ABACC (Brazilian-Argentine Agency for Accounting and Control of Nuclear Material) 301, 303–307

ABM (anti-ballistic missile) treaty, 1972 346, 353, 354, 360–363
Standing Consultative Commission established under 347, 362

A-bombs (atomic bombs) 17

Action/reaction syndrome, and Cold War 338

Active defense strategy China 48–49
Actual Routine Inspection Effort (ARIE) 109


ADE reactors 368
Advanced Nuclear Fuels 297–298
Advanced Tactical Lasers (ATL) 4
AECC (Angarsk Electrolysis Chemical Complex) 269

Aegis anti-missile radar system 24

AEOI (Atomic Energy Organization of Iran) 90, 270

Aerial bombing 2, 3, 320–321
Aerodynamic Separation Process (ASP) 273

Afghanistan
United Nations Assistance Mission to (UNAMA) 3
war against terrorists in 6, 38, 42, 411

Afrasiabi, Kaveh L. 406

Africa, uranium production 89

African Commission for Nuclear Energy 175

Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL) 169

Agent Orange 9

Agreement between Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities, 2008 159

Agreement for Cooperation between the Government of the United States of America and the Government of India concerning Peaceful Uses of Nuclear Energy, 2007 158

Ailuk Atoll, nuclear testing claims 162
Airborne gamma spectrometry (AGS) 378

Airspace sovereignty 28

Al Kibar (Syria) reactor, attack of (2007), 151, 190, 380–385, 392, 399, 406, 408, 409, 410, 413
compared with Osiraq (Iraq) 386–391
and precautionary self-defense 397–400

Al Qaeda 41, 70, 192

Albright, David 381, 383

Algeria 82, 175
Alimohammadi, Masoud 194
Alliances 43, 64–65
Almaty Declaration 177

Alvarez, José E. 200, 202, 237

Ambiguity/ambiguous events 123, 165
nuclear ambiguity, Israel 62–63, 217
ancient Greeks 194–195

Anderson, Ross 194

Angarsk Electrolysis Chemical Complex (AECC) 269

Annoyance actions 393

Anomaly, nuclear material 107

ANSN (Asian Nuclear Safety Network) 88
Antarctica 180
Anthony, Ian 234

Anti-Ballistic Missile (ABM) treaty see ABM (anti-ballistic missile) treaty, 1972

anticipation of risks 55–56, 71–72
anticipatory self-defense 36, 336, 404–405
attacks on Al Kibar and Osiraq 386
and enforcement 222–223
Osiraq reactor (Iraq), attack on (1981) 394–397
and preemption 392–400
vs. preemptive self-defense 392
UN system 188, 189–190, 191

anti-nuclear protects 78, 220
anti-satellite (ASAT) technology 24
anti-satellite tests 24, 25, 182, 227
anti-submarine warfare (ASW) 73

anti-terrorism initiatives/legislation 48, 51, 235–249

API1000 nuclear power plant 86
Areva (French nuclear energy company) 82, 90, 93, 269, 270
Argentina, case study 301–307
ARIO (Actual Routine Inspection Effort) 109
Armenia 74
arms control instruments 18, 102, 220–221, 341–344
companies 339–340
Armstrong, Andrea 189, 392, 394, 395
ASAT (anti-satellite technology) 24
Asgari, General Ali Reza 194
Asian Nuclear Safety Network (ANSN) 88

ASP (Aerodynamic Separation Process) 273
al-Assad, Bashar 383, 385
ATL (Advanced Tactical Lasers) 4
Atomenergoprom (Russian company) 90

Atomic Energy Act 1954, US 156, 253
attack, preemptive 188

attacking of nuclear reactors 380–391
at Al Kibar see Al Kibar (Syria) reactor, attack of (2007)
nature of facility 386

open attack vs. covert attack 387–388
at Osiraq see Osiraq reactor (Iraq), attack on (1981)
threshold of imminent threat 386–387

Australia
France, action against 159–161, 211
national security strategies
conventional and unconventional threats 70–71
nuclear deterrence and non-proliferation 73–74
operational tools 72–73
risk management anticipatory strategy 71–72
Australia Group 132
Australian Defence Force (ADF) 72
Austria 273
Azerbaijan 74–75

B-61 bomb 46
Bacevich, Andrew J. 336
Baker, James E. 398, 401, 402
Ballistic Missile Defense Organization (BMDO) 362
Banisar, David 75
El Baradei, Mohamed 103
Bar-Joseph, Uri 385, 402
Baruch, Bernard 252, 253
Batty, David 383
BCC (Bilateral Consultative Commission) 355
BDMS (Blend-Down Monitoring System) 371
Beck, Michael 132
Begin, Menachem/Begin doctrine, Israel 63, 381, 388, 402
Belin, Yossi 83
Bekker, Pieter H.F. 333
Belarus 209, 212
Beres, Louis Rene 395
Bernstein, Adam 364
Betts, Paul 81
BIC (Bilateral Implementation Commission) 354, 357
Bikini Atoll, nuclear testing claims 161, 162
Bilateral Consultative Commission (BCC) 355
Index

Bilateral Implementation Commission (BIC) 354, 357
Biohacking 11
biological warfare 10–11, 12, 329
Biological Weapons Convention (BWC), 1972 11, 344
Blend-Down Monitoring System (BDMS) 371
blitzkrieg 14
BMDO (Ballistic Missile Defense Organization) 362
Board of Governors, IAEA 256, 257–258, 389
Bolton, John R. 189
bombardment, strategic 14
Bonino, A.D. 301
Bosch, Miguel Marin 102, 315
Bowett, Derek W. 414
BPSP (burden of proof on suspected proliferators) 102, 184, 222, 256, 399, 409
and future of nuclear weapons 224, 225
and IAEA 276–277
non-proliferation, effectiveness 218–219
and Security Council 135, 136, 137, 151–152, 154
Bradford, Ernle 401
Brannan, Paul 381, 383
Bravo test 161
Brazil
case study 301–307
security strategies 67–69, 76, 218
as TNWS 67–69, 207, 211, 301
uranium enrichment facility 91
see also ABACC (Brazilian-Argentine Agency for Accounting and Control of Nuclear Material)
Broad, William J. 83, 341
Brom, Shlomo 63
Brom, Shlomo 63
Brussels Convention Supplementary to the 1960 Convention on Third Party Liability in the Field of Nuclear Energy 266
Budlong, Kory W. 87
bulk materials 108, 299
bunker-buster bombs 5
Bunn, Matthew 213, 264
burden of proof on suspected proliferators (BPSP) see BPSP
(burden of proof on suspected proliferators)
Burgess, Stephen F. 375
Bush, George W. 241
Bush, Richard C. 228
BW (biological weapons) 11
BWC (Biological Weapons Convention), 1972 11, 344
Byers, David 24
C4ISR (command, control, communications, computer, intelligence, surveillance and reconnaissance) 3–4
Canada 89
Cannizzaro, Enzo 320
CANWFZ (Central Asian NWFZ) 51, 176–179
Cappello, John T. 18
Caribbean NWFZ 167–171
Carnesale, Albert 337
Caroline case (1837) 36, 188, 392–393, 396
cartels 215, 267
Carter, Jimmy 146, 235
Category I and Category II items, MTCR 130–131
CBMs (Confidence Building Measures) 166
CBRN (Chemical, Biological, Radiological Nuclear) defense 8
CD (Conference on Disarmament) 50–51, 164, 375
Central Asian Nuclear-Weapon-Free Zone (CANWFZ) 51, 176–179
Central Intelligence Agency (CIA) 193, 233, 413
CERN (European Organization for Nuclear Research) 30
Charter, United Nations 316, 392
Article 2(4) 313, 413
Article 51 187, 188, 311, 313, 316, 328, 330, 331, 390, 393, 398, 415
Chapter VII 186–187, 200
covert operations 194, 195
peace and justice 185, 186
and Security Council 136, 137, 201
self-defense, right to 171, 187
sovereign equality of states 199–200, 200
Chemical, Biological, Radiological Nuclear (CBRN) defense 8
chemical warfare 8–10, 329
Chemical Weapons Convention (CWC), 1993 8, 9, 10, 344
Chernobyl accident, 1986 78, 84, 266
China 16, 29, 31, 59, 93, 228, 372, 376
anti-satellite test (2007) 24, 25, 182
national security strategies 39, 40
active defense 48–49
offense 49–50
tools, conventional and unconventional 50–51
nuclear energy industry 81, 84
China National Nuclear Corporation (CNNC) 91
Chulov, Martin 341
CIA (Central Intelligence Agency) 193, 233, 413
CIS (Commonwealth of Independent States) 178, 293
civil wars 5
civilians vs. combatants, distinction principle 313, 324, 328
clandestine nuclear programs 101, 122, 129, 134, 136, 153, 184, 218, 233–234, 399
in Iran 141, 232, 256
in Iraq 125, 152, 256
in Libya 232
in North Korea 145, 148, 152, 153, 232, 256
in Syria 190
climate change, and energy security 81
Clinton, Bill 353
cluster bombs 324
CNNC (China National Nuclear Corporation) 91
CNOs (Computer Network Operations) 31–32
CNWS (current nuclear weapon states) 224
Cochran, Thomas B. 116
coerced transparency 77
Cogazzi, G.G.M. 87
COGEMA MOX fabrication plant, Cadarache (France) 299
Cohen, Eliot A. 6, 336
Cohen, Stuart A. 63
Cold War 18, 23, 45, 109, 191, 200, 206, 227–228, 234, 309, 342, 406
and deterrence 15, 17, 35, 36, 210
military-industrial complex 338, 339
and self-defense 187, 189
and UK strategy 57–58
collective action 186–187
Collins, Catherine 140, 234
Commission of the European Communities v. Council of the European Union 300
Common System for Accounting and Control of Nuclear Materials (SCCC) 302–303
Commonwealth of Independent States (CIS) 178, 293
compartmentalization 122
compensation 161–163
Comprehensive Nuclear Ban Treaty (CTBT) 48, 51, 153, 164
Comprehensive Safeguards Agreements (CSAs) see CSAs (Comprehensive Safeguards Agreements)
 Comprehensive Test Ban Treaty Organization (CTBTO) 164, 165, 166, 178
Computer Network Operations (CNOs) 31–32
Conference on Disarmament (CD) 50–51, 164, 375
Confidence Building Measures (CBMs) 166
confidential information, disclosure 122
Congressional Research Service (CRS) 258
control of nuclear weapons 338–379
arms control instruments 18, 102, 341–344
instruments of control 346–357
early efforts 346–350
SORT Treaty, 2002 343, 355, 356, 357
START 350–357
military-industrial complex 338–341
nuclear disarmament strategies 344–346
verification of disarmament 102, 122, 363–374
Convention on Certain Conventional Weapons (CCW), Protocols I-IV 323–324
Convention on Cluster Munitions, 2008 324
Convention on Early Notification of a Nuclear Accident, 1986 266
Convention on Nuclear Safety, 1994 259
Convention on the Physical Protection of Nuclear Material (CPPNM) 153, 179, 261, 262, 293
Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material, 1971 266–267
conventional war 1–5, 19, 327
Australia 70–71
China 50–51
weapons 339, 401
conversion times 115, 116, 117
Co-operation Agreement, 1998 306
corrective justice 197
Counter Surveillance Reconnaissance System (CSRS) 29
counter-insurgency warfare 6–8
counter-proliferation 243
Coupland, Robin 326
covert operations 190, 192–196
advantages and disadvantages 195, 401–403
vs. open attack 387–388
role of 400–405
Cowell, Alan 193
CPPNM (Convention on the Physical Protection of Nuclear Material) 153, 179, 261, 262, 293
CRS (Congressional Research Service) 258
CSAs (Comprehensive Safeguards Agreements) 135, 140, 144, 218
safeguards system 106–107, 110, 111, 113, 121
CSRS (Counter Surveillance Reconnaissance System) 29
CTBT (Comprehensive Nuclear Ban Treaty) 48, 51, 153, 164
CTBTO (Comprehensive Test Ban Treaty Organization) 164, 165, 166, 178
current nuclear weapon states (CNWS) 224
CWC (Chemical Weapons Convention), 1993 8, 9, 10, 344
cyberattacks 31, 32, 39, 50
cyber-exploitation 31, 50
cyberspies 401
cyberwarfare 31, 32
D’Amato, Anthony 394
Davis, Philip E. 201
DBT (design basis threat) 263, 264
DDoS (distributed denial of service) attack 32
De Gaulle, Charles 284
decommissioning of nuclear power plants 95–96
defense industry, consolidation of 339–340
defense-in-depth 260–261
Democratic Republic of Congo (DRC) 331, 332
demonstrations against nuclear weapons 78, 220
Denuclearization of the Korean Peninsula 145
Department of Defense, US see DOD (Department of Defense) US
Department of Energy, US see DOE (Department of Energy) US
depleted uranium (DU) 20–21, 213–214
depth-charge, nuclear 315
design basis threat (DBT) 263, 264
design information, verification 104–105
DeSutter, Paula A. 27
detection times 115, 116
deterrence 4, 12–17, 35, 40, 224, 227, 312
Australian policy 73–74
and Cold War 15, 17, 35, 36, 210
extended 15
independent nuclear deterrent (UK) 59
minimum 15, 60–61
missile defense systems 360
politics of 206
recessed 60
threshold 15, 16
universal 16–17
developing states 203, 227
Diamond, Jared M. 415
differentiation approach, non-proliferation 217
Dillon, Garry 118
Dinstein, Yoram 394
dirty bombs 20, 247
dissarmament 13, 99, 220
Conference on 50–51, 164
‘Megatons to Megawatts’ program 368–371
nuclear stockpile declarations 276, 371–373
nuclear strategies 344–346
Trilateral Initiative 276, 373–374
verification of 102, 122, 363–374
distinction principle (combatants and civilians) 313, 324, 328
distributive justice 197
DOD (Department of Defense) US, 35, 39, 43, 188, 338
On-Site Inspection Agency 360
DOE (Department of Energy) US, 40, 338, 366
drones (UAVs) 2–3, 4, 38, 320–321, 337
DU (depleted uranium) 20–21, 213–214
dual-use materials/technologies 69, 125, 126, 129, 133, 232, 234
due process 197
Dupuy, Pierre-Marie 317
early warning radars (EWR) 362
egalitarianism, legal 198
Egypt, nuclear cooperation agreements 82–83
Eichensehr, Kristen E. 396
Eisenhower, Dwight D. 285–286, 358
electromagnetic (EM) field 22
electronic warfare (EW) 22
Emergency Preparedness and
Response Manual on
Communicating with the Public (IAEA) 85
Empresa Nacional de Urânio SA (ENU) v. Commission of the European Communities 293
energy supply, common policy for security of 282–295
Ennewetak Atoll, nuclear testing claims 161, 162
enforcement 222–223, 405–408
ENMOD Convention (Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques), 1977 32–33
environmental modification techniques 32–33
environmental protection 311
environmental sampling 111, 115, 117, 118, 384
EPR (European Pressurized water Reactor) technology 86
equality before the law 197–198, 199, 202
ESA (Euratom Supply Agency) 285–294
Euratom (European Atomic Energy Community) 89, 218, 282–301
combined energy supply, common policy for security of 282–295
and French-German cooperation agreement (1957) 284
impetus for creation of 283
mandatory safeguards 295–301
Safeguards Directorate 285, 295
Treaty see Euratom Treaty 1957
Euratom Supply Agency (ESA) 285–294
Euratom Treaty, 1957 282, 283, 295
Article 76 291
Article 103 293
Chapter 6 288, 291, 292
Chapter 8 288
Chapter 9 286
Eurodif (European Gaseous Diffusion Uranium Enrichment Consortium) 90, 215, 269–271, 272–273, 290
Index 423

European Atomic Energy Community  see Euratom (European Atomic Energy Community)
European Coal and Steel Community (ECSC) 285
European Commission 285, 291, 296, 297, 298, 300
European Council 285
European Court of Justice (ECJ) 291, 294, 296
European Economic Community (EEC) 284–285
European Gaseous Diffusion Uranium Enrichment Consortium (Eurodif) 90, 215, 269–271, 272–273, 290
European Organization for Nuclear Research (CERN) 30
European Parliament (EP) 285, 293
European Pressurized water Reactor (EPR) technology 86
European Union (EU) 283, 294, 296, 299, 300
EWR (early warning radars) 362
ex post facto 335, 394
export controls 123–134, 153
evaluation 132–134
Missile Technology Control Regime 130–132
Nuclear Suppliers Group 124–129
Zangger Committee 123–124
extended deterrence 15
extradition 238–239
Fackler, Martin 67
failed states 199, 228, 404
fairness, of non-proliferation 405–408
Falk, Richard 315
Feliciano, Florentino P. 336, 393, 394
Ferguson, Charles D. 82
Finkelstein, David M. 50
Finland 81, 85, 86
First World War 8, 14
Fischer, David 92, 109, 252, 389
Fissile Material Cutoff Treaty (FMCT) 48, 51, 157, 211, 374–379
fissionable material 105, 123, 124, 375
flag of convenience (FOC) states 244, 245
FMCT (Fissile Material Cutoff Treaty) 48, 51, 157, 211, 374–379
Ford, Christopher A. 101
Foreign Research Reactor Spent Nuclear Fuel (FRSRNF) Acceptance Program, US 241
forensics, nuclear 117–118
Former Uganda National Army (FUNA) 331
fragmentation warheads 23
France 16, 29, 82, 84, 90, 93, 252, 299, 327, 387
Areva (French nuclear energy company) 82, 90, 93
Australia and New Zealand’s case against 159–161, 211
and Euratom 291, 291–292
French-German cooperation agreement (1957) 284
national security strategies 55–57
and nuclear testing 159–161, 171, 175
Franck, Thomas M. 186, 187, 337
Frantz, Douglas 140
Freedman, Lawrence 13, 339, 344, 400, 406
freedom of information (FOI) laws 75
Friend, Peter 119
fuel banks 267, 268
Fuel Fabrication Facility (FFF) 367
fusion 14
G-8 Global Partnership (2002) 153, 246
G-8 Nuclear Safety and Security Group (G8-NSSG) 88
Gaddafi, Muammar 83
Galileo (satellite system) 29
Gardam, Judith 320
Gaudreau, Julie 325
Gaza, 2009 war 3
GBU-28 (Guided Bomb Unit-28) 5
GCC (Gulf Cooperation Council) 83
Gellman, Barton 140
General Accounting Office (GAO), US 132, 274
General Assembly (UN) 174–175, 200, 201, 257, 309, 316, 331
General Conference, IAEA 256
generation III nuclear reactors 85, 86
generation IV International Forum (GIF) 86

Elli Louka - 9780857931092
Downloaded from Elgar Online at 12/16/2018 02:51:42PM
via free access
Geneva Conventions 1949, Protocols 324–325, 327
Geneva Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 1925 322–323
genocide 310, 311
germy warfare 10–11, 12
Germany 273
French-German cooperation agreement (1957) 284
and NPT 207
and nuclear industry 78
as threshold nuclear weapon state 217–218
GIF (Generation IV International Forum) 86
GLCM (ground-launched cruise missiles) 348, 350
GLE (Global Laser Enrichment technology) 74
Global Initiative to Combat Nuclear Terrorism, 2006 48, 51, 153, 241–242
global justice and nuclear weapons 202–204
Global Laser Enrichment (GLE) technology 74
Global Navigation Satellite System (GLONASS) 27
Global Nuclear Energy Partnership (GNEP) 48, 86, 273–274
Global Nuclear Safety Network (GNSN) 89
global order 196–202
Global Satellite Positioning System (GPS) 27
Global Threat Reduction Initiative (GTRI), 2004 48, 240–241
global transparency, and national security strategies 75–77
GLONASS (Global Navigation Satellite System) 27
GNEP (Global Nuclear Energy Partnership) 48, 86, 273–274
GNSN (Global Nuclear Safety Network) 89
Google Earth 29, 30, 403, 411
Gorman, Siobhan 32
GPS (Global Satellite Positioning System) 27
Gray, Christine 189
great power, defined 407
Greenwood, Christopher 314
Grossman, Elaine M. 91
ground-launched ballistic missiles 350
ground-launched cruise missiles 348, 350
GTRI (Global Threat Reduction Initiative), 2004 48, 240–241
guerrilla warfare 6, 45, 319
Guided Bomb Unit-28 (GBU-28) 5
Gulf Cooperation Council (GCC) 83
Gulf War 1991 2, 21
Hague Code of Conduct against Ballistic Missile Proliferation (HCOC) 132
Hague Convention, 1899 313, 322
Hague Declaration in Expanding Bullets, 1899 321
Hague Regulations, 1907 312, 321–322
Hall, Kenjii 104
Hamas 193
Handel, Michael 385, 402
Hasan, Syed Shoaib 233
Hay, Bruce L. 135
H-bombs (hydrogen bombs) 17
HCOC (Hague Code of Conduct against Ballistic Missile Proliferation) 132
hedging 34–35, 38–40, 192
Hellfire missiles 2
Henkin, Louis 412
Heraclitus 1
Herby, Peter, 326
and GTRI 240, 241
and nuclear fuel cycle 89–90, 94
and Russia 368–370
Hezbollah militants 380
Higgins, Rosalyn 317
high level waste (HLW) 95
highly enriched uranium (HEU) see HEU (highly enriched uranium)
Index

Hiroshima, atomic bombing of 2, 12, 15, 18, 89
hit-and-run operations 6
hit-to-kill interceptors 23
Hiznay, Mark 2
HLW (high level waste) 95
Holtom, Paul 339
humanitarian law 316, 318–337
cardinal principles 313, 328
evaluation of 335–337
necessity 318–319
proportionality 319–321
treaties 321–334
Hussain, Ramthan 81–82
Hussein, Saddam 395
hybrid warfare 7, 44
hydro-power plants 82

IAEA (International Atomic Energy Agency) 21, 48, 80, 84, 85, 86, 103, 138, 374
and attacks on Al Kibar and Osiraq 384, 385, 388, 389
Board of Governors 256, 257–258, 389
creation as ‘Atoms for Peace’ agency 253
director general 257
effectiveness of 275–278
nuclear stockpile declarations 372
nuclear waste management 94–95
purpose 255
role 252–256, 277
safeguards 154, 254, 269, 296, 396
Safeguards Analytical Laboratory 117
Safeguards Information System 112
in Statute of IAEA 99, 104–106
see also safeguards
Satellite Imagery Analysis Unit 119
and Security Council 255–256, 257
structure 256–258
Trilateral Initiative 276, 373–374
Ibero-American Forum of Nuclear and Radiological Regulators 88
Ibero-American Nuclear Network 89
ICBMs (intercontinental ballistic missiles) 17, 45, 46, 55
control of nuclear weapons 341, 346, 350, 351, 353, 357
heavy 350
Protocol for eliminating 354
ICJ (International Court of Justice) see International Court of Justice (ICJ)
ICOC (International Code of Conduct) 132
ICRC (International Committee of the Red Cross) 326
ICRP (International Commission on Radiological Protection) 88
IEDs (Improvised Explosive Devices) 45
illicit networks 232–235
Illicit Trafficking Database (ITDB) 118, 232
ILW (intermediate level waste) 95
imminent nature of attack 393
immobilized waste 364, 365
Improvised Explosive Devices (IEDs) 45
IMS (International Monitoring System) 164, 165, 166
incidents-in-space agreements 26–27
India 16, 28, 81, 155–159, 204, 217, 228, 405
fissile material 374–375
Mumbai terrorist attacks (2008) 79, 327
national security strategies 60–62
and non-proliferation 216, 217
Tarapur plant 94, 128, 156
indiscriminate attacks 324
Indonesia 81
Industrias Nucleares do Brasil SA, Siemens Ag v. UBS AG 291
INES (International Nuclear and radiological Event Scale) 88–89
INF Code (International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wasters on Board Ships) 265
in-field activities 115
information categories 114–115
INPRO (International Project on
Innovative Nuclear Reactors and
Fuel Cycles) 86
INRA (International Nuclear
Regulators Association) 88
INSAG (International Nuclear Safety
Group) 88
inspections 119–121, 142, 296–297
Brazil-Argentina case study 305, 306
short notice random 119, 377
On-Site Inspection Agency 349–350, 360
On-Site Inspections 166
START (Strategic Arms Reduction
Treaty) 353–354
and verification 351–352
Institute for Science and International
Security (ISIS) 381
institutionalization of war 185, 196
integrated safeguards 112
integrated soldier system, Australia
72
intelligence gathering 72
Inter-Agency Space Debris
Coordination Committee 26
intercontinental ballistic missiles
(ICBMs) see ICBMs
(intercontinental ballistic missiles)
interdependence 228
Interim Agreement on the Limitation
of Certain Strategic Arms (SALT I) 346–347
intermediate level waste (ILW) 95
Intermediate-Range Nuclear Forces
(INF) Treaty, 1987 347
International Atomic Energy Agency
(IAEA) see IAEA (International
Atomic Energy Agency)
International Basic Safety Standards
for Protection against Ionizing
Radiation 21
International Code of Conduct
(ICOC) 132
International Commission on
Radiological Protection (ICRP)
88
International Committee of the Red
Cross (ICRC) 326
International Convention for the
Suppression of Acts of Nuclear
Terrorism (2005) 153, 236, 238–240
International Court of Justice (ICJ)
160, 161, 189, 393
advisory opinion 308–318
dispositif 314
non liquet, issuing of 314, 317
decisions 328–334
International Covenant on Civil and
Political Rights 310
International Criminal Court, Rome
Statute 325
International Data Center 164
International Decommissioning
Network 96
International Monitoring System
(IMS) 164, 165, 166
International Nuclear and radiological
Event Scale (INES) 88–89
International Nuclear Regulators
Association (INRA) 88
International Nuclear Safety Group
(INSAG) 88
International Panel on Fissile
Materials (IPFS) 108, 375
International Project on Innovative
Nuclear Reactors and Fuel Cycles
(INPRO) 86
International Science and Technology
Center (INSTC), Russian
Federation 219
International Steering Committee on
Denials of Shipment of
Radioactive Material 80
International Uranium Enrichment
Centre (IUEC) 213, 269
ionizing radiation incidents (2008)
84
Iran
Atomic Energy Organization 90,
270
clandestine nuclear program 141,
232, 256
and NPT 102, 391, 405
and Security Council 134, 140–144,
152, 154, 218, 219, 222, 278
as ‘state of concern’/‘hostile nation-
state,’ 41
### Index

<table>
<thead>
<tr>
<th>Entry</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>threshold nuclear weapons capability</td>
<td>17</td>
</tr>
<tr>
<td>as TNWS 17, 207, 212, 406</td>
<td></td>
</tr>
<tr>
<td>Iran-Iraq war 1980–88</td>
<td>391</td>
</tr>
<tr>
<td>Iraq 4, 6, 45</td>
<td></td>
</tr>
<tr>
<td>attack on nuclear reactor at Osiraq</td>
<td></td>
</tr>
<tr>
<td>see Osiraq reactor (Iraq), attack on (1981)</td>
<td></td>
</tr>
<tr>
<td>clandestine nuclear program 125, 152, 256</td>
<td></td>
</tr>
<tr>
<td>Iran-Iraq war, 1980–88 and NPT 102, 391</td>
<td></td>
</tr>
<tr>
<td>and Security Council 134, 137–140, 152, 155, 218, 219, 222, 278</td>
<td></td>
</tr>
<tr>
<td>Ireland 92</td>
<td></td>
</tr>
<tr>
<td>irregular warfare 6–8</td>
<td></td>
</tr>
<tr>
<td>ISIS (Institute for Science and International Security) 381</td>
<td></td>
</tr>
<tr>
<td>Islamic revolution (1979) 270</td>
<td></td>
</tr>
<tr>
<td>Israel 29, 204</td>
<td></td>
</tr>
<tr>
<td>Armistice Agreement with Syria 1949 399</td>
<td></td>
</tr>
<tr>
<td>attack on Al Kibar see Al Kibar (Syria) reactor, attack of (2007)</td>
<td></td>
</tr>
<tr>
<td>attack on Osiraq reactor see Osiraq reactor (Iraq), attack on (1981)</td>
<td></td>
</tr>
<tr>
<td>Begin doctrine 63, 381, 402</td>
<td></td>
</tr>
<tr>
<td>national security strategies 62–64</td>
<td></td>
</tr>
<tr>
<td>nuclear ambiguity 62–63, 217</td>
<td></td>
</tr>
<tr>
<td>ISTC (International Science and Technology Center), Russian Federation 219</td>
<td></td>
</tr>
<tr>
<td>Italy 78</td>
<td></td>
</tr>
<tr>
<td>ITDB (Illicit Trafficking Database) 118, 232</td>
<td></td>
</tr>
<tr>
<td>IUEC (International Uranium Enrichment Centre) 213, 269</td>
<td></td>
</tr>
<tr>
<td>JADGE (Japan Aerospace Defense Ground Environment) 65</td>
<td></td>
</tr>
<tr>
<td>Jahn, George 384</td>
<td></td>
</tr>
<tr>
<td>Japan 93, 107, 273, 342</td>
<td></td>
</tr>
<tr>
<td>bombings of Hiroshima and Nagasaki 2, 12, 15, 18, 89</td>
<td></td>
</tr>
<tr>
<td>nuclear energy industry 81, 84</td>
<td></td>
</tr>
<tr>
<td>security strategies 64–67</td>
<td></td>
</tr>
<tr>
<td>as TNWS 64–67, 204, 207, 209</td>
<td></td>
</tr>
<tr>
<td>Tokai plant 94, 103, 104</td>
<td></td>
</tr>
<tr>
<td>Japan Nuclear Fuel Limited (JNFL) 91, 93</td>
<td></td>
</tr>
<tr>
<td>Japan-United States Security Treaty 64–65</td>
<td></td>
</tr>
<tr>
<td>JCIC (Joint Compliance and Inspection Commission) 352</td>
<td></td>
</tr>
<tr>
<td>Jennings, R.Y. 392</td>
<td></td>
</tr>
<tr>
<td>Jessup, Philip C. 404</td>
<td></td>
</tr>
<tr>
<td>JNFL (Japan Nuclear Fuel Limited) 91, 93</td>
<td></td>
</tr>
<tr>
<td>Joint Compliance and Inspection Commission (JCIC) 352</td>
<td></td>
</tr>
<tr>
<td>Joint Consultative Commission 366</td>
<td></td>
</tr>
<tr>
<td>Joint Development Agency 252</td>
<td></td>
</tr>
<tr>
<td>Joint Space Operations Center, California 25</td>
<td></td>
</tr>
<tr>
<td>Jordan 83</td>
<td></td>
</tr>
<tr>
<td>jus ad bellum 318, 320, 328, 336</td>
<td></td>
</tr>
<tr>
<td>jus cogens 328</td>
<td></td>
</tr>
<tr>
<td>jus in bello 318, 320, 328, 335, 336, 397, 400</td>
<td></td>
</tr>
<tr>
<td>justice 185–186</td>
<td></td>
</tr>
<tr>
<td>global 202–204</td>
<td></td>
</tr>
<tr>
<td>types 197</td>
<td></td>
</tr>
<tr>
<td>just-in-time nuclear weapons 208</td>
<td></td>
</tr>
<tr>
<td>Kahn, Herman 13, 206, 230, 308</td>
<td></td>
</tr>
<tr>
<td>Karim, Dilruba 201</td>
<td></td>
</tr>
<tr>
<td>Karman line 28</td>
<td></td>
</tr>
<tr>
<td>Kazakhstan 89, 207, 209, 212, 213</td>
<td></td>
</tr>
<tr>
<td>Kazooba, Charles 82</td>
<td></td>
</tr>
<tr>
<td>Keegan, John 344</td>
<td></td>
</tr>
<tr>
<td>keep-out zones, satellites 27</td>
<td></td>
</tr>
<tr>
<td>Kelsen, Hans 199</td>
<td></td>
</tr>
<tr>
<td>Kennedy, Brian T. 22</td>
<td></td>
</tr>
<tr>
<td>Kennedy, David 317</td>
<td></td>
</tr>
<tr>
<td>Kernkraftwerke Lippe-Emsh GmbH v. Commission of the European Communities 293</td>
<td></td>
</tr>
<tr>
<td>Kessler, Glenn 382</td>
<td></td>
</tr>
<tr>
<td>Khan, Abdul Qadeer 233–234</td>
<td></td>
</tr>
<tr>
<td>Kibaroglu, Mustafa 406</td>
<td></td>
</tr>
<tr>
<td>killing, in humanitarian law 318</td>
<td></td>
</tr>
<tr>
<td>Kim Il Sung 146</td>
<td></td>
</tr>
<tr>
<td>Kissinger, Henry A. 210</td>
<td></td>
</tr>
<tr>
<td>Klydon (South African company) 273</td>
<td></td>
</tr>
</tbody>
</table>

---

Elli Louka - 9780857931092
Downloaded from Elgar Online at 12/16/2018 02:51:42PM via free access
knowledge 223
Korean Peninsula 66
Kosovo conflict 20, 336
Kuwait, Iraq's invasion of 137, 391

Lachowski, Zdzislaw 342
Lahore declaration (1999) 61
Lasswell, Harold D. 411
latent nuclear weapon states see threshold nuclear weapon states (TNWS)
Latin American NWFZ 167–171
Lebanon war, 2006 400
legal expertise 198
Legality of the Use by a State of Nuclear Weapons in Armed Conflict (Advisory Opinion), 1996 308–318
legitimacy 224, 225, 226, 238
LEU (low-enriched uranium) 89, 90, 117, 241, 369, 370
lex lata 412
LFUA (limited frequency unannounced access) 119
Libya 82, 83, 232
Lieber Code, 1863 318–319
life, right to 310, 311
limited frequency unannounced access (LFUA) 119
Limited Test Ban Treaty 1963 163
Lipson, Michael 246
Litvinenko, Alexander V. 193
Litwak, Robert S. 386, 391
LLW (low level waste) 95
Lobel, Jules 139, 191
long-range ballistic missiles 18, 45
loose nukes 231–232
Los Alamos National Laboratory, United States 126
Louka, Elli 79, 136, 197, 249, 292
Louka, Pria M. 196
Loukianova, Anya 269
low level waste (LLW) 95
low-enriched uranium (LEU) 89, 90, 117, 241, 369, 370
Lowenthal, Mark M. 28
low-yield nuclear weapons 14–15, 19, 37
Lung-Chu Chen 411

Macartney, Jane 24
MacAskill, Ewen 383
macro-prudential regulation 201
MAD (Mutually Assured Destruction) 23, 37
Magniez reactors, North Korea 145
managed access 111–112
Marcus, Jonathan 380
Marshall Islands 161–162, 171
Martens Clause 313
mass destruction 8–22
Material Balance Areas (MBAs) 377
material unaccounted for (MUF) 106, 107, 108, 296, 298
Mayak Chemical Combine, Russia 94
Mazzetti, Mark 380, 381, 382, 383
MBAs (Material Balance Areas) 377
McCormack, Timothy L.H. 394
McDougall, Myres S. 336, 393, 394, 411, 412
McGoldrick, Dominic 139
MDA (Missile Defense Agency) 23
MDEP (Multinational Design Evaluation Program) 86, 260
measure of effectiveness (MOE) 343
Medalia, Jonathan 5
‘Megatons to Megawatts’ program 368–371
Memorandum of Understanding on Implementation of the Guidelines for Transfers of Nuclear-Related Dual-Use Equipment 126
Memorandum of Understanding on Warhead Attribution and Heavy Bomber Data 354
MENWFZ (Middle East Nuclear-Weapon-Free Zone) 279
mergers, transnational 339
Micronesia 171
Middle East, nuclear cooperation agreements 82–83
military advantage 329
direct and concrete 325
military necessity 318–319
military-industrial complex 338–341
minimum deterrence 15, 60–61
mini-nukes 19
Ministry of Atomic Energy, Russian 366, 369
<table>
<thead>
<tr>
<th>Index</th>
<th>429</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIRVs (multiple independently targetable re-entry vehicles)</td>
<td>17, 353</td>
</tr>
<tr>
<td>Missile Defense Agency (MDA)</td>
<td>23</td>
</tr>
<tr>
<td>missile defense systems</td>
<td>226–227</td>
</tr>
<tr>
<td>Missile Technology Control Regime (MTCR)</td>
<td>130–132, 134</td>
</tr>
<tr>
<td>mixed-oxide fuel (MOX)</td>
<td>see MOX (mixed-oxide fuel)</td>
</tr>
<tr>
<td>MNA (Multilateral Nuclear Approaches)</td>
<td>268</td>
</tr>
<tr>
<td>MOE (measure of effectiveness)</td>
<td>343</td>
</tr>
<tr>
<td>Mongolia</td>
<td>176–177</td>
</tr>
<tr>
<td>Moon Agreement, 1979</td>
<td>183</td>
</tr>
<tr>
<td>MOOTW (military operations other than war)</td>
<td>50</td>
</tr>
<tr>
<td>Mossad (intelligence service)</td>
<td>193</td>
</tr>
<tr>
<td>MOX (mixed-oxide fuel)</td>
<td>92, 94, 116, 298, 363, 364</td>
</tr>
<tr>
<td>Fuel Fabrication Facility</td>
<td>367</td>
</tr>
<tr>
<td>Russian MOX Fuel Project</td>
<td>366, 367</td>
</tr>
<tr>
<td>MPC&amp;A (Nuclear Materials Protection, Control and Accounting)</td>
<td>247–249</td>
</tr>
<tr>
<td>MTCR (Missile Technology Control Regime)</td>
<td>130–132, 134</td>
</tr>
<tr>
<td>MUF (material unaccounted for)</td>
<td>106, 107, 108, 296, 298</td>
</tr>
<tr>
<td>Muller, Jörn</td>
<td>149, 150</td>
</tr>
<tr>
<td>Müllerson, Rein</td>
<td>317</td>
</tr>
<tr>
<td>Multilateral Nuclear Approaches (MNA)</td>
<td>268</td>
</tr>
<tr>
<td>multilateralism</td>
<td>43</td>
</tr>
<tr>
<td>Multinational Design Evaluation Program (MDEP)</td>
<td>86, 260</td>
</tr>
<tr>
<td>multiple independently targetable re-entry vehicles (MIRVs)</td>
<td>17, 353</td>
</tr>
<tr>
<td>multipurpose functionality</td>
<td>65–66</td>
</tr>
<tr>
<td>Mumbai terrorist attacks (2008)</td>
<td>327</td>
</tr>
<tr>
<td>Mururoa Atoll, French Polynesia</td>
<td>159</td>
</tr>
<tr>
<td>Mutually Assured Destruction (MAD)</td>
<td>23, 37</td>
</tr>
<tr>
<td>Myanmar</td>
<td>113</td>
</tr>
<tr>
<td>Nabhan, Saleh Ali</td>
<td>192</td>
</tr>
<tr>
<td>Nagai, Masanori</td>
<td>103</td>
</tr>
<tr>
<td>Nagaraja, Shishir</td>
<td>194</td>
</tr>
<tr>
<td>Nagasaki, atomic bombing of 2, 12, 15, 18</td>
<td></td>
</tr>
<tr>
<td>Nagel, Thomas</td>
<td>202, 203</td>
</tr>
<tr>
<td>NAM (non-aligned movement)</td>
<td>279</td>
</tr>
<tr>
<td>Namibia, nuclear energy industry</td>
<td>82</td>
</tr>
<tr>
<td>nanotechnology</td>
<td>4</td>
</tr>
<tr>
<td>Natanz, uranium enrichment plant in</td>
<td>141</td>
</tr>
<tr>
<td>National Nuclear Security Administration (NNSA)</td>
<td>338, 366</td>
</tr>
<tr>
<td>National Resources Defense Council (NRDC)</td>
<td>15</td>
</tr>
<tr>
<td>National Security Advisory Board, India</td>
<td>60</td>
</tr>
<tr>
<td>National Security Council, India</td>
<td>60</td>
</tr>
<tr>
<td>national security strategies</td>
<td>34–77</td>
</tr>
<tr>
<td>Australia</td>
<td>70–74</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>74–75</td>
</tr>
<tr>
<td>deterrence</td>
<td>35, 40, 59, 60</td>
</tr>
<tr>
<td>and global transparency</td>
<td>75–77</td>
</tr>
<tr>
<td>hedging</td>
<td>38–40</td>
</tr>
<tr>
<td>nuclear weapon states</td>
<td>38–64</td>
</tr>
<tr>
<td>see also China; France; India; Russian Federation; United Kingdom; United States</td>
<td></td>
</tr>
<tr>
<td>prevention of threats and risks</td>
<td>52–53, 57–59, 61–62, 64–65</td>
</tr>
<tr>
<td>for risk management</td>
<td>34–38</td>
</tr>
<tr>
<td>threshold nuclear weapon states</td>
<td>64–69</td>
</tr>
<tr>
<td>see also threshold nuclear weapon states (TNWS)</td>
<td></td>
</tr>
<tr>
<td>dual-use technologies</td>
<td>see dual-use technologies</td>
</tr>
<tr>
<td>multipurpose functionality</td>
<td>65–66</td>
</tr>
<tr>
<td>weapons and options</td>
<td>37–38</td>
</tr>
<tr>
<td>National Technical Means of Verification (NTMs)</td>
<td>165, 346, 349, 351, 356, 359, 373</td>
</tr>
<tr>
<td>NCA (Nuclear Command Authority), India</td>
<td>61</td>
</tr>
<tr>
<td>NEA (Nuclear Energy Agency)</td>
<td>89</td>
</tr>
<tr>
<td>Near Real Time Accountancy (NRTA)</td>
<td>108</td>
</tr>
<tr>
<td>necessity</td>
<td>318–319</td>
</tr>
<tr>
<td>Netherlands</td>
<td>217–218</td>
</tr>
<tr>
<td>Network of Analytical Laboratories (NWAL)</td>
<td>117</td>
</tr>
</tbody>
</table>
neutrality principle 313
New Economic Order 202
New Triad 45
New Zealand, France, action against 159–161, 211
NEWS (Nuclear Events Web Based System) 89
NFZ see Nuclear-Free-Zones
NGOs (non-governmental organizations) 84, 95
NIMBY (Not-In-My-Back-Yard) syndrome 78–79, 95, 226
9/11 terrorist attacks 36, 40
1984 (Orwell) 229–230
NISS (Information Sharing System) 126
NNSA (National Nuclear Security Administration) 338, 366
NNWS (non-nuclear-weapon states) see non-nuclear-weapon states (NNWS)
no-first-use posture 61
non-aligned movement (NAM) 279
non-nuclear-weapon states (NNWS) 155, 156, 157, 203, 211, 239, 408
and export controls 125, 126, 128
national security strategies 61, 74
and NPT 98, 99, 100, 102, 104, 155
see also nuclear weapon states (NWS)
non-proliferation 112, 205, 287, 316
Australia 73–74
complexity of 219–221
vs counter-proliferation 243
effectiveness of 215–221, 405–408
fairness of 405–408
principle 99, 101, 124–125, 207
strategies 215–219
non-proliferation order see NPO (non-proliferation order)
North Atlantic Treaty Organization (NATO) 336
North Korea 41, 66, 110, 146, 209, 214, 216, 245, 342
and Al Kibar attack by Israel 382–383, 389
clandestine nuclear program 145, 148, 152, 153, 232, 256
and NPT 102, 147, 149, 204, 216, 391
and Security Council 134, 145–151, 152, 154, 218, 219, 222, 278
Yongbyon, nuclear deterrent facility 148, 382
see also South Korea
NPO (non-proliferation order) 102, 134, 184, 204–217, 278, 282, 372
flowchart 103, 225
and legitimacy 224, 225, 226
NPT (Treaty on the Non-proliferation of Nuclear Weapons) 47, 69, 98–102, 312, 317, 407
adoption of 203
Article I 99
Article II 99
Article III 100
Article X 153
Article XII 104, 105
countries refusing to sign 204
distinction between those states with or without nuclear weapons 98, 99, 100, 101
evaluation of 101, 102, 216, 408
extension of (1995) 102, 203
fairness issues 405
grand bargain 100, 101
and IAEA 257
Iran, ratification by (1970) 140
Libya, breaching of obligations under 83
negotiations for 207
and non-nuclear states 98, 99, 100, 102, 104, 155
Preamble 98, 99
safeguards 154, 184
NRDC (National Resources Defense Council) 15
NRTA (Near Real Time Accountancy) 108
NSG (Nuclear Suppliers Group) 124–129, 145, 156, 234
NSOI (Nuclear Smuggling Outreach Initiative) 246–247
NST (Nuclear and Space Talks) 348
Index

NTI (Nuclear Threat Initiative) 83, 145, 273–274
NTMs (National Technical Means of Verification) 165, 346, 349, 351, 356, 359, 373
NTRG (Nuclear Trafficking Response Group) 246
nuclear accidents 266
Nuclear and Space Talks (NST) 348
Nuclear Claims Tribunal, Marshall Islands 162–163
Nuclear Command Authority (NCA), India 61
nuclear cooperation agreements 82
nuclear disarmament see disarmament
nuclear dumping 85, 256
nuclear energy, and nuclear weapons 78–97
Nuclear Energy Agency (NEA) 89
Nuclear Events Web Based System (NEWS) 89
nuclear forensics 117–118
back-end 209, 225–226, 273
controlling 267–275
front-end 209, 273
proliferation-prone components 252, 268, 272, 273
and weapons 89–97
Nuclear Materials Protection, Control and Accounting (MPC&A) 247–249
Nuclear Non-Proliferation Act 1978, US 156
nuclear power plants 260
nuclear renaissance 36, 37, 80–89, 223, 378, 407
Nuclear Risk Reduction Centers 349
Nuclear Smuggling International Technical Working Group 247
Nuclear Smuggling Outreach Initiative (NSOI) 246–247
nuclear stockpile declarations 371–373
Nuclear Suppliers Group (NSG) 124–129, 145, 156, 234
nuclear taboo 16–17, 20, 101, 317
nuclear testing 28, 149
compensation for 161–163
and France 159–161, 171, 175
outlawing 159–166
treaties prohibiting 163–166
Nuclear Threat Initiative (NTI) 83, 145, 273–274
Nuclear Trafficking Response Group (NTRG) 246
nuclear warheads, non-deployed 46–47
nuclear waste management 78–79, 94–97
nuclear weapon states (NWS) 15, 17, 203, 206, 276, 317, 408
de facto 155, 156, 204, 208, 215, 216, 217, 223, 341
de jure 204, 208, 215, 216, 217, 341
as exclusive club 204
new 210, 374
and NPT 98, 99, 100
safeguards 113–114
see also safeguards
security strategies 38–64
specific countries see China; France; India; Israel; Russian Federation; United Kingdom; United States
and threshold nuclear weapon states 210
see also non-nuclear-weapon states (NNWS)
nuclear weapons
controlling 338–379
demonstrations against 78, 220
future of 223–230
and global justice 202–204
and nuclear energy 78–97
nuclear fuel cycle, using to make 89–97
prohibiting 378
strategic 17, 315
tactical 17–20, 315, 329
war, use in 318–337
zones free of 167–184
nuclear yield 14–15, 18, 19
Nuclear-Free-Zones (NFZ), South Pacific 171–173
Nuclear-Weapon-Free-Zones (NWFZs) 167–184, 184, 408
African 174–176
Antarctica 180
Caribbean 167–171
Central Asian 51, 176–179
Latin American 167–171
Middle East 279
Southeast Asia 51, 173–174
Treaties 102, 167–184, 205, 224, 226, 312
Nunn, Sam 210
NWAL (Network of Analytical Laboratories) 117
NWFZ (Nuclear-Weapon-Free-Zone) see Nuclear-Weapon-Free-Zones (NWFZs)
NWS (nuclear weapon state) see nuclear weapon states (NWS)
OAS (Organization of American States) 330
Obama, Barack 221, 279
observation flights 358–359, 360
O’Driscoll, Mervyn 283, 289
offense strategy, China 49
Office of Fissile Materials Disposition, NNSA 366
Office of National Infrastructure and Sustainability, US 249
Office of Nuclear Warhead Protection (ONWP) 248
O’Hanlon, Michael E. 228
Olander, Donald R. 208
Olkiluoto (generation III nuclear power plant), Finland 85, 86
Olmert, Ehud 192–193
On-Site Inspection Agency (OSIA) 349–350, 360
On-Site Inspections (OSI) 166
on-the-uniform medical response interventions 4
ONWP (Office of Nuclear Warhead Protection), 248
OPANAL (Agency for the Prohibition of Nuclear Weapons in Latin America) 169
OPCW (Organization for the Prohibition of Chemical Weapons) 9, 10
Pelindaba nuclear facility, South Africa 79–80
Pelindaba Treaty, 1996 174–176
People’s Liberation Army, China 50
Perlmutter, Amos 385
Perlo-Freeman, Sam 340
Operation Praying Mantis 334
operational dispersal 352
opinio juris 312
Organization for the Prohibition of Chemical Weapons (OPCW) 9, 10
Organization of American States (OAS) 330
‘orphan’ radioactive sources 85
Orwell, George 229–230
OSCC (Open Skies Consultative Commission) 359
OSI (On-Site Inspections) 166
OSIA (On-Site Inspection Agency) 349–350, 360
and anticipatory self-defense 392, 394–397
compared with Al Kibar (Syria) 386–391
PAC (Priority Industry Capabilities) 73
Pakistan 204, 217, 233, 405
and India 61, 62
war against terrorists in 3, 6, 42
Palau 171
Paris Convention on Third Party Liability in the Field of Nuclear Energy (1960) 266
PAROS (Prevention of Arms Race in Outer Space) 376
Parrish, Scott 178
Partial Test Ban Treaty (PTBT), 1963 163, 164
Paulus, Andreas L. 149, 150
PDCF (Pit Disassembly and Conversion Facility), 366
peace 185–186
preventing threats to 186–187
Permanent Court of International Justice 310
Perry, William J. 210
Perseus (Greek bomb) 2
persistent conflict 30–33
Peters, Ralph 4
Physical Inventory Verification (PIV) 299
Pierrelatte, plans for enrichment plant at 284
Pierson, Ted A. 395
Pilat, Joseph F. 87, 212
Pilcaniyeu, (Argentina), enrichment process at 301
Pit Disassembly and Conversion Facility (PDCF) 366
PIV (Physical Inventory Verification) 299
plutonium 116, 145, 146, 232, 345, 382
disposition 363–367
irradiated depleted uranium with 213–214
monitoring 376–377
reactors, shutting down 367–368
and reprocessing 91–94
Plutonium Disposition Agreement, 2000 364, 365, 367, 375
PMFs (Private Military Firms) 340–341
polluters, strict liability of 135
Potter, William C. 178, 212
precaution
notion of 191
in UN system 185–196
precautionary preemption 63–64
precautionary principle 135, 136
precautionary self-defense 190, 222, 404
and Al Kibar attack by Israel 397–400
and world order 409–415
precautionary society 414
precision targeting 3
preemption 35–37, 40–41
and anticipatory self-defense 392–400
precautionary 36–37, 63–64
self-defense, preemptive 187–192, 392, 405, 412
in UN system 185–196
Prevention of Arms Race in Outer Space (PAROS) 376
Priority Industry Capabilities (PIC) 73
Private Military Firms (PMFs) 340–341
procedural due process 197
Proliferation Security Initiative (PSI) 48, 242–246
proliferation-resistance 87
proliferation-sensitive material 128, 129
prompt global strike program 37
proportionality 318, 325, 335
principle of 311, 319–321, 328, 330
PSI (Proliferation Security Initiative) 48, 242–246
psychological warfare 7
PTBT (Partial Test Ban Treaty), 1963 163, 164
punitive justice 197
Putin, Vladimir V. 193, 241
Qiao Liang 3, 30, 411
Questions of Interpretation and Application of the 1971 Montreal Convention Arising from the Aerial Incident at Lockerbie 237–238
R&D (research and development) 97, 207–208
radiation illnesses 15, 365
radioactive material 79–80
waste disposal see waste management, nuclear
radiological dispersion devices (RDDs) 20, 247
radiological weapons 20–22
Ratner, Michael 139
RDDs (radiological dispersion devices) 20, 247
Reagan, Ronald 22–23, 235
recessed deterrence 60
Reduced Enrichment for Research and Test Reactors (RERTR) program 241
regional institutions 282–307
Brazil-Argentina case study 301–307
Euratom see Euratom (European Atomic Energy Community); Euratom Treaty, 1957
Reisman, W. Michael 189, 316, 392, 394, 395, 396, 397, 398, 400, 401, 402
Reiter, Dan 386, 391
reprocessing of spent fuel 91–94
reprocessing plants 376
RERTR (Reduced Enrichment for Research and Test Reactors) program 241
Resende (Brazil), enrichment plant at 301, 302
Revolution in Military Affairs (RMA) 2
risk management strategies 34–38, 35
anticipation of risks 55–56, 71–72
definition of ‘risk’ 190
hedging and risks 34–35, 38–40, 192
portfolio of weapons and options 37–38, 192
preemption 35–37
prevention of risks to national security 52–53, 57–59
UK operational tools 59
see also national security strategies
Rislove, Daniel C. 122
RMA (Revolution in Military Affairs) 2
RNEP (Robust Nuclear Earth Penetrator) 5
Robust Nuclear Earth Penetrator (RNEP) 5
Rokkasho reprocessing plant, Japan 107
Rothkopf, David 339
RRRFR (Russian Research Reactor Fuel Return Program) 240–241
Russian Federation 59, 84, 93, 276, 340, 350
highly enriched uranium held by 89–90
Mayak Chemical Combine 94
nuclear security strategies 37
nuclear posture 54–55
operational tools 53–54
preventing threats and risks 52–53
nuclear cooperation agreements 82–83
plutonium disposition 363–367
Russian Research Reactor Fuel Return Program 240–241
satellite systems 27, 29
Trilateral Initiative 276, 373–374
see also Cold War; Soviet Union, former
safeguardability principle 99
safeguards 87, 88, 154, 179, 184
additional 110–112, 254, 307
and Euratom 295–301
evaluation of implementation 121–122
initial 106–110
inspections 119–121
integrated 112
items-specific agreements 113
mandatory 295–301
monitoring and forensics 114–119
in Statute of IAEA 99, 104–106
system 103–122
voluntary offer agreements 113–114
see also under IAEA (International Atomic Energy Agency)
Safeguards Analytical Laboratory (SAL) 117
Safeguards Information System, IAEA (ISIS) 112
safety and security standards 259–266
Safety Evaluation During Operation of Fuel Cycle Facilities (SEDO) 85
SAL (Safeguards Analytical Laboratory) 117
Salopek, Paul 404
SALT I Agreement (Interim Agreement on the Limitation of Certain Strategic Arms) 346–347
SALT II (Treaty of the United States and Union of the Soviet Socialist Republics on the Limitation of Strategic Offensive Arms), 1979 347
sanctions 222
Sanger, David E. 83, 380, 381, 382, 383
Satellite Imagery Analysis Unit (IAEA) 119
satellites 5, 24, 26, 29
surveillance 27–28
Saudi Arabia 389
Savannah River site, PDCF facility 366, 367
Scales, Robert 4–5
SCCC (Common System for Accounting and Control of Nuclear Materials) 302–303
Schachter, Oscar 405
Scheinman, Lawrence 270
Schelling, Thomas C. 35, 206, 343, 344
Schultz, George P., 210
SDI (Strategic Defense Initiative) 22–23
Seabed Treaty (1971) 180–181
sea-launched cruise missiles (SLCMs) 17, 18
second line of defense 250
Second World War 14, 17, 161, 185, 344
bombings of Hiroshima and Nagasaki 2, 12, 15, 18, 89
secondary proliferation 133
Security Council/Security Council resolutions 102, 134–155, 184, 187, 200, 222
anti-terrorism legislation 235–238
attacks on Al Kibar and Osiraq 381, 388, 389, 394
covert operations, 194, 195
and IAEA 255–256, 257
Iran case study 134, 140–144, 154, 218, 219, 222, 227
Iraq case study 134, 137–140, 152, 218, 219, 222, 278
North Korea case study 134, 145–151, 152, 154, 218, 219, 222, 278
role and powers of Security Council 200, 201, 237
states making up Security Council 191, 201
Syria case study 151–152
SEDO (Safety Evaluation During Operation of Fuel Cycle Facilities) 85
self-defense 314, 335, 336
anticipatory see anticipatory self-defense
precautionary see precautionary self-defense
preemptive see preemptive self-defense
restrictions to right of 311, 316
unilateral claims of 395
self-determination 185, 202
self-preservation concept 316
self-sufficiency, nuclear power 283–284
Sellafield site, UK 92, 298
Sen, Amartya 197, 205
Seversk 368, 371
SFM (special fissile material) 288, 289, 291, 295, 297, 299
Shabab militia (Islamist group) 192
Shahab-3 missile 22
ship submersible nuclear-powered ballistic missiles (SSNBs) 55
shock and awe campaigns 4, 6
short notice random inspections (SNRI) 119, 377
Siberian Chemical Enterprise (SChE) 371
silver iodide powder 9
SirUS Project 326
Sköns, Elisabeth 340
slaughter, uncontrolled (avoidance of) 3
SLBM (submarine-launched ballistic missiles) 17, 45, 46
control of nuclear weapons 346, 347, 350, 353, 357
SLCMs (sea-launched cruise missiles) 17, 18
Slim, Hugo 1
Sloane, Robert D. 325, 336
Small Quantities Protocol (SQP) 113
Smith, Michelle M. 82
SNRI (short notice random inspections) 119, 377
Sofidif 269, 270, 271
Sokova, Elena 366
SOLAS Convention (International Convention for the Safety of Life at Sea) 265
soldiers 3, 44
Somalia 192, 195, 404
SORT Treaty, 2002 343, 355, 356, 357
South Africa 212, 252
attack on nuclear materials 79–80
nuclear energy industry 82, 86
as TNWS 207, 209, 212
South Korea 245
dismantling of nuclear weapons by 213–214
nuclear energy industry 81, 84, 214
as TNWS 204, 207  
see also North Korea  
Southeast Asia NWFZ Treaty, 1995 51, 173–174  
sovereign equality of states 199–200, 202, 203, 205, 211  
sovereignty, airspace 28  
Soviet Union, former  
Chernobyl accident (1986) 78, 84, 266  
and Cold War see Cold War  
collapse of 231  
incidents-at-sea agreement with United States (1972) 26–27  
Space Tracking and Surveillance System (STSS) 23, 25  
special fissile material (SFM) 288, 289, 291, 295, 297, 299  
Springfields (UK), BNFL uranium conversion and fuel fabrication plant at 299  
SQ (significant quantity) 107  
SQP (Small Quantities Protocol) 113  
Squassoni, Sharon 156, 258, 374  
Sri Lanka 30, 85  
SS-20 missiles, destruction 350  
SSACs (State Systems for Accounting and Control) 106–107, 247–248  
SSBNs (survivable ballistic missile submarines) 345  
SSNBs (ship submersible nuclear-powered ballistic missiles) 55  
SSP (Stockpile Stewardship Program) 47, 338  
St Petersburg Declaration 1868 321  
Stålénheim, Petter 340  
Standing Consultative Commission (SCC) 347, 362  
START (Strategic Arms Reduction Treaty)  
START I treaty (1991) 342, 347, 350, 352  
START II treaty (1993) 352, 353–354  
START III process 354  
START process 350–357  
State practice  
covert operations 192–196  
preemptive self-defense 187–192  
State Systems for Accounting and Control (SSACs) 106–107, 247–248  
Statement of Interdiction Principles (SIP) PSI, 242  
Statement of Principles, GTRI 241  
Stein, Marius 88  
Stephens, Bret 381  
Sterling, Eleanor Jane 9  
Stockpile Stewardship Program (SSP) 47, 338  
Strategic Arms Reduction Treaty see START  
Strategic Arms Reduction Treaty see Strategic Arms Reduction Treaty  
strategic bombardment 14  
Strategic Defense Initiative (SDI) 22–23  
strategic nuclear weapons 17, 18, 315  
Stroehlein, Andrew 30  
strong legitimacy 224  
STSS (Space Tracking and Surveillance System) 23, 25  
submarine-launched ballistic missiles (SLBMs) see SLBMs (submarine-launched ballistic missiles)  
submarines 6–7  
substantive due process 197  
Suchman, Mark C. 238  
Sudan, attack on chemical factory 390  
al-Sudani, Abu Talha 192  
Suez crisis (1956) 283  
suffering (unnecessary), prohibiting of 313, 321, 326  
suicide bombings 6  
Suleiman, Mohammad 385  
sunk-costs approach, non-proliferation 217  
Surrey Satellite 29  
surveillance, from space 27–30  
survivable ballistic missile submarines (SSBNs) 345  
survival of states 316  
survival of the fittest 197  
Suzuki, Kazue 104
Index

Sweden, and NPT 207
Switzerland, and NPT 207
Syria
  Armistice Agreement with Israel
    (1949) 399
  attack on nuclear reactor at Al
    Kibar see Al Kibar (Syria)
    reactor, attack of (2007)
IAEA investigation 191
Security Council case study 151–152
TNWS status, aspiring to 211–212
tactical nuclear weapons 17–20, 315, 329
Taiwan 49
Taliban 6, 236
Tammuz 70 Mwth see Osiraq reactor
  (Iraq), attack on (1981)
Tarapur plant, India 94, 128, 156
Tashkent Collective Security Treaty
  (1992) 178
Terms of Reference for
  Implementation and Assessment
  242
terrorism
  in Mumbai (2008) 79, 327
  nuclear renaissance 87–88
  and surveillance 29–30
  see also Afghanistan; anti-terrorism
    legislation; 9/11 terrorist
    attacks; Pakistan
Texas Utilities Electric Corporation
  291
Thailand 81
theater missile defense (TMD) systems
  353
therapeutic occupation 336
thermonuclear bombs 17
threats
  conventional and unconventional
    70–71
definition of ‘threat’ 190
examples of 187
Global Threat Reduction Initiative
  (GTRI), 2004 48, 240–241
of nuclear weapons, 309
to peace, preventing 52–53, 186–187
threshold of imminent threat
  386–387
threshold deterrence 15, 16
threshold nuclear weapon capability
  (TNWC) 17, 37, 60, 208–209
threshold nuclear weapon states
  (TNWS) 16, 94, 99, 101, 102, 155,
    208, 210, 211, 215, 224, 295, 345,
    407
definitions 207
security strategies 64–69
as semi-open club 204–215
specific countries
  Argentina 301
  Brazil 67–69, 207, 211, 301
  Iran 17, 207, 212, 406
  Japan 64–67, 204, 207, 209
  Kazakhstan 207
  South Africa 207, 209, 212
  South Korea 204, 207
tolerance for 217–218, 222
Tinner family 233
Tlatelolco Treaty 1967 167–171
TMD (theater missile defense) systems
  353
TMO (Transparency Monitoring
  Office) 370
TNWC (threshold nuclear weapon
  capability) 17, 37, 60, 208–209
TNWS (threshold nuclear weapon
  states) see Threshold Nuclear
  Weapon States
Tokai plant, Japan 94, 103, 104
tolerance 217–218, 222
trade wars 228
transcendental justice 197
transparency 77, 134, 142, 151, 218,
  219, 222
Transparency Monitoring Office
  (TMO) 370
Traynor, Ian 233
treaties
  Nuclear-Weapon-Free-Zone 102,
    167–184, 205, 224, 226, 312
  prohibiting nuclear testing
    163–166
  use of nuclear weapons in war
    321–334
  see also specific treaties
Treaty Establishing the European
Atomic Energy Community
  (Euratom) see Euratom Treaty,
  1957
Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco) 1967 167–171, 301
Treaty of Almeio, 1971 271, 272
Treaty of Lisbon, 2007 299
Treaty of Rarotonga, 1985 171–173
Treaty of the United States and Union of the Soviet Socialist Republics on the Limitation of Strategic Offensive Arms (SALT II), 1979 347
Treaty on Open Skies see Open Skies Treaty, 1992
Treaty on the Non-proliferation of Nuclear Weapons see NPT (Treaty on the Non-proliferation of Nuclear Weapons)
Treverton, Gregory F. 28
Tripartite agreement (France, Germany and Italy), 1957 284
Tsidon-Chatto, Yoash 395
Tsukamoto, Keiji 103
U-235 atoms 89
UAVs (Unmanned Aerial Vehicles) 2–3, 4, 28, 29, 38, 131, 320–321, 337
Uganda, nuclear energy industry 82
Ukraine 209, 212, 213
Science and Technology Center 219
UN Charter see Charter, United Nations
UNAEC (United Nations Atomic Energy Commission) 252
UNAMA (United Nations Assistance Mission to Afghanistan) 3
UNCLOS (UN Convention on the Law of the Sea) 243
unconventional war 6–8
Australia 70–71
China 50–51
under-sea warfare 73
United Arab Emirates 82
United Kingdom 273, 327
highly enriched uranium held by 90
national security strategies 57–59
on nuclear arms races 16
nuclear stockpile declarations 276
United Nations (UN)
Conference on Disarmament 50–51, 164, 375
General Assembly see General Assembly (UN)
International Atomic Energy Agency see IAEA (International Atomic Energy Agency)
Law of the Sea Convention 243
Office for Outer Space Affairs 181
preemption and precaution strategy 185–196
Security Council see Security Council/Security Council resolutions
see also Charter, United Nations
United Nations Assistance Mission to Afghanistan (UNAMA) 3
United Nations Atomic Energy Commission (UNAEC) 252
United Nations Environment Program (UNEP) 21
United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCAR) 88
United States 11, 27, 82, 93, 156, 161, 228, 241, 276, 350
Central Intelligence Agency 193, 233, 413
Enrichment Corporation 90 and Euratom 287, 292
highly enriched uranium held by 89–90
incidents-at-sea agreement with Soviet Union (1972) 26–27
loose nukes 231–232
military spending 340–341
national security strategies 35, 37
deterrence 40
goals and priorities 42–43
hedging against unpredictability 38–40
nuclear posture 45–48
preemption 40–41
tools 43–45
nuclear energy industry 79, 84
Index

plutonium disposition 363–367
and space use 24, 25, 26, 182
see also Cold War; DOD (Department of Defense), US; DOE (Department of Energy); 9/11 terrorist attacks
United States-Russia-IAEA Trilateral Initiative 276, 373–374
United States-Russian Agreement Concerning the Shutdown of Plutonium Production Reactors and Cessation of Use of Newly Produced Plutonium for Nuclear Weapons, 1994 368
United States-Soviet detente 283
Universal Declaration of Human Rights 198
universal deterrence 16–17
Unmanned Aerial Vehicles (UAVs) 2–3, 4, 28, 29, 38, 131, 320–321, 337
UNMOVIC (United Nations Monitoring, Verification and Inspection Commission) 138, 139
UNOOSA (United Nations Office for Outer Space Affairs) 181
UNOSAT (UN Operational Satellite Applications Programme) 30
unpredictability, hedging against 38–40
UNSCAR (United Nations Scientific Committee on the Effects of Atomic Radiation) 88
UNSCOM (United Nations Special Commission) 138
Urals Electrochemical Integrated Enterprise (UEIE) 371
Uranium Enrichment Corporation (Urenco) 90, 215, 218, 271, 272, 290
Uranium Processing Facility, Y-12 Plant 47
uranium/uranium enrichment 84, 89–91, 141, 148, 254, 384
depleted uranium 20–21, 213–214
uranium dioxide 298
Urenco (Uranium Enrichment Corporation) 90, 215, 218, 271, 272, 290
USEC (US Enrichment Corporation) 90
Utrik Atoll, nuclear testing claims 162
Vandenberg air force base, California 25
verification
Brazil-Argentina case study 305
of design information 104–105
of disarmament 102, 122, 363–374
methods 356
START (Strategic Arms Reduction Treaty) 353–354
see also inspections; NTMs (National Technical Means of Verification); Physical Inventory Verification (PIV); UNMOVIC (United Nations Monitoring, Verification and Inspection Commission)
Vienna Convention on Civil Liability for Nuclear Damage, 1963 266
Vietnam 81
Vietnam War 9
De Villiers, J. W. 212
virtual nuclear weapon states see threshold nuclear weapon states (TNWS)
VLLW (very low level waste) 95
Vogt, Heidi 337
voluntary offer agreements (VOAs) 113–114
Volz, Matt 341
VSLW (very short lived waste) 95
VX gas 390
Walker, William 102
Waltz, Kenneth 16, 206
Wang Xiangsui 3, 30, 411
WANO (World Association of Nuclear Operators) 84, 89, 259–260
war
biological warfare 10–11, 329
chemical warfare 8–10, 329
conventional see conventional war
honorable 195
in institutionalization of 185, 196
mass destruction 8–22
proportionality in 325
unconventional see unconventional
can war
use of nuclear weapons in 318–337
Congo case 328, 331–332
evaluation 335–337
ICJ decisions 328–334
necessity 318–319
Nicaragua case 319, 328, 330–331, 333
Nuclear Weapons case 328–330
Oil Platforms case 332–334, 409
proportionality 319–321
treaties 321–334
Warbrick, Colin 139
Warrick, Joby 384
Washington Treaty relating to the Use of Submarines and Noxious Gases in Warfare, 1922 322
 Wassenaar Arrangement 332
waste management, nuclear 78–79, 94–97
weak legitimacy 226
weapons
conventional 339, 401
nuclear see nuclear weapons
portfolio of 37–38, 192
radiological 20–22
see also war; WMD (weapons of mass destruction)
Webb, Simon 83
Webster, Daniel 392
Wedgwood, Ruth 138
WENRA (Western European Nuclear Regulators Association) 88, 300
Westall, Sylvia 258
Wirtz, James J. 342
Wittner, Lawrence S. 78, 220
WMD (weapons of mass destruction) 12, 25, 137, 139, 150, 183, 235, 395, 415
attacks on facilities 391
export controls 133, 134
and national security strategies 41, 54, 59, 71
Proliferation Security Initiative 242, 243
WMO (World Meteorological Organization) 33
Woolf, Amy F. 18, 24, 37, 342
World Association of Nuclear Operators (WANO) 84, 89, 259–260
World Health Organization (WHO) 21, 308
Constitution 309
World Meteorological Organization (WMO) 33
World Trade Organization (WTO) 228
World War I see First World War
World War II see Second World War
Wortzel, Larry M. 28
Wright, Robin 382, 384
WTO (World Trade Organization) 228
Yamaguchi, Tsutomu 11–12
Yassin Abdullah Kadi and Al Barakaat International Foundation v. Council and Commission 237
Yeltsin, Boris 353
Yongbyon nuclear deterrent facility (North Korea) 148, 382
Yucca Mountain repository, Nevada 79
Zangger Committee 123–124
Zenko, Micah 80
Zheleznogorsk 368, 371

Elli Louka - 9780857931092
Downloaded from Elgar Online at 12/16/2018 02:51:42PM
via free access