurt 55–6
Malecki, E. 23, 296, 305, 325
Malerba, F. 140, 166–8, 181
Malmberg, A. 1, 239, 260, 297
market entry barriers 51
monopoly 64–5
Emerging clusters

market exit 65
market failure
block start-ups 151
media contents are public goods 52
market patterns, vertical splitting 50
market pioneers, first-mover
advantages 47–8, 65
Markusen, A. 80, 124, 193, 296, 303–4
Marshall, A. 1, 80, 103, 116, 142, 193, 337
Marshall-Arrow-Romer (MAR) spillovers 103
thinking 38
Marshallian agglomeration economies 194
Marshallian district 124
Marshall’s labour pooling thesis 103
Martin, R. 1, 3, 5, 75–8, 167, 194, 240, 293
‘Cambridge phenomenon’ 307
clusters 1, 167, 241, 297–8, 326, 330
economic geography 194, 325
path dependence 3, 5, 75–8, 298–9
Maskell, P. 1, 140, 142, 144, 217, 239, 260, 297
mass-media, social and cultural
importance 52
Massachusetts 228
Max-Delbrück-Centre for Molecular Medicine (MDC) 252
Max-Planck-Institute for Molecular Genetics see MPIMG
MDC, within BioHytec 253
media goods, economic and cultural
goods 52
Menzel, M.-P.
chance and 77
cluster emergence 91, 122, 140, 143–4, 239–40
cluster formation 3
cluster life-cycle 100, 328
evolution of clusters 191
firm foundation 241, 247, 249
geographical proximity 260
IJP 265
incubator networks 259
mergers and acquisitions (M&A) 157
Metcalfe, J.S. 153, 325, 327
Mexico 85
micro-arrays, minor focus 258
Milford Haven refineries, SugarGrass biorefineries 33–4
Military Educational Complex 304
mindful deviation, two kinds 78
‘mission-oriented’ technology 309
MNCs 154, 166, 267
advanced country 170
clustering and 166
source of ideas 181
mobile telephony 32
mobility, local employees and 100
mobility industry 338
mobility patterns, region-specific
characteristics 130
mobility of talent 39
Modern Archief 79
monopolistic
abuse 52
companies, under public law 64
regional leadership 53
structures 91
diamond sector 91
Montero, C. 171, 173, 175–6, 178
Mosaic, Internet browser 230–31
Mosaic Communications Corporation (later Netscape) 232
Mossig, Ivo 46–50, 55, 64, 107, 122
MPIMG 243–4, 253, 255–7, 258
Munich
AVM 46, 53, 55–8, 64, 108–9
biochip industry 243–4, 246
case study 296, 301, 309–310, 312–13
‘mutation agents’ identifiable 20
Myrdal, G. 21, 193, 195
Myrdal-Hirschman theses, ‘cumulative
causation’ 21–2, 40
NACE categories, biodiesel or
bioethanol 24
nanotechnology 19, 35, 216
NASDAQ, foreign start-ups 152
NASDAQ Index 157
National Center for Supercomputing
Applications (NCSA) 230–32
national system policy 45
Nationale Vereniging van Banken 197
natural monopoly 50
Nazi rule
diamond sector during 78
end of trajectory 81–3
Index

NCSA 230–32
NE England, fewer Jacobian clusters 38
*Nederlandsch Economisch-Historisch Archief* 197
Nelson, R.R. 141, 145, 160, 166, 193, 327
neo-Schumpeterian, theory of regional evolution 21
neoclassical world, the state and 327
Netherlands
  banking sector 192
  foreign banks and 202
  list of banks 196–7
  spinoff entrants 206
Netscape and PayPal 219, 228, 230
‘network regions’ 23
networks 1, 166, 181, 217–18
  of competence 335
  local informal 104
  regional interactions between 260
  social capital and 39
  university 233
New York 84, 86
non-academic job movers 122, 124
non-start-up companies, IPOs in NASDAQ 152
North American firms 170, 176
North Carolina 228
North German Broadcasting
  (*Norddeutscher Rundfunk NDR*) 55
North Jutland 6, 19, 26, 37
  Jacobian cluster 30–31
  mobile telephony 40
  railroadization 30, 39
  solar thermal energy cluster 29
  wind-turbine cluster 26–8
North Rhine-Westphalia (NRW) 335–7, 340
North-West Baden-Württemberg 246
Northern California, Jacobian clusters 25
Northwest German Broadcasting
  (*Nordwestdeutscher Rundfunk NWDR*) 59, 63–4
Norway 6
  cleantech 35–6, 40
  Mongstad, CO2 capture testing facility 35–6
non-cluster case 19
REC firm for solar energy 36
salmon 171–2, 174–6, 180
Nuremberg Programme (1994) 338, 342
OCS 141
  policy promoted demand for R&D 148
  regular R&D support program 146, 149–50
Office of the Chief Scientist, Ministry of Industry and Trade *see* OCS
Office of Corporate Relations (OCR) 225
on-the-job-learning 193
open systems 23
organizational routines 48–50
  original equipment manufacturer (OEM) 274–5
Oslo peace agreements 157
Owen-Smith, J. 1, 3, 170, 220
Oxford, job mobility 104
Oxfordshire
  British motorcar sports industry 3
  job turnover low 127
Paderborn (Germany), IT cluster 102
Palestine 81, 83, 85, 87
patents
  Cambridgeshire IJP 268, 273, 276, 280
  knowledge transmission 215, 231
  Vitamin D 225, 230
path creation 298–9
  role of entrepreneurs 77
  path dependency 298–9
  clusters and 74
path-dependent institutional learning 340–41, 345
path-dependent process, key characteristic 75
Perez-Aleman, P. 165–6, 170–71, 174, 176
photovoltaics 34–6
Physical-Technical-Institute (PTI) 248–9
Physics Cavendish Laboratories 280
Pinch, S. 3, 5, 10, 104, 127, 142
pioneer disadvantages 48
pioneers’ temporary monopoly 51
Piore, M.J. 166, 168, 181, 297
PKS, private broadcaster 61
Plastic Logic 280–81
platform concept 39
Poland, anti-Semitism 89
policy tourism 331, 343
policy transfer 325, 341–2, 345
channels 330–31
degree of 329
determinants of 331–2
mechanisms 329
Porter, M.E. 1–2, 26, 37, 78, 102, 142, 167, 239
cluster policies 330
definition of clusters 241, 326, 335, 341
positive external economies 103
positive externalities 144
labour mobility 105
post ministry (Reichpostministerium) 57
Postbank (later ING Postbank) 200
Potsdam 59
Potsdam/Babelsberg 106
Powell, W.W. 1, 3, 166, 170
pre-emergence processes 141
preferential attachment 260
primate cities 21
printed circuit boards 275, 280
process of emergence, dynamic economies of scale 144
product quality standards 182
productivity contributions, railroads and 18
proximity 19, 217, 260, 266, 275–6
geographical 19, 260
R&D 299
spatial 298, 306, 309, 328, 339
and relational 342
to incubators 49
public choice theory 346
public sector, start-ups and 175
public television station ARD 107
Puppis, M. 51–2, 60, 66
Quaker Oats, WARF licence (1927) 225
qualitative changes, quantitative changes and 153
qualitative co-evolution 160
qualitative dimension, all three phases 145
qualitative interviews, competencies and 247
qualitative method, dynamics 261
‘Quartier Latin aux Champs, Le’ 308
R&D
Bavaria 337
Cambridge 279
expenditure 300
Greater Boston 304
infrastructure 9, 316
labs 160
MoD and 306
Munich 310
performing firms, high-tech activities 141
policy 316
the ‘regional state’ and 22
university 215
Rad Group 150
radio frequency identification (RFID) 280
Radio Television Luxemburg (RTL) 53, 62–4, 66
‘railroadization’ 6, 17–19, 30
Jutland and 32
Rau, Johannes (PM of North-Rhine Westphalia) 63
re-emergence of a cluster, strategic action and ‘accidental’ events 90
Reagan administration, cut alternative energy research budgets 27
recent advances in RIS research 23–5
Jacobian clusters 25–32
Regenburg city, industrialisation 338
REGION BRAUNSCHWEIG GMBH 339
region-specific characteristics, mobility patterns 130
regional agglomeration, global leading cluster 140
regional clusters
definition 165
emergence of 75
regional economic opportunity (Schumpeterian) 20
‘regional evolution’ 17
Regional Growth Concepts (RGCs) 338, 344
‘regional innovation networks’ 22
regional innovation systems (RIS) 22–3
regional labour pool, small firms and 127
regional learning processes 261
regional stock corporations 57
regularities, clusters and 168, 182
‘related variety’, industrial districts 20, 24, 30, 38–9
relating railroads, related variety 19–22
relevance of human capital and labour mobility 100–105
reproduction processes, organizational routines 49
reverse spin-off process 127
Rhine-Neckar triangle 243
Rhineland 38, 57
biochip industry 243
Rhineland Palatinate media agency (Anstalt für Kabelkommunikation AKK) 61
Rhineland Palatinate prime minister 62, 67
RIS framework, ‘varieties of innovation’ 23, 39
Romanelli, E. 4–5, 220, 239–40, 260
Rotterdam 198, 202
Rotterdamsche Bank, strategy 198–9
‘Route des Hautes Technologies’ 308
Russia 89
Russian River valleys, clusters 25
Sabel 166, 168, 171, 181, 297
Sacramento river valleys, varieties of horticulture 25
St Asaph, UK-Dutch steel manufacturer Corus 35
SalmoCorp 180–81
Salmofood 181
salmon, water quality and disease transmission 179
salmon cultivation, complex 179
Salmon Technology Institute (INTESTAL) 179
Salmones Antártica, salmon aquaculture 175
salmon’s lifecycle, technological challenges 175
San Diego 25–6, 220
San Francisco 220
San Francisco Bay Area biotechnology cluster 220
San Joaquin river valleys, varieties of horticulture 25
Sat 1 company 43, 55, 61–2, 64
Cologne and 66
licence in Berlin 62–3
satellite towns 21
Saxenian, A. 1
biochip industry 240–41
California and 26, 39
case studies and 301, 314
clusters in developing countries 165–6
Greater Boston 304
networks 181
Silicon valley and 168
start-ups 143
university clusters 216
Schelt city 74
Schmitz 165, 169, 181
Schott-Zeiss Institute (1944), penicillin 248
Schumpeter, J. 17, 30
railroadization 39–40
Schumpeterian and Jacobian, relationship 19–20
Schumpeterian literature, co-evolution 160
Schumpeterian logic, clusters and 267
Schumpeterian ‘new combinations’ 6, 37–8
‘science city’, German reunification and 254
science, technology and higher education infrastructure (STE) 148, 159
Scitex 152
Scotland, salmon 171, 175–6
Scott, A.J. 2, 193, 298–9, 301–2, 308
second generation growth 5, 8, 267
biochip industries 240, 242, 252, 257–8
MPIMG firms 258
processes leading to 260–61
second-mover advantages 48
Emerging clusters

seedbeds 49–50, 53, 65
failure to establish 60
RTL and 66
seeding event 214
seeds 216–17, 233
Sequoia 157
Sericol 279
Sharp, Japanese electronics corporation 35
Shockley, Bill, co-inventor of the transistor 303
Siemens 102
Siemens AG 309
Silicon Valley cluster 4, 39, 105, 140, 159, 167–8, 218
attempts to copy 239, 295–6, 298, 301
case study 302–4, 312–13, 317–18
individuals from UIUC 227, 228
Netscape drew managers 233
Netscape and Paypal 219, 233
policy tourism 331
Stanford University and California 216
Singapore 180
small firms, local labour market pool (Thesis 5) 127–8
small and medium-sized enterprises see SMEs
SMEs 124
Denmark and 26–7
Germany and 243, 246
Grenoble 307
Stanford University 303
smolts (juvenile salmon), cages in the sea 175, 183
social capital 32, 39
social market economy (soziale Marktwirtschaft) 45
’social structure of innovation’ 216
software, development 151–2
Sophia Antipolis (Nice in France) 127, 296, 302, 307–8, 312–13, 314, 317
sourcing of human capital 110
industrial origins of labour inflows 122–4
intra-and interregional labour mobility 116–20
labour inflows into selected clusters 112–16
local labour market pool and its development 110–112
mobility patterns and cluster structure 124–9
South Africa 81
South German Broadcasting (Süddeutscher Rundfunk SDR) 59
South-African diamond deposits, rough diamonds 79
Southern California, Jacobian clusters 26
Southwest Broadcasting (Südwestfunk SWF) 59
Southwest Broadcasting (Südwestrundfunk SWR) 55, 62, 67
Soviet Union, immigration to Israel 151
Spain, Silkeborg turbines 27
spatial agglomeration 298
spatial concentration, system policy and 50
spatial effects 50, 57
spatial proximity, electrotechnology and 306
specialised high-tech firms 266
spin-off dynamics 8
spin-off firms, further spin-offs 277
spin-off processes 8, 9, 10, 49–51, 64, 66, 143, 239
firms formed in first phase 258–9
firms in second phase 267
spin-offs 5, 144, 239–40
competencies 260–61
definition 204
EE&CS 224
firm routines 260
from early entrants 267
IJP sector 267
mechanisms 246
source of variety 241
university 8
spin-outs 252, 257, 265
spinoff companies 195–6
must innovate 272
spinoff dynamics 192, 194, 195
agglomeration economics 191, 194–6
spinoff model 194–5
spinoff processes 143, 195
Spitzencluster (leading-edge cluster) 324
competition 324
spotting devices 242, 254–5
spread effects 21
Stam, Erik 217, 266, 272
stand-off situation 103
standardization 7
standards 165, 170
institutional mechanism 182
international markets and 168
Stanford, EE & CS spinoffs 224–5
star scientists, industrial
agglomerations 105
start-up-intensive high-tech cluster life
 cycle model 140
start-ups
based on university research 217
excess demand for support 154–5
inventor companies 145
technology categories 221–2
state policies: North Rhine-Westphalia
 vs. Bavaria 339–41
STE 159
Steenbock, Professor Harry (UW-M) 225, 230, 232
Sternberg, R. 107–8, 295, 300–301, 309–310, 338
stochastic approaches 2
stochastic concepts, mathematical
models 75–6, 92
Stoerring, D. 27, 30, 38
Stoiber, Edmund (Bavarian minister) 340
Storper, M.
cluster growth dynamics 168–9
Dutch banking 191, 193
hub-and-spoke district 124
labour and 101–2, 116, 120
path creation 299, 309
’shifting centres’ 75, 83, 93
spatial clustering processes 47–50, 53
university clusters 216–17
WLO approach 2–4, 76, 239
strategic action
chance and other factors 87–9
COFDI and 85
former cluster structures and 90
generating advantages on supply side 84–5
recovery of labour 85–7
strategic action and path creation 77–8
Strategic Partnership for Sensor
Technology 338
sub-system of firms, ‘exploitation’ 23
SugarGrass, prospect to replace oil 33
Sun Chemical 279
Sunley, P.
clusters 1, 167, 239–40, 241, 297, 330
path dependence 3, 5, 75–8, 298–9
Sweden
forestry in biofuels cluster in
Örnsköldsvik 35
Xaar relocated to 277
Switzerland 275
Syndicate of the Belgian diamond
industry (Syndicaat der Belgische
Diamantnijverheid) 79
synthetic vitamin D pharmaceuticals,
Tetronics 230
Syria 85
system policy (Ordnungspolitik) 44
market entry and exit 51
regulation to promote public interest 52
system policy and adjustment policy,
relationship hierarchical 45
tacit knowledge 195, 216–17
Taiwan 180
information technology in Hsinchu
region 165–6
targeting VC, Yozma program 147, 160
Technological Incubators 154
Technological Incubators’ Program
147, 152
technological knowledge 165
technology classification, MG&E 221
technology licensing offices (TLOs)
225
technopole 307
telegraphy
(Reichtelegraphenverwaltung) 57
televisor satellite ECS 1 60–61
Terman, Fred 303
Teubal, M. 140–41, 143–7, 154, 160
Thailand 74
Third Italy 20, 23, 298
Thyssen Krupp 343
Emerging clusters

‘traded interdependencies’ of a cluster 217
training on the job, small firms 127
triggering event 214, 221
Turkey 85

UC Berkeley 224–5
UIUC 215, 218
ingineering and physical sciences 228–9
high technology set-ups 226–7
information technology and engineering start-ups 222
Lotus Notes and Eudora 218–19
not retaining entrepreneurs 228
seeds and 233
Silicon Valley and 219
start-ups 228–9
UK 81
diamonds 83, 87, 93
high cost of capital disincentive 275
salmon exports 174
uncodified knowledge, mobility rates and 104
University of Wisconsin-Madison see UW-M
University of California, $500 million for Climate Change research from BP 33
University of Illinois at Urbana-Champaign see UIUC
university licensed technology 224
university research-centric cluster research university 232–3
specialization 216–17
start-ups 230
start-ups 230
university spin-offs 216
University of Wisconsin-Madison see UW-M
Unix 231
Upper Austria, cluster policy 339
USA 9, 39, 81, 83
biotech clusters 105, 267, 295
biotherapeutics industry 5, 240
bolt for biofuels 33
Cambridge/Boston cluster 220
emigrants in and Antwerp 86–7
Frontier West in nineteenth century 32
IJPs and pumps 275
National Archives and Records Administration 78
railroadization 17
Research Triangle Park (RTP) 305
Research Triangle/NC 296, 301, 304–5, 312–13, 317–18
salmon 171, 174, 177, 180
Sunbelt states 193
university-based clusters 214–15, 234
UW-M 215, 218–19, 222–4
biological and medical sciences 228–9, 235
high technology set-ups 226–7
start-ups 228–30
University Research Park (1984) 225
Vitamin D 230
WARF and Office of Corporate Relations 233

Vanden Daelen, V. 81–2, 86–8
‘varieties of capitalism’ (VOC) 314–15
variety creation, competencies 247
venture capital see VC
Vereniging voor Vrije Diamanthandel 79
vertical disintegration 298
vertically integrated district 124
Videojet (USA) 270–71, 274, 276–7
Virginia 228
Vitamin D 225, 230
Voelzkow, H. 53, 63–5
Volkswagen (VW) 335
VW, Wolfsburg and McKinsey & Co 343

Wales 6, 18–19, 23, 26, 38
bioenergy from crops 32–5, 38
food path dependence 35
solar energy equipment manufacturers 34
Walker, R.
Dutch Banking 191, 193
hub and spoke district 124
labour and 101–2, 116, 120
‘shifting centres’ 75, 83, 93
spatial clustering processes 47–50, 53
WLO 2–4, 76, 239
WARF 225, 230, 232
  patents 231
Weimar Republic 57–9
Wenting, R. 39, 47, 49–50, 196, 208, 239
  clusters 266
  fashion industry 192
West German Broadcasting
  (Westdeutscher Rundfunk WDR) 53
West Germany, sound results from 106
‘Western Crescent’ west of London
  296, 301, 305–6, 312–13, 317
Western Germany, new Länder deviate 335
Willett (Corby UK) 272, 276
  window of locational opportunity
  approach see WLO
wine clusters, overlap horticultural
  zones 37
Wisconsin 220
  Angel Network 231
  Entrepreneurs’ network 231
  Technology Network 231
Wisconsin Alumni Research
  Foundation see WARF
WLO 2, 4, 10, 20, 59, 75, 208
  Antwerp 76
biochip industries 239
Dutch banking 192–3
  new 84
  R&D-intensive industries 297
  Wolfsburg AG 341
  Wolfsburg’s AutoVision concept 343
  World Bank, Projects of National
  Importance program 149
World War II 74
Wowereit, Klaus (Berlin’s mayor) 43
  www.biochipnet.com 244, 261
  www.biotechnologie.de 244, 261
Xaar 268, 270–71, 272, 276–9
Xennia 268, 272–3
  application in RFID 280
  taken over by Ten Cate
  (Netherlands) 277–8
Yiddish, mazl un brokhe (good luck
  and blessing) 81
Yozma, critical mass (1993) 161
Zeiss 34, 248, 250, 251, 255, 258
ZIMET 248–9
Zone pour l’Innovation et les
  Réalisations Scientifiques et
  Techniques (ZIRST) 307
Zucker, L. 1, 4, 90, 105, 216–17