Chapter 5
Metaphor

Abstract The discussion of process and its significant relationship to meaningful and effective governance remains incomplete. Several issues that will help in the clarification of how governance processes can be improved can be identified and thereafter we can begin to move into others that have remained neglected by governance and policy-making in the maritime sector—flow and speed. Following that we can begin to draw together the threads of the discussion to see where maritime governance finds itself in the dynamic world of globalisation and pressures that exist that constrain and determine its effectiveness. In this chapter, we consider issues of process philosophy, process transfer, convergence and learning, the significance of metaphors in an understanding of process and particularly the role of nomadology, process complexity, dispersion and concentration, and the application of global fluids. Maritime governance may seem far from such issues but has a lot to take from the wider debate on dynamism and the concepts which characterise it, much as it might wish to hide away in the safety of commercialism and pragmatism.

> Whereas literal knowledge aspires to the inert status of information, metaphor works with indeterminacy to keep meaning safe from the final clarification that is its obituary. Meaning's play is not a game watched from the outside but one in which we live and throughout which we understand. We may fantasise about mastering literal knowledge, fixing it in our memories or reference books or filing cabinets, but metaphors in knowledges cannot be processed, always maintaining reserves of wisdom beyond our present understanding. When someone criticised the lack of likeness in Picasso's portrait of Gertrude Stein, Picasso advised the person to wait. In the same way, the meaning of rich metaphors keeps blooming; people think further by growing into them, awakening to their implications. Traditions of thought grow stale with the declining productivity of their key metaphors…
>
> Metaphoric activity is not the same as the culture's reality, but we are sceptical of the literal claim to re-present reality. Reality cannot really be seen, because we cannot see the world from the outside. Our knowledges are ours, mediated through us and projecting us into the world. We cannot fix or imitate the world as it really is. As Benjamin (1995) noted, 'Perhaps there is none of [man's] higher functions in which his mimetic faculty does not play a decisive role'… By letting us live (in) the world, metaphors enliven our understandings. Weber was too modest when claiming that the faculty for compassion or empathy lets us understand other people; it underlies all metaphoric truth.

M. Roe, *Maritime Governance*, DOI 10.1007/978-3-319-21747-5_5

> We do not come empty-handed to our performances and metaphors. When metaphor engages us, we respond through the emotions and memories that reverberate with the role.
>
> Game and Metcalfe (1996: 50–51) in Thrift (1999: 35–36).

The discussion of process and its significant relationship to meaningful and effective governance remains incomplete. Several issues that will help in the clarification of how governance processes can be improved can be identified and thereafter we can begin to move into others that have remained neglected by governance and policy-making in the maritime sector—flow and speed. Following that we can draw together the threads of the discussion to see where maritime governance finds itself in the dynamic world of globalisation and pressures that exist that constrain and determine its effectiveness.

In this chapter, we consider issues of process philosophy, process transfer, convergence and learning, the significance of metaphors in an understanding of process and particularly the role of nomadology, process complexity, dispersion and concentration, and the application of global fluids. Maritime governance may seem far from such issues but has a lot to take from the wider debate on dynamism and the concepts which characterise it, much as it might wish to hide away in the safety of commercialism and pragmatism.

Process Philosophy

> The point of philosophy is to start with something so simple as not to seem worth stating, and to end with something so paradoxical that no one will believe it. Bertrand Russell (1912: 514).

Process philosophy helps to underpin much of what else we have been considering in process and its relationship to governance. Hartshorne (1965: xiii) sees process philosophy as considering change as the 'successive becoming of events related to, but also differing from one another in some more or less abstract respects which interest us'. He sees change as the 'becoming of novelty' and process philosophy is central to this.

Meanwhile in the words of Browning (1965a: xxiii):

> Process philosophy is fundamentally a metaphysical position. Its basic doctrine is that the universe is essentially to be understood as creative, organic, and temporal. In this metaphysical soil a pragmatic epistemology and a teleological ethic seems to grow naturally, while a distinctive theology and philosophy of language may be easily nurtured.

The relationship of change to metaphor and its consequent role in process philosophy is considered by Huggett and Perkins (2004: 230). Process philosophy attempts to understand what change really means and considers such issues as what changes? Whether the items which are considered to have changed are part of a whole that has changed or whether they are separate and new items which have 'become' something else? Thus, as Hartshorne suggests, when the weather has changed from wet to dry, is there actually anything we can actually term

'weather' or is weather constituted by its wet and dry states? Process philosophy considers the change that has occurred rather than the items that change and the 'becoming' that this represents. It therefore helps to understand what change means in governance and what dynamic governance would attempt to accommodate—not some overall governance, nor individual items such as the environment or safety, but the becoming that is represented by the changes exhibited by each.

Chorley and Kennedy (1971: 251–252) note that there is far from universal agreement that 'becoming' is fundamentally different from 'being' finding that the distinction between what they term timeless and timebound changes impossible to sustain. They suggest that in this view, systems have a 'constant architecture in time' which is represented by a 'spiral of cause and effect' passing from 'becoming' (i.e. developing or evolving) at one integrative level of organisation, to 'being' (i.e. adopting a characteristic structure or morphology) at a higher level to 'behaving' (i.e. operating in a self-justifying, equilibrium manner) at a still higher level. Progressive integration inevitably leads to irreversible evolution.

Griffin (1998) considers that process philosophy refers to views where process or 'becoming' is always more fundamental than unchanged 'being'. He notes in particular the work of Samuel Alexander, Henri Bergson, John Dewey, Charles Hartshorne, William James, Lloyd Morgan, Charles Peirce and Alfred North Whitehead and roots in Hegel and Heraclitus. Whitehead (1967: 72, 1978: 41) in particular is seen as the most significant proponent suggesting that 'reality is the process' and 'an actual entity is process'. He sees the units that make up the universe as 'momentary' and 'occasions of experience'. Thus Whitehead (1978: 77) views:

> the most fundamental units of the world, the most fully actual entities, not as enduring individuals but as momentary events. Enduring individuals, such as electrons, molecules, and minds, are 'temporarily ordered societies' of these momentary events.

They are fundamentally temporal and as such cannot exist and exhibit the characteristics of a slice of time as time cannot be sliced, for this would demand momentary cessation of change which never occurs. However, for human convenience and better understanding, we allocate them a brief duration suggested by Bergson et al. (2002) to be less than a billionth to possibly a tenth of a second. In truth, these instants do not exist at all as everything is permanently in a process of becoming. In creating these artificial conditions of being the 'human intellect spatializes the universe… tends to ignore the fluency, and… analyze(s) the world in terms of static categories' (Whitehead 1967: 307).

Rescher (2000: 3) attempts to move the focus from Whitehead as process philosophy's prime promoter to the theory that lies behind it. Despite this, he begins by outlining Whitehead's fixation on process and that time and change are 'definitively central and salient metaphysical issues'. Temporality, historicity, change and passage are seen as 'fundamental facts to be reckoned with in our understanding of the world'. Whitehead (1929: 47) bases this on Leibnizian *appetition*—'the striving through which all things endeavour to bring new features to realization'. He sees the whole universe as characterised by an 'ongoingness', with generations

of ‘entities and occurrences succeeding one another without end’. Consequently ‘nothing floats into the world from nowhere’. Process is movement and temporal change. Creativity provides an underlying structure which makes the movement intelligible (Eichenbaum and Gale 1971: 529).

Underlying this was Heraclitus and his notion that ‘all things flow’, where all was seen as strife and change (Platt 1970: 2). Harmony was the consequence of developing relationships between opposites and far from static, characterised by flux (Toulmin and Goodfield 1962: 47; Browning 1965b: 305, 306) and a rejection of a ‘Parmenidean/Atomistic view that nature consists of the changeable interrelations amongst stable, unchanging units of existence’. Whilst change is everywhere there remains order within it (of which man is a central part) and nature reflects the constant process of interplay between the opposites that exist. From this emerges the concept of dialecticism which formed such a fundamental part of the early Soviet Communist interpretation of society:

> It is wise for those who hear, not me, but the universal reason, to confess that all things are one. This world, the same for all, neither any of the gods, nor any man has made, but it is always was, and is, and shall be a living fire, kindled in due measure and in due measure extinguished. Into the same river you could not step twice, for other waters are flowing. In change is rest. Craving and satiety. God is day and night, winter and summer, war and peace, plenty and want. For men to have whatever they wish, would not be well. Sickness makes health pleasant and good; hunger, satiety; weariness, rest. War is the father and king of all. It is hard to contend with passion, for whatever it craves it buys with life. Heraclitus, from Whyte (1944: 171–172).

> For there could be no harmony without sharps and flats, nor living beings without male or female, which are contraries. The harmony of the world is a harmony of oppositions, as in the case of the bow and the lyre. The unlike is joined together, and from differences results the most beautiful harmony, and all things take place by strife. Good and evil are the same. Unite whole and part, agreement and disagreement, accordant and discordant; from all comes one, and from one all. Heraclitus, from Whyte (1944: 172).

Despite living only two or three generations after Heraclitus, Plato presents an opposite view expressing the human demand for permanence in a sea of process (and change), something from which he never diverted in life as a ‘pupil, lover, citizen and idealist’ (Whyte 1944: 173–174). Taking on the Socratic ideal of moral and intellectual certainty, Plato does not reject the views of Heraclitus and process but restricts their application to the world of senses, contrasting them with a world of permanent ideas. This dualism was ‘essential and permanent’ but since only what was permanent could be granted ‘real existence’ the harmony of the ‘ideal world was reality and the confusion of world of process was illusion’ (Browning 1965b: 306). This approach was accepted for centuries with reality and its apparent permanence only ever questioned at times of severe emotional stress such as illness, love or impending death at which point the idea of impermanence (and hence an end to the stress) was bound to be appealing.

Meanwhile, Aristotle had the advantage of living after both Heraclitus and Plato. Whilst he accepted that change did take place and that motion was the key to understanding nature (Hagerstrand 2004: 315), his position was that anything that was immutable and hence immune to influence from other things,

was superior to anything that changed or was dependent upon other things (Eichenbaum and Gale 1971: 529). Thus, process is relegated to second best and the classical view of the world begins to take shape characterised by stability and predictability, an ideal which was to last for some 2000 years.

Eichenbaum and Gale (1971: 529) also note the close relationship between the Buddhist approach of *dependent origination* with its clear association with relations and relativity and consequently process and becoming. 'What has an origin is relative to that origin; only what has always been as it is can be *absolute*, wholly independent of other things'.

Rescher (2000: 4) goes on to outline how processes were viewed from earliest times as important as well as 'persistent physical things'. He uses the idea of verbs rather than nouns—and the contrasting dynamic storms and heatwaves contrasting with dogs and oranges to make the point. Process philosophers will see the becoming as more important than the being with an understanding of reality only possible if the process of (say) maritime environmental degradation, seafarer safety deterioration or shipping economic inefficiency is appreciated as much as the existence of an environmental pollutant, death and injury or a liner cartel.

> The 'freshening' of the wind, the forming of waves in the water, the pounding of the surf, the erosion of the shoreline are all processes that are not really the machinations of identifiable 'things'. Consider such processes as 'a fluctuation in the Earth's magnetic field' and 'a weakening of the Sun's gravitational field'. Clearly such processes will make an impact on things (magnetic needles for example). But by no stretch of the imagination are these processes themselves the doings/activities of things/substances. There is not a thing 'magnetic field' or 'a gravitational field' that does something or performs certain actions - nor does the world or sun project such a field… As process philosophers see it, processes are basic and derivative because it takes a mental process (of separation) to extract 'things' from the blooming buzzing confusion of the world's physical processes. Traditional metaphysics sees processes… as the manifestation of dispositions… which must themselves be rooted in the stable properties of things. Process metaphysics involves an inversion of this perspective. It takes the line that the categorical properties of things are simply stable clusters of process-engendering dispositions. Rescher (2000: 7).

Perhaps Leonardo da Vinci (Undated but quoted in Richter 2008) can help us sum it all up:

> Nothing originates in a spot where there is no sentient, vegetable, and rational life; feathers grow upon birds and are changed every year; hairs grow upon animals and are changed every year, excepting some parts, like the hairs of beards of lions, cats, and their like. The grass grows in the fields and the leaves on the trees, and every year they are in great part renewed. So we might say that the earth has a spirit of growth; that its flesh is the soil, its bones the arrangement and connection of the rocks of which the mountains are composed, its cartilage the tufa, and its blood the springs of water. The pool of blood which lies around the heart is the ocean, and its breathing, and the increase or decrease of the blood in the pulses, is represented in the earth by the flow and ebb of the sea; and the heat of the spirit of the world is the fire which pervades the earth, and the seat of the vegetative soul is in the fires, which in many parts of the earth find vent in baths and mines of sulphur, and in volcanoes, and at Mount Etna in Sicily, and in many other places.

So where does that leave us in this consideration of process philosophy and its relationship with governance and specifically the maritime sector? Perhaps firstly it is important to recognise that the maritime sector is just one small component

of society and as such it remains constrained, defined and stimulated by what surrounds it and the activities, ambitions and beliefs of the society it serves.

Emerson (1981) implies that change is a necessity of life and an appreciation of the dynamics needed for governance is no exception. Berry (1973: 8) continues by looking at the inadequacies of form as a driving force and the need to accommodate time within any systematic consideration of events and plans.

> To seek any fixed thing is to deal in false imagination, therefore, for all phenomenal existence is immediately also seen to be transitory when the dimension of time is added. No particular thing is 'real' in any absolute sense; it is passing into something else at every moment. Every individual, for example, is a progressively ageing, temporarily-organized 'bundle' of energy flows faced with ultimate disintegration.

Berry goes on to indicate that a continuous intellectual process is needed, recognising that every system and interpretation will always need reassessment in the light of what has happened; thus governance needs continuous reaffirmation if it is to be relevant. Static governance (maritime or otherwise) will fail. Man, as the central feature in governance design and application, must be viewed as:

> an information-processing, decision-making, cybernetic machine whose value systems are built up by feedback processes from his environment. These feedback processes are built into the most primitive forms of life, and they form a continuous spectrum all the way back through prehistory and to times when no life existed. Throughout this whole development of man's history, coming up through biological evolution and extending into cultural evolution, the essential message is one in which disorder or randomness is used to generate novelty, and natural selection then generates order. Van Potter (1971: 36).

Essentially, we are talking here of process metaphysics, derived from the work of the Ancient Greeks and as we noted earlier, the work of Heraclitus and his consideration of flows. The role of governance is to provide a basis for policy-making that is impacted by the environment within which it operates and the constant changes in the 'tidal waves of energy' that at times resemble stability but which in fact never cease changing (Toulmin and Goodfield 1962: 301). The world of maritime governance and policy-making should be looked at as a 'complex living system in which individuals, social groups and institutions are dynamically interrelated actors involved in continuous processes of decision-making' (Berry 1973: 9). The force fields that surround each of these actors determine their nature, purpose and meaning and equilibrium will only appear to exist when the forces are balanced; not because they are not there. Berry once more: 'in each case, of course, decisions are made in the relational context of perceived organization and structure, and processes set in motion by actions therefore reaffirm or reform the intrinsic self-organization of the system amidst the apparent disorder of myriad decisions and actions'.

Policy Transfer

> Each country has its problems, and each thinks that its problems are unique… However, problems that are unique to one country… are abnormal… confronted with a common problem, policy-makers in cities, regional governments and nations can learn from how their counterparts elsewhere responded. Rose (1991: 3).

> The most casual acquaintance with any important substantial area of regulation soon reveals that institutions and rules are widely imitated… Since regulation is typically begun under pressure of time, or in conditions of crisis, the incentive to imitate is great. The result is that 'early' regulators often provide a model for countries following later along the regulatory road…. (I)t is apparent that models emanating from countries exercising great economic and political power are most likely to be the objects of emulation. Hancher and Moran (1989: 285).

Policy transfer comes in many forms and the terminology used for the variety of processes that it represents can be confusing—policy convergence, policy diffusion, policy copying, policy learning…. All much the same thing with some local variation. For example, Radaelli (2000: 26) introduces us to the idea of policy transfer as outlined by Dolowitz and Marsh (1996) who defines it as:

> a process in which knowledge about policies, administrative arrangements, institutions and ideas in one political setting (past or present) is used in the development of policies, administrative arrangements, institutions and ideas in another policy setting.

It was originally developed to help understand the diffusion and adoption of policy in the USA (Walker 1969; Gray 1973) but has been adapted to look at learning (Rose 1993); convergence (Bennett 1991); democracy (O'Loughlin et al. 1998); a measure of transfer success (Dolowitz and Marsh 1996); political economy (Simmons and Elkins 2004); and institutional issues (Locke and Jacoby 1997). Rose (1991: 7) defines lesson drawing in the context of planning policy as 'an action-oriented conclusion about a programme or programmes in operation elsewhere'. This other programme was not spatially constrained in any way and could be in another region, city, nation or even global. The implication is always that the programme is not just reviewed but is always considered for application in some shape or form. He goes on to question why anyone should make comparisons in policy analysis:

> The major problems that face one government are often the same as those that face its neighbours… Although the existence of common or similar problems need not imply that every nation should or will respond in the same way, it does mean that each may draw lessons from the relevant experience of others. Rose (1988: 219).

Lesson drawing is distinctly different from the diffusion of public policy from innovation elsewhere to destination country, state or region (Walker 1969; Collier and Messick 1975; Savage 1985; Berry and Berry 1990). In diffusion studies, the focus is more on the adaptation by those receiving the new policy and the pattern of diffusion. Factors such as spatial propinquity, socio-economic resources and policy-maker characteristics are clearly important (Rose 1991: 9). Emphasis is upon diffusion sequence rather than content and form focusing on the nature of generators and absorbers rather than their characteristics.

Bennett (1991: 215) examines policy convergence which he sees as central to much of political science (and thus intrinsic to policy studies). He centres his definition of policy convergence on 'the tendency of societies to grow more alike, to develop similarities in structures, processes and performances' (Kerr 1983: 3). He identifies five key characteristics:

- A convergence of policy goals; a coming together of intent.
- It refers to policy content; convergence on statutes, rules, regulations, etc.

- Convergence on policy instruments—regulatory, administrative or judicial.
- Policy outcomes—including direct impacts or indirect consequences.
- Convergence on policy style; conflictual, consensual, incremental, reactive, etc. Bennett (1991: 218).

These may of course overlap, conflict and may or may not exist in each case.

Bennett and Howlett (1991: 275–277) continue this theme, also emphasising the relationship between policy learning and change and the wealth of research undertaken in particular between about 1972 and 1990 (Heclo 1974: 305; Walker 1974: 3; Hernes 1976; Weiss 1977a, b; Argyris and Schon 1978; Lynn 1978; Sabatier 1978; Lindblom and Cohen 1979; Etheredge 1981: 77–78; Nordlinger 1981; Hogwood and Peters 1983; Shrivastava 1983; Polsby 1984; Haas 1990; Bennett and Howlett 1991; Bennett 1991).

Evans and Davies (1999: 361) emphasise policy transfer's multidisciplinary characteristics whilst re-emphasising Dolowitz and Marsh's (1996: 344) definition of it as a voluntary process occurring as a result of free choices of political actors. Stone (1999: 52) agrees and suggests that policy transfer may include innovation, termination or convergence. Transfer objects might include policies, institutions, ideologies, attitudes, ideas or negative lessons (Dolowitz 1997). Those involved commonly include elected officials, political parties, civil servants, pressure groups, policy entrepreneurs/experts and supranational institutions (e.g. in particular the EU) (Dolowitz and Marsh 1996: 345).

Stone (2001: 2) considers policy transfer and lesson drawing as dynamic processes. They are not independent but linked closely with policy networks (Borzel 1998; Knoepfel and Kissling-Naf 1998) and shaped by these networks in the way they perform (Wolman 1992: 44).

Policy transfer is widely viewed as a process. Savage (1985: 6) quotes Farina and Kelly (1983: 25): 'clearly, the process of diffusion is a complex one'. There would be few who would argue with that from the maritime sector or elsewhere. Quite how policies emerge from experience elsewhere is thoroughly unclear even if it is equally as clear that they do. However, complex or not, diffusion is a significant feature. Bennett (1991: 217) in reviewing public policy convergence suggests that it occurs through a number of processes. Evans and Davies (1999: 367) for example see it as a process of policy change and understanding transfers requires the policy-maker to understand the underlying processes that are going on. Figure 5.1 outlines their interpretation of this process of transfer through a network of communications.

The concept of policy transfer, convergence, learning or any other of its variants is relatively recent yet it has emerged as a mainstream element of policy processes developing alongside greater interest in regional integration and in particular the emergence of the EU (Bennett 1991: 215). However, Stone (1999: 58) describes it as a 'coherent framework for thinking about what is an old practice' and 'one that was originally developed in the US as a means to explain policy adoption' in the federal system (Stone 2001: 3). It can be considered to be a consequence of industrialism which is commonly characterised by societal convergence

1 RECOGNITION Discourse Dissatisfaction Cyclical events Conflict Legitimation	2 SEARCH Regime International Transnational National Regional Local	3 CONTACT	4 EMERGENCE of information feeder network	5 COGNITION AND RECEPTION	6 EMERGENCE OF TRANSFER NETWORK
>>>>>>>>>>>>>	>>>>>>>>>	>>>>>>>>>>>	>>>>>>>>>>>	>>>>>>>>>>>	>>>>>>>>>>>
7 ELITE and cognitive mobilization	8 INTER- ACTION	9 EVALUATION	10 DECISION enters policy stream	11 PROCESS	12 OUTCOME
>>>>>>>>>>>>>	>>>>>>>>>	>>>>>>>>>>>	>>>>>>>>>>>	>>>>>>>>>>>	>>>>>>>>>>>

Fig. 5.1 The emergence and development of a voluntary transfer network. *Source* Evans and Davies (1999: 377)

Copying	Adoption more or less intact of a programme already in effect in another jurisdiction
Emulation	Adoption, with adjustment for different circumstances, of a programme already in effect in another jurisdiction
Hybridization	Combine elements of programmes from two different places
Synthesis	Combine familiar elements from programmes in effect in three or more different places
Inspiration	Programmes elsewhere used as intellectual stimulus for developing a novel programme without an analogue elsewhere

Fig. 5.2 Alternative ways of lesson drawing. *Source* Rose (1991: 22)

searching for an optimal arrangement, the rise of state planning, the increase in pragmatism at the expense of idealism and the 'levelling impact of technology'.

Rose (1991: 22) suggests that there are five ways in which drawing lessons from policies elsewhere can be applied (Fig. 5.2). Meanwhile, Dolowitz and Marsh (1996: 344) suggest it emerged with comparative political analysis in the 1960s starting with Walker's (1969) policy diffusion focussing in particular upon the causes of transfer and an explanation of its timing and likelihood. This slowly developed into transfer studies whereby politicians and planners began to examine the potential in policies used elsewhere and their adaptability to comparative situations.

Stone (2001: 4) emphasises its rapid development by noting the wide range of studies conducted since the 1980s and the variety of labels attached essentially to the same process. They include 'pinching ideas' (Schneider and Ingram 1988), 'external inducement' and 'policy band-wagoning' (Ikenberry 1990), 'lesson drawing' (Rose 1993), 'direct coercive transfer' (Dolowitz and Marsh 1996), 'policy borrowing' (Cox 1999), 'policy pushing' (Nedley 1999) and 'policy shopping'

(Freeman 1999). She settles on 'policy convergence' as it appears to stress the existence of 'structural forces' but the word 'semantics' also seems relevant here. However, there are undoubtedly some differences between each of the terms if only to a limited extent and the presence of so much activity focussed on one process suggests not just its existence but also its significance.

Maritime policy-making is no different in that it is centred around processes of policy formulation and application which have been adapted and borrowed from elsewhere in many circumstances. These include environmental policies for the control of emissions which have emerged from long debates more widely on climate change, maritime safety policies which are developments of industrial and technological innovation and research, security policies which have used experience gained recently from other transport sectors and more generic security debates, and economic efficiency policies which have a long history of policy learning, transfer and convergence from national and international economic policy-making. The degree of convergence and transfer is variable depending upon the specific nature of the issue (the policies on ballast water transfer for example, might have taken more or less from other policy sectors than policies on competition in the liner sector) and also the political and social context. Globalisation on the one hand has encouraged policy transfer and convergence by facilitating the cross-fertilisation of ideas through the development of governance regimes based on similar processes and structures but on the other has experienced difficulties as nation-states and shipowners see a true exchange of ideas and policies as threatening to their status (Bennett 1997: 214). Globalisation is not a requirement for transfer or convergence; but it helps (Stone 1999: 55).

Whatever terminology is used, these processes of policy transfer or convergence have advantages identified by Stone (1999: 53) and Evans and Davies (1999: 362). They include the fact that any search of policies and practices elsewhere and in particular in other countries and contexts must contribute to innovation and provide a stronger base than a local adjustment of policy taken from existing and familiar circumstances. As Schneider and Ingram (1988: 67) suggest:

> Cross national policy comparisons contribute to innovation. National governments are introverted and career officials identify with particular ministries. Unless the examples of other countries are brought to light through analysis, changes will be incremental.

Of course comparison does not necessarily mean adoption will occur, nor improvement of policies but the fact that this process has the potential to bring a range of changes from which improvements might be found must suggest it is the thing to do. In shipping, this is clearly the case. The international nature of the sector makes international policy convergence essential as national policies by definition would be narrow, introverted, lacking in experience and knowledge of circumstances elsewhere and ultimately conflictual permitting stakeholders to play national policies off against one another. The fact that this occurs already (cf. tonnage tax and flag-hopping) only goes to show that more convergence and transfer is needed. Thus, policy convergence and transfer gives nation-states the possibility of avoiding Scholte's (1996) 'methodological nationalism' which has increased in significance with the continued increase in the power of globalisation.

It is not all good news however; policy-makers need to ensure that transfer and convergence is not over-hasty and it is important to make comparisons across a variety of sources and contexts to ensure that the full range of opportunities and issues is understood. Some policy ideas are not transferable across context, jurisdiction or issue, and in this case, it may be detrimental even to try (Stone 1999: 54).

Policy convergence is seen by Bennett (1991: 219) as dynamic and relational and far from the static institutional assumptions of policy-making in the past—and which still characterises the maritime sector to an extent. Convergence he sees as a 'becoming' event rather than a condition of 'being' He quotes Inkeles (1999: 13–14): 'Convergence means moving from different positions towards some common point. To know that countries are alike tells us nothing about convergence. There must be movement over time toward some identified common point'. Convergence is a dynamic event which should be seen in terms of time rather than space (otherwise it is simply similarity).

Examples abound of policy transfer, convergence and the like. Crain (1966) who sees policy diffusion having its roots in primitive culture and so has always been with us provides an example applied to fluoridation in the USA. Rose (1991: 4) notes how the process goes on in employment policy in the EU (Carlson et al. 1986; Dommergues et al. 1989). Gray (1973: 1175) points out examples from rural sociology (the diffusion of hybrid seed corn amongst farmers) (Ryan and Gross 1943); medical sociology (drug adoptions by physicians) (Coleman et al. 1966); political science (the diffusion of city manager governments in the 48 US states) (McVoy 1940); and medicine (the contagion of a disease) (Bailey 1957; Rogers and Shoemaker 1971). Knoepfel and Kissling-Naf (1998: 344) note the rise in a 'continuous policy dialogue whereby the different actors introduce their views and reach a solution to the problem posed through an exchange of subjective ideas and transforming debate' and provide examples from Majone (1993), Sabatier (1993), Schon and Rein (1994), Fischer (1993), Fischer and Forester (1993), Singer (1993) and Nullmeier (1993). Coleman (1994) provides a discussion of banking and policy convergence whilst other commentators providing examples include Wolman (1992), Collier and Messick (1975), Eyestone (1977), Heclo (1974) and Savage (1985: 2–3) who cites Rogers (2003) in his identification of nine traditional areas for policy diffusion—rural sociology, communication, education, marketing, general sociology, public health and medical sociology, anthropology, geography and early sociology.

More specific in terms of governance is Collier and Messick's (1975: 1306) consideration of hierarchical diffusion where innovation occurs in the higher authorities and then filters down to the smaller and less advanced units—much as planned in the maritime sector. Hierarchical diffusion can be seen in examples from many sectors—radio stations, trolley cars, electronic technology, policy innovation in federal states, fire brigade operation and Rotary Club organisation in Chile are just some that have been cited. Hierarchical diffusion sounds logical—larger and more developed units have more resources; they may have access to more information; and smaller units tend to exhibit 'positioning behaviour' whereby they adapt to the desires of the higher units. All this suggests that the

maritime governance model should work, but it may just be a reflection of a model of governance that in theory is unquestionable but in practice will always exhibit significant problems if the jurisdictional underpinning is inadequate. Meanwhile, Knoepfel and Kissling-Naf (1998: 347) emphasise the rise of network governance as a replacement for market and hierarchy which in turn stresses the importance of the exchange of ideas (O'Toole 1993: 53; Scharpf 1993: 125) something that fits well with the concept of policy transfer and convergence.

Evans and Davies (1999: 362) concur identifying the jurisdictional hierarchy as an 'essential element in policy transfer, that transfer can occur across all and any of the jurisdictional boundaries, and it is something that must be considered if it is to be understood adequately'. They continue by pulling together this discussion of policy transfer, convergence, learning and an abundance of the other categories by suggesting that as yet it fails to provide a full explanatory or theoretical basis for understanding the processes that underlie changes in policy but even so it is clearly fundamental to producing both adequate governance and polices. Gregor (1971: 193–194) sees policy transfer as a sustained metaphor or 'promissory note' for theories which have yet to emerge. As such, they are significant but remain undeveloped. Maritime governance might do well to accommodate this policy learning process as much as it can if it is to be effective and relevant.

Metaphor

> Invention flags, his Brain goes muddy,
> And Black Despair succeeds brown study.
>
> Congreve (1923: volume IV, 60).

> Vimes shrugged. 'That's it then,' he said, and turned away. 'Throw the book at him, Carrot.'
> 'Right, sir.'
> Vimes remembered too late.
> Dwarfs have trouble with metaphors.
> They also have a very good aim.
> *The Law and Ordinances of Ankh and Morpark* caught the secretary on the forehead. He blinked, staggered, and stepped backwards.
> It was the longest step he ever took. For one thing, it lasted the rest of his life. After several seconds they heard him hit, five storeys below.
>
> Pratchett (1989: 388).

> Thrown into the vast open sea with no navigation charts and the marker buoys sunk and barely visible, we have only two choices left: we may rejoice in the breath-taking vistas of new discoveries - or we tremble out of fear of drowning. One option not really realistic

> is to claim sanctuary in a safe harbour; one could bet what seems to be a tranquil haven today may soon be modernized, and a theme park, amusement promenade or crowded marina will replace the sedate boat sheds. Bauman (1998: 85).

> Virtually all statements – from quantitative descriptions of empirical data to the most vigorous mathematical formulations – are 'metaphors' which makes semiotics the queen of sciences. Artigiani (1987: 250).

Speaking of metaphors we now reach a core theme of governance and the need for change in the maritime sector and its approach to policy-making. Metaphors have been a central focus of discussion for as long as discussion of any issue has taken place (see for example McCloskey 1964; Weimar 1966; Sachs 1978; Ortony 1979; Livingstone and Harrison 1981: 96; Alvesson 1993; Cameron and Low 1999; Edwards et al. 2004). Traditionally, they have been drawn from fields of movement, and shipping has played a major role in this along with a variety of other transport and distribution-related examples including those cited by Edwards et al. focussing upon traffic congestion and movement (2004: 24, 31–32) and Law (1999: 573) notes the use of metaphors of mobility in social theory including those by Matless (1995), Wolff (1995), Hanson and Pratt (1995), McDowell (1996) and Cresswell (1997). In each case, the significance of change is obvious and consequently we can trace a close relationship between metaphor, movement and process which can help to indicate the importance of accommodating dynamism into the policy-making and governance areas. However, care needs to be taken:

> Metaphors are invaluable at the start of an inquiry. Ideas often come to us first as metaphors, a vague notion that x is like y. These can be creative insights; they may revolutionize a field. But they should not remain as they are born, for as scientific formulations, metaphors are flawed (Landau 1972). Bendor et al. (2001: 188).

Before we can begin to look closely at the contribution metaphor can make in the development of dynamic governance we must first be sure of what we mean by the term although we need to be careful as 'there is always a real possibility that one might drown in attempting to achieve hermetic sealing' (Edwards et al. 2004: 27). There are many definitions to choose from—take for example those provided by Livingstone and Harrison (1981: 95)—'a word which is usually applied to one sort of thing [is applied] to another sort of thing'—and Mills (1982: 237):

> It would be an error… to regard every metaphor as an explicitly formulated analogy, in which the words of comparison 'like', 'as' and so on, are omitted. This presupposes that the literal truth precedes the metaphor, which is thus always a conscious transference of the properties of one thing to another. But history shows that metaphors are generally older than expressed analogies… Metaphors may thus be viewed as expressing the vague and confused but primal perception of identity, which subsequent processes of discrimination transform into a conscious and expressive analogy between different things, and to which further reflection transforms into the clear assertion of an identity of common element (or relation) which the two different things possess. Vico (1968).

However, Morgan (1998: 4) provides us with all we need at this stage. A metaphor:

> … is a primal force through which humans create meaning by using one element of experience to understand another.

Morgan sees it as the primary tool for 'creating an understanding about what we now recognise as organisation and management' and as such has a central role in the development and understanding of governance in all fields, including shipping. Organisation, management and governance are themselves metaphors in that they are not 'shipping' itself but a way of viewing shipping so that understanding the process can be that much simpler and easier. It is a 'formative influence on language, on science, on how we think, how we see and how we express ourselves' (Morgan 1998: 5). As such, it can be incredibly valuable. Sfard (1998: 4) agrees: 'metaphors are the most primitive, most elusive and yet amazingly informative objects of analysis. Their special power stems from the fact that they often cross the borders between the spontaneous and the scientific, between the intuitive and the formal'.

Edwards et al. (2004) suggest that 'the essence of metaphor is understanding and experiencing one kind of thing in terms of another' (Lakoff and Johnson 1980: 5), and there are four ways of achieving this—metaphor, metonymy, simile and synecdoche. The first two involve replacement where 'one concept or idea is conceived in terms of another' (Edwards et al. 2004: 25). By so-doing, thinking is freed up and new perceptions of problems and issues can be derived. Movement metaphors and similes are very common and their application to an understanding of policies and their inadequacies is often derived through maritime scenarios and also can be applied readily to the maritime sector. Ships, the sea, safe harbours, storms, along with tourism, hotels, motels, vagabonds and nomads are common examples.

Meanwhile, metonymy and synecdoche require substitution as 'one idea or concept stands in for another with which it is related' (Edwards et al. 2004: 25). Nash (1989: 122) notes that metonymy substitutes 'a particular instance, property, characteristic or association for the general principle or function'. Thus, 'walking the plank' provides a representation of threat used to indicate the need for discipline.

Synecdoche is similar but substitutes a whole with a part or as Fraser (1979: 175) rather grandly puts it 'the substitution of one term for another within a predetermined hierarchy'. Thus, a captain of a ship may in an emergency do a 'headcount' of crew where heads refers to seafarers.

Metaphors are also frequently spatially characterised with clear relationship to the issues of maritime governance where space (and jurisdiction) remains a paramount issue. Paechter (2004) provides a typology:

- Area space—concerned with the drawing of boundaries; for example the field of study for maritime business, economics or finance.
- Movement through space—concerned with how for example, a seafarer moves through his or her career.
- Structural space—concerned with the foundations of the maritime sector and its policy-making institutions.
- Hierarchical space—concerned with assessment and attainment, for example top of his/her maritime career or profession.

- Distance space—concerned with institutional and individual relationships—for example the port/office—ship interface.

Metaphors clearly will cross categories such as these generating a 'metaphorical complex'.

Punter (2007: 2–3) provides numerous examples of the significance of metaphors in our daily lives. Take for example:

> a firm of London builders from Indian backgrounds, who some years ago painted on the side of their van the slogan: 'You've tried the cowboys: now try the Indians'. Punter (2007: 8)

He sees a metaphor operating 'by means of which one thing is made to stand in for another'. Metaphors are viewed as processes at work everywhere in language and by association, in organisation and activity as well including actions, thoughts, policies and ultimately in our case governance. It is inevitable in engagement and thus an essential part of the governance process.

As we have seen already, governance is a complex issue whose inadequacies are not resolved simply by laws and regulations. A much more complex design accommodating inference and opinion, social communication and political sensitivity is needed alongside. Urry (2004a) points out this complexity and its relationship to metaphor suggesting that it provides 'metaphors, concepts and theories essential for analysing' the disorderliness described by Gray (2001) as intractable. He also comments that existing processes for examining these complex systems are inadequate and lack the necessary characteristics to understand their complexity, richness and nonlinearity 'involving multiple negative and positive feedback loops'. Although referring directly to global systems, his comments could just as easily be applied to maritime governance—characterised by unpredictability and irreversibility, lacking equilibrium and order—or in the words of Prigogine (1997), 'pools of order that heighten overall disorder'. We return to complexity at a later stage.

Not everyone is convinced however. Bicchieri (1988: 102) for example suggests that:

> literal language is the only vehicle for expressing meaning and making truth claims, and metaphor is a deviant use of words other than in their proper places… figurative discourse is used only for rhetorical purposes or stylish embellishment; metaphor is denied any autonomous cognitive content.

Thus, metaphorical language is seen merely as ornamental rather than a way of better understanding the real world, including its role in policy-making. Taylor (1984) agrees suggesting that metaphors are seductively reductionist and the antithesis of the move towards accountability, quality control and common cores, themes central to maritime policy-making and governance from the 1980s onwards. Edwards et al. (2004: 27) point out criticisms of the use of metaphors particularly in an era of 'accountability' and 'quality control' as cited by Taylor (1984: 11). Cresswell (1997: 331) also notes David Harvey's comments quoted in Barnes and Duncan (1992: 10) that metaphors can 'hinder objective judgement',

something that reflects the view of Locke quoted in Lakoff and Johnson (1980: 191) that:

> all the artificial and figurative application of words eloquence hath invented, are for nothing else but to insinuate wrong ideas, move the passions, and thereby mislead the judgement.

Urry (2000a: 26) points out the relationship between metaphor and globalisation, and the significance of which in our discussion of governance is clear. He sees that they have become socially powerful, and employed as 'the figurative use of exemplars, or icons or characteristics of mobility'. He suggests that there is no single globe but rather:

> different metaphors of the globe and globality. Central to notions of globalisation are various metaphors of the global which embody alternative presumptions of homogenisation/h etereogenisation, of simplicity/complexity, of movement/stasis, of inclusion/exclusion and so on.

Metaphors therefore have a significant role to play in understanding the processes of globalisation and the forces that are buffeting governance and their importance more generally lends substance to the concept—see for example the growth in interest in geography (Mills 1982) citing Weimar (1966), Kolodny (1973), Tuan (1978), Livingstone and Harrison (1980, 1981), Sitwell (1981), and Edwards et al. (2004: 152, 155) and particularly their metaphorical interpretation of globalisation as a 'moving practice' requiring an 'interpretative process'. Maritime governance is essentially global and consequently is particularly appropriate for a metaphorical interpretation. As we shall see in the coming sections, this has been a common approach with extensive use of movement metaphors (through nomads, hotels, motels, tourism and the like) across a range of issues and which might be particularly suitable to accommodate the process element of governance so sorely missing.

Urry (2000a: 27) provides some broad examples of application. These include the use of the sea, river, flux, waves and liquidity (Bachelard 1942), and the vagabond, nomad, pilgrim and motel (Deleuze and Guattari 1986; Braidotti 1994). The emphasis is on 'fluidity' or as Derrida (1987: 27) put it: '*Différance* is incompatible with the static, synchronic, taxonomic, ahistoric motifs in the concept of structure', something that rings particularly true in the context of our consideration of governance, process and form although this is dependent upon whether one associates the sea with freedom and space or with danger, illness and insecurity.

Clifford (1997: 3) emphasises the role of travel metaphors in the interpretation and understanding of culture which can also include governance and policy in its remit. This follows on from Buttimer's (1982: 91) understanding of root metaphors—forming, mechanism, organicism and contextualism—which could be used as the basis for analysing policy and governance. The latter is essentially culturally driven with the outcomes (policies, laws, regulations) merely the final expression of a long process of discussion dictated by cultural norms, which despite globalisation remain largely locally determined. Clifford suggests that although social

existence is centred in circumscribed places—roots, gardens, dwellings—travel and all its related mobile facets have grown to be a:

> complex and pervasive spectrum of human experiences. Practices of displacement might emerge as constitutive of cultural meanings rather than as there simple transfer or extension… Cultural centers, discrete regions and territories, do not exist prior to contacts, but are sustained through them, appropriating and disciplining the restless movement of people and things.

Thus, maritime policies and governance, associated as they are with nation-states and their territories, are also influenced by this restless movement that defines the territories themselves—a succession of processes which can be interpreted through a variety of metaphors. This significance of movement in understanding society and with it the governance it needs has not been lost elsewhere. Cresswell (1997: 361) for example quotes Said (1994: 403):

> … surely it is one of the unhappiest characteristics of the age to have produced more refugees, migrants, displaced persons and exiles than ever before in history, most of them as an accompaniment to and, ironically enough, as afterthoughts of the post-colonial and imperial conflicts. As the struggle for independence produced new states and new boundaries, it also produced homeless wanderers, nomads, vagrants, unassimilated to the emerging structures of institutional power, rejected by the established order for their intransigence and obdurate rebelliousness.

He goes on:

> … it is no exaggeration to say that liberation as an intellectual mission, born in the resistance and opposition to the confinements and ravages of imperialism, has now shifted from the settled, established, and domesticated dynamics of culture to the unhoused, decentred and exilic energies, energies whose incarnation today is the migrant, and whose consciousness is that of the intellectual and artist in exile… And while it would be the rankest Panglossian dishonesty to say that the bravura performances of the intellectual exile and the miseries of the displaced person or refugee are the same, it is possible, I think, to regard the intellectual as first distilling them articulating the predicaments that disfigure modernity – mass deportation, imprisonment, population transfer, collective dispossession, and forced immigrations.

The relationship between movement, change, process and governance is clear and made clearer through the application of metaphor. Peters (1999: 31) quotes Emerson (1981: 335): ‘Everything good is on the highway’, although not all metaphors relating to movement are happy ones—‘Every ship is a romantic object except that we sail in’ (327) reflecting his view that nothing is so strange as the normal; nothing so terrifying as that which we inhabit since home is the place of ‘language, sleep, madness, dreams, beasts, sex’ (4). Homelessness is thus ‘cheerful’, travel embraces ‘rapid domestication’. In Henry Thoreau’s (2007) terms, the art is to travel without leaving home. We shall return to such notions of nomadism soon.

There are many examples of the use of movement metaphors that show their significance. Most appropriate for our purposes of exploring maritime governance are those relating to ships and shipping. Urry (2000a: 29, 2001: 239) for example,

cites Gilroy's (1993: 4) use of the ship as a 'living, micro-cultural, micro-political system in motion'. Using the black slave trade as an example:

> ships were the living means by which the points within that Atlantic world were joined. They were mobile elements that stood for the shifting spaces in between the fixed spaces that they connected. Accordingly they need to be thought of as cultural and political units… they were… a means to conduct political dissent and possibly a distinct mode of cultural production. Gilroy (1993: 16–17).

An alternative has been the use of the motel as a metaphor and its characteristics of constant movement, change and flux. Urry (2000a, 2001: 240–241) once again provides examples. Clifford (1997) is cited by Urry (2000a: 30) although initially dismissing the traditional hotel which had been selected on the basis of being away from home, movements outside and a shelter from the unexpected. Home would be the opposite typified by fixture and stasis. He sees hotels as nostalgic and gentlemanly and as such rather too staid. Motels meanwhile are a different concept:

> The motel has no real lobby, it is tied into the network of highways, it functions to relay people rather than to provide settings for coherent human subjects, it is consecrated to circulation and movement, and it demolishes the sense of place and locale. Urry (2000a: 30).

Or in the words of Morris (1988: 3–5): 'motels memorialize only movement, speed and perpetual circulation'. They 'can never be a true place' and they are distinguishable from each other only in 'a high-speed, empiricist flash'. Like an airport transit lounge, they represent neither arrival nor departure but 'pause' (Urry 2000a: 30).

Alternative metaphors have used vagabonds, particularly suitable in understanding process, movement and change in that a vagabond has little idea of how long he/she will stay wherever he/she is and in addition often has no choice in the matter (Urry 2001: 240). Destinations are frequently unknown and certainly uncertain and the only thing certain is his/her temporality. Bauman (1999: 240) suggests that the vagabond is 'pulled forward by hope untested, pushed from behind by hope frustrated… (he/she) is a pilgrim without a destination'. Space is unstructured with trails marked only by their own footprints. He/she 'structures the site he (*sic*) happens to occupy at the moment only to dismantle the structure again as he leaves. Each successive spacing is local and temporary—episodic'.

Bauman also talks of tourists as metaphors which he feels are a product of a postmodern interpretation. Tourists are like vagabonds in that they know that their stay is relatively short and similarly 'he has only his own biographical time to string together the places he visits; otherwise nothing orders them in this rather than another temporal fashion'. The tourist is thus in charge almost entirely of his life world, dictating the changes and processes that affect and are experienced by him. Bauman (1999: 241) says it all rather well:

> It is the tourist's aesthetic capacity – his or her curiosity, need of amusement, will and ability to live through novel, pleasurable, and pleasurably novel experiences – which appears to possess a nearly total freedom of spacing the tourist's life-world; the kind of freedom which the vagabond, who depends on the rough reality of the visited places for

> his livelihood and who may only act to avoid displeasure by escaping, can only dream of. The tourists pay for their freedom; the right to disregard native concerns and feelings, the right to spin their own web of meanings, they obtain in a commercial transaction… Like the vagabond the tourist is extra-territorial; but unlike the vagabond, he lives his extraterritoriality as a privilege, as independence, as the right to be free, free to choose; as a licence to restructure the world.

It is this freedom to restructure and the desire and need to do so that rings so true in contrast to the inadequacies of maritime governance where the whole idea of encouraging restructuring and the changes this implies is an anathema (Urry 2001: 240). The tourist (and vagabond) provides a contrasting metaphorical interpretation of the problems of governance and the need for a dynamic re-interpretation of the frameworks for policy-making that exist in the maritime world. To quote Bauman (1999: 241) further:

> One more feature unites the lives of the vagabond and the tourist. They both move through the spaces other people live in… like a theatre performance, the most dramatic and impressive of contacts are securely encased between the wings of the stage and between the rise and the fall of the curtain – inside the time and place designated for the 'suspension of disbelief' – and guaranteed not to leak through them and spill over.

In this sense, the tourist represents the inadequacies of current maritime governance, formulated in a confined space and time which takes no account of (and commonly wishes not to) the changes occurring all around: a static image within a dynamic context.

And that takes us to smells. Well it does not really but the application of perhaps the least fashionable of senses as a metaphor in movement does provide some interesting interpretations. Rojek and Urry (1997a, b: 8–9) introduce us to the idea through the work of Porteus (1985) and Stallybrass and White (1986: 139).

Smell was always the primary target of social reformers as it has a 'pervasive and invisible presence difficult to regulate' (Rojek and Urry 1997a, b: 8). Key issues in nineteenth-century urban redevelopment centred upon smells, sewers and rats, slum-dwellers, prostitutes and kneeling maids, etc. In turn these concepts drove wealthier city dwellers out to newly forming suburbs.

However, these (semi) tangible smelly issues have been incorporated within metaphor and combine with movement to form a distinctive mechanism for interpreting and understanding the need for change and policy dynamics. Bauman (1999: 24) expressed it well in considering the static modernity that was envisaged and its relationship to unwanted smells:

> Modernity declared war on smells. Scents had no room in the shiny temple of perfect order modernity set out to correct.

Bauman's argument is that smell is 'subversive' in that it is almost impossible to remove completely and control and thus any attempt to create a 'pure rational order of things' is doomed to failure (Rojek and Urry 1997a, b: 8). Bad smells can be seen as an incentive (if not a requirement) to keep on the move, to absorb and accept change and changing circumstances and they are unavoidable. Hence, the governance of anything needs to also accept change, to accommodate process, and to sustain the dynamic.

Finally in our consideration of the variety of movement metaphors that have been successfully applied to issues of process, change and dynamism, we can look at the use of what Cresswell (1997: 339) terms bodily secretions and in particular fluids. Kristeva (1982: 69) is clear in her consideration of normality and how it is relatively defined according to context with relevance to space and location policy:

> Why does corporeal waste, menstrual blood and excrement, or everything else that is assimilated to them, from nail-pairings to decay, represent – like a metaphor that would have become incarnate – the objective frailty of symbolic order?

Mol and Law (1994) take the characteristics of human blood and the system it inhabits to 'interrogate the diverse spatial forms of social life' (Urry 2000a: 30). Blood they see as not conforming to the 'structures and regions of conventional anatomy'. Blood remains a fluid that moves through almost all parts of the human body and consequently is both everywhere and nowhere as it never rests. There is no definite structure only a structure for the vessels through which it passes.

Using the specifics of blood, Mol and Law apply it as a metaphor for the 'diverse forms of social life' and in turn it can be applied to our case of maritime governance which in itself is nothing more than a structured form of social activity. They identify three metaphors of social and spatial topologies: regions, which are territorialities with clustered patterns and boundaries to confine them; networks, where the relative distance between the features making up the network define its characteristics; and regional boundaries commonly may be crossed. Meanwhile, fluids (e.g. blood) differ substantially from regions and networks in that:

> neither boundaries nor relations mark the difference between one place and another. Instead, sometimes boundaries come and go, allow leakage or disappear altogether, while relations transform themselves without fracture. Sometimes, then, social space behaves like a fluid. Mol and Law (1994: 643).

In maritime governance, the existing framework is characterised by regions and networks, territories and boundaries, manifesting themselves in the nation-state above all others. The nation-state is an anachronistic feature of governance and as such the use of regional and network structures themselves are anachronistic as well. Meanwhile, fluids in their continuous movement, cross-boundary features and inherent dynamism are more suited to the need of globalised governance that characterises the maritime sector. Hence, the blood metaphor is wholly appropriate. Taking the case of anaemia in Africa, where it is extremely common, they argue that:

> We're looking at *variation without boundaries* and *transformation without discontinuity*. We're looking at flows. The space with which we are dealing is *fluid*. Mol and Law (1994: 658, original emphasis).

How wholly appropriate for dynamic maritime governance, where boundaries have become progressively less relevant, discontinuities less significant, and the policy space which is considered, acts like a fluid. Anaemia is seen by Mol and Law as like blood:

> flowing in and out of different regions, across different borders, using diverse networks. It changes as it goes, although this is often in ways which are more or less imperceptible at the time. Anaemia as an illness is like a fluid, like blood, and is subject to transformation.

> Fluids are subject to mixtures and gradients with no necessarily clear boundaries. The objects generated may not be clearly defined. Normality is a gradient and not a clear absolute. In a fluid space it is not possible to determine identities nice and neatly, once and for all; nor to distinguish inside from outside. Various other fluids may not be able to combine together with each other. Urry (2000a: 31).

Mol and Law (1994: 660 and 664) sum it up:

> (A) fluid world is a world of mixtures.
>
> The study of fluids, then, will be a study of relations, repulsions and attractions which form a flow… as it moves, it changes its shape and character.

We shall return to the issue of fluids as metaphors for progress and change in maritime policies and governance under globalisation in the coming sections. Globalisation (and hence maritime policy and governance) is susceptible to 'interpretative processes' (Edwards et al. 2004: 155) and as such the value of metaphor is clear. Meanwhile, we can finish this section by quoting from Lury (1987: 90–91) who brings together a whole range of related issues. She considers the relationship of globalisation and culture and sees it as:

> a space of flows in which time-space compression occurs, in which objects and people are dissected by the cut'n'mix of boundary crossing and return, in which culture as technology refers back into and outside itself, creating environments by design, and objects come to take on new capacities. It is a space that which is not homogenous, but its heterogeneity is not unplanned; rather it is a space in which subjects and objects do not come face-to-face, but inter-face. The possibilities for tourism of this new space of flows are only just beginning to be explored, but they have the potential both to expand the kind of journeys possible – through the incorporation of time-space compression and the multiplication of perspectives – and to provide the basis for new kinds of hierarchy among both travelling people and objects.

Lury focuses upon a range of concepts that are relevant to our discussion of metaphor, process, change and governance—in particular spaces of flows (which we return to in a later chapter) and time-space compression which underlies much of the discussion on globalisation, jurisdiction and the problems of the maritime sector. Meanwhile, McCloskey (1964: 215) helps to place the whole issue of metaphor into context:

> We look for, example, from the top of a building at the busy street below: and say 'Ants!'. This is to call what other people and we ourselves at other times would call 'people', by another word 'ants'. The new application of the word is given by the behavioural or literary context. We either go up a building and look down together at the street; or I write and you read, 'Beneath me I saw the people coming and going, busy steams of ants hurrying backwards and forwards across the pavements.

Nomads

> When I first came to that quiet corner of the Nile Delta I had expected to find on that most ancient and most settled of soils a settled and restful people. I couldn't have been more wrong. The men of the village had all the busy restlessness of airline passengers in

> a transit lounge. Many of them had worked and travelled in the sheikdoms of the Persian Gulf, others had been in Libya and Jordan and Syria, some had been to the Yemen as soldiers, others to Saudi Arabia as pilgrims, a few had visited Europe: some of them had passports so thick they opened out like ink-blackened concertinas…
>
> And none of this was new; their grandparents and ancestors and relatives had travelled and migrated too, in much the same way as mine had, in the Indian sub-continent – because of wars, or for money and jobs, or perhaps simply because they got tired of living always in one place. You could read the history of this restlessness in the villagers' surnames; they had names that derived from cities in the Levant, from Turkey, from faraway towns in Nubia; it was as though people had drifted here from every corner of the Middle East. The wanderlust of its founders had been ploughed into the soil of the village; it seemed to me sometimes every man was a traveller. Ghosh (1986: 135).

> It's great to have roots as long as you can take them with you. Gertrude Stein.
>
> …nomadic consciousness is an epistemological and political imperative for critical thought at the end of this millennium. Braidotti (1994: 1).

Nomads provide perhaps the most evocative of all metaphors that derive from our perception of change and movement and which can help to understand the relationship between governance, process and movement, issues central to the failure of the maritime policy-making process in a time of extended globalisation. The concept of nomadology has been widely discussed (see for example Morris 1988; Sheller and Urry 2006: 210; Kennedy 2007: 272) and remains both fashionable and central to Western society (Peters 1999: 17–18).

> Otherness wanders through its center. Exile is, perhaps, the central story told in European civilisation: the human estate as exile from God, the Garden of Eden, the homeland, the womb, or even oneself. Thus Eisen (1986: xi) recasts the opening line of the Book of Genesis. 'In the beginning, there was exile'.

Or even more evocative Gay et al. (1996: 23–24) use the nomadic metaphor to bring us right up to date (or almost—just substitute 'iPhone' for 'Walkman' and you have it) suggesting the Sony Walkman is:

> virtually an extension of the skin. It is fitted, moulded, like so much else in modern consumer culture, to the body itself… It is designed for movement – for mobility, for people who are always out and about, for travelling light. It is part of the required equipment of the modern 'nomad'… it is testimony to the high value which the culture of late modernity places on mobility.

Hannam (2009: 101) takes Calhoun's (1995: 4–5) definition of nomadology as 'a way of socially constructing reality and asking new questions'. D'Andrea (2006: 107) adds:

> Nomadology refers to a style of critical thinking that seeks to expose and overcome the sedentary logic of the state, science and civilization… It denounces a categorical binary of civilization whereby the dweller is positively assessed over the wanderer, seen as menace, distortion and problem… The privilege of fixity over mobility – of roots over routes – hinges on the issue of conventional modes of subjectivity; a dialectic of identification/alterity sustains a model of identity that constrains the self within rigid and exclusionary boundaries.

Cresswell (2006: 43) also contributes to the identification of nomadology which focuses upon:

> movement, mobility, and contingent ordering, rather than upon stasis, structure and social order… (the) corporeal, imagined and virtual motilities of people.

with increasing focus upon the transnational, global, forms of governance.

Salo (1986: 7) discusses some problems in identifying nomads which in turn leads to questions about their value as a metaphor but nevertheless nomads themselves (rather than the theory of nomadology) retain a positive metaphorical image despite their rather dubious connotations at times (vagrants, tinkers, homeless, etc.). Cresswell (1997: 367) says it all:

> …the nomad becomes an exhilarating character. Everywhere the nomad goes new freedoms and opportunities follow. Modernist thought, the doomed search for Truth established through the mythical 'view from nowhere', is characterized by stabilities and certainties. The familiar dualism of man/woman; white/black; true/false are all tethered to the geography of here and there. The movements of the nomad, on the ground and in the head, cannot help but transgress such simplicities.

Rojek and Urry (1997a, b: 10) cite a number of examples of the use of nomads as metaphors by other authors: Braidotti (1994) and nomadic consciousness; Clifford (1992: 101) and hotel lobbies setting a time and place for nomadic intercourse; Morris's similar approach using motels; and Jokinen and Veijola (1994) who place the nomadic metaphor into a sexual context suggesting its dominant maleness. Kaplan (1996: 63) cites Eisenstein (1969) who described the early days of Soviet Russia as when cinema was 'discovered' as a 'place with unimaginably great possibilities'. 'We came like Bedouins' and pitched our tents' Kaplan sees Eisenstein's words as distinguishing the new medium from the traditional theatre using the metaphors of desert and Bedouin to emphasise 'values of freedom, hybridity and modernity'. Such nomadic clichés are commonly identified with progress, change and dynamism, values we see repeated in our understanding of the problems that besiege maritime governance.

Malkki (1992: 37) adds that nomadology rethinks identity as:

> Always mobile and processual, partly a condition, a status, a label, a weapon, a shield, a fund of memories, etc. It is a creolized aggregate composed through bricolage.

Despite this not everyone is in favour. For example:

> The feudal ownership of land did bring dignity, whereas the modern ownership of movables is reducing us again to a nomadic horde. Forster (1931: 141).

However, first to nomads themselves and the variety of interpretations that have been made.

De Lange (2009: 3–4) in an appreciation of the rise of digital nomadism quotes Peters (1999: 19–20) who suggests that:

> nomadism dispenses altogether with the idea of a fixed home or center. Whereas exile often occurs in relation to some looming authority figure who wields power over life and death, nomadism can involve active defiance of or furtive avoidance of the sedentary authority of the state and society (often to the peril of actual nomadic societies). If

> diaspora suggest a geographically dispersed network, the concept of nomadism suggests a face-to-face community, usually linked by ties of kinship stemming from a real or imagined common ancestor that travels as a unit… For nomads, home is always mobile. Hence there is a subtle doubleness here: being at home everywhere but lacking any fixed ground.

D'Andrea (2006: 108) puts it more simply: 'traditional nomadism can be defined as mobile household communities that carry their means of production within a single ecological niche' (Cribb 1991: 20; Rao 1987; Khazanov 1984). He goes on to emphasise that they can be divided into two main groups—those that move animals to better pastures and 'neo' nomads (hippie traders, smugglers, DJs, alternative therapists, tattoo artists, etc.) who exercise their skills along the way and use impermanence as a source of learning and charisma to their professional advantage (D'Andrea 2004; Rao 1987; McKay 1996). Nomadism is defined by both culture and economics, and 'wandering' is no part of their lives. Barfield (1993: 12) confirms that they both know where they are going and why, and possess both goods and tools. They merely remain unattached to land.

Zembylas and Vrasidas (2007: 66) look at how the metaphor of the nomad is useful in showing how ICT can be inclusive for marginalized people. They define a nomad as:

> constantly on the move, connecting with others, assuming heterogeneous identities, and celebrating plurality in contradiction to unitary models of Western thought that exclude certain populations. Nomads learn to live with the discomfort of uncertainty and multiplicity, and do not allow themselves to collapse their identities into that of 'global villagers' who are assumed to have identical and universal needs and desires.

As such, their value in understanding the problems and requirements of maritime governance are clear where the issues of plurality are inadequately addressed through the minimal acknowledgement of stakeholders and the focus on a unitary and inflexible approach to policy-making.

The origins of nomadology are outlined by De Lange (2009: 2) who stresses the significance of the work of Deleuze and Guattari (1988) and their discussion of the characteristics of nomadic life and how it can provide a metaphor for the relationship between the state and the 'war machine'. In so-doing, they hope to liberate thinking about identity. Their emphasis on the state and its fixed, static role is reminiscent of our earlier discussion with specific reference to the maritime sector, its narrowly defined stakeholders, institutionalism and governance that lacks dynamism. Consequently, the characteristics of nomadism provide a framework for the interpretation of the move that maritime governance needs to make from its current somnolence to becoming more zoetic. Lancaster and Lancaster (1998: 32) make this clear:

> Nomadism, with its flexible multi-resource economic strategy is ideally suited to the unpredictable environment… External factors such as trade routes, governments or states are grist to the mill; they are the necessary substrate. (Nomads) change because the economic and political climate changes, and nomadism is still the best method of adapting and surviving.

Peters (1999: 25) notes that nomad is of Greek origin relating to seemingly contrasting concepts of pasturing of animals (*nomas*) and law (*nomos*) and reflected the

Athenian view that community (*polis*) was an essential part of humanity (and consequently nomadism was inhuman). The current use of the word nomadism dates from 1841 and the work of Emerson and its use in connection with how the 'soul may exist in the world' (Emerson 1981; Peters 1999: 30). It retains its 'inhuman' characteristics reflected in the difficulties faced by modern-day travellers across Europe. Emerson rejects this view seeing homelessness as to be celebrated. His attitude is that of 'the tent-dweller for whom home is always already here. As his disciple Thoreau put it, the art is to travel without ever leaving home' (Peters 1999: 31).

Speaking of tents, in themselves serious contenders for a nomadic icon, they are also commonly seen to be a major part of the nomadic metaphor. Peters (1999: 24) provides some clarity. For example, the Bible puts it forward as a 'symbol of rule, a cosmic link with the heavens, and a redoubt against harm (Nibley 1966)'. Peters sees the tent as an 'enduring sign of both worldly authority and the flaunting thereof, and of mobility as part of the human estate' and as such it plays a central part in nomadic sociology.

> Abraham, Isaac and Jacob, the patriarchs who became strangers in a strange land, all dwelt in tents. The tabernacle bearing the Ark of the Covenant was clearly a type of tent, a mobile abode for God's presence. Long after the Jewish people traded a nomadic existence for the settled life of farming and cities, the pastoral life retained an ideological privilege. Even at the pinnacle of the Kingdom of Israel, King David boasted of his childhood as a shepherd… Isaiah compares the people of Israel to a tent (Isaiah 54:2 compare Isaiah 33:20). The sedentary emulation of mobile others is an enduring pattern: it continues in both social theory and social life today. Peters (1999: 24–25).

Peters goes on to elaborate upon the Jewish Festival of Tents and its relationship to space, place, process, change and movement and there may be something here that has relevance for maritime governance and its failure.

Nomadology relies upon the use of nomadic metaphor and plenty of examples exist. Peters (1999: 18) suggests a range of personalities:

> Abraham, the sojourner and stranger, never to return to his home; Odysseus, who finally returns to Penelope after his odyssey; Oedipus, an outcast from his city; the legend of the wandering Jew; *flâneurs*, loafers and Bohemians; gypsies, gypsy scholars, sea gypsies, and gypsy truckers; hoboes, tramps, drifters, vagabonds and flimflam artists; sociologists, private eyes, journalists, men and women of the street; sailors, soldiers of fortune, adventurers and explorers; border crossers of all sorts; gauchos, cowboys, and guerrilla fighters; pioneers, pilgrims and crusaders; knights errant, troubadours, minstrels, charlatans, and journeymen; Huns, Vandals, Goths, Mongols, Berbers, and Bedouins; tourists, travellers, *haji,* refugees, immigrants, the stateless and the homeless; commuters, telecommuters, jet-setters, migrant workers, and *Gastarbeiter*; automobilists, bikers, and circus people.

There is disagreement about those defined as nomadic although generally three types have been widely identified. Pastoral nomads: 'societies specializing in animal husbandry requiring periodic movements' (Barfield 1993: 4). Hunter-gatherers: whose mode of existence sets them apart from traditional pastoralists and sedentary farmers (Bogue 2004: 172). And gypsies, tinkers, weavers, mime artists, magicians, musicians, horse-dealers, circus performers, etc. Salo and Salo (1982: 276) describe these as 'spatially mobile peoples who exploit resources primarily in the social environment'.

Turning specifically to the use of nomads as metaphors and their relationship to nomadology, process and change we find a considerable body of opinion with some contrasting views. This includes Peters (1999: 18) who considers their role in Western metaphorical culture, and Wolff (1993: 224) who notes their proliferation during the early 1990s partly as a postmodern response but also their inherent sexism and favourable characterisation of male nomadism. Cresswell (2006: 43) approaches nomadology from the point of view of sociology but his comments are still helpful as they focus upon the contrast between 'movement, mobility, and contingent ordering, rather than upon stasis, structure and social order', something that sounds very familiar in our consideration of maritime governance. He goes on; this involves looking at 'corporeal, imagined and virtual mobilities of people' (Urry 2000a: 18) and the interactions between people and objects and increasing importance of 'transnational, global, forms of governance' (Cresswell 2006: 43).

Bauman (1998: 240) is critical of the use of nomads as a metaphor for contemporary society in Postmodern times. He considered nomads as circling 'around a well-structured territory with long invested and stable meaning assigned to each fragment'. Thus is far from the conventional image of Postmodernism (see for example Roe 2013 in a maritime context) although he did accept that in this 'fluid stage of modernity' the settled majority is in some ways 'ruled by the nomadic and extraterritorial elite' (Bauman 2000: 13). They lack a final destination which guides their itinerary, not specific and privileged places compared with which all other places and movements are subservient. They 'move from place to place in a strictly regular succession following the order of things rather than composing that order as they move in and dismantling it again as they move out'. As such, their use as a metaphor for dynamism in a Postmodern world can be questioned as inappropriate.

Bogue (2004: 170) meanwhile notes Miller's (1993: 11–12) criticism of nomadology and the contribution of Deleuze and Guattari (1986). Miller suggests that the realities of nomadism are ignored, that selected elements from 'scattered anthropological sources' have tended to romanticise their image creating a process of 'pseudo-colonial subjugation'. Bogue refutes much of Miller's arguments suggesting that Deleuze and Guattari actually made none of these claims which have derived only from their many and varied interpreters; however, the debate remains unresolved.

Bauman (1998: 240), cited in Urry (2001: 240), is also critical of nomadic metaphors asserting that nomads actually follow regular and predictable patterns. From a postmodern perspective particularly appropriate to the times, vagabonds and tourists were much more plausible since they lacked regularity. The vagabond is a 'pilgrim without a destination, a nomad without an itinerary' (Urry 2000a: 29), whilst the tourist:

> pay(s) for their freedom; the right to disregard native concerns and feelings, the right to spin their own web of meanings… The world is the tourist's oyster… to be lived pleasurably – and thus give meaning. Bauman (1998: 243).

Wolff (1993) continues the criticism in particular of the masculinist character of many nomadic metaphors whilst Clifford (1997: 377) suggests that the

postmodern nomad is 'unmarked by the traces of class, gender, ethnicity, sexuality and geography' and thus clearly unrealistic. This view is backed by Jokinen and Veijola (1994) who also suggest that maleness could be overcome at least in part by further use of nomads but in the form of prostitute, babysitter and au pair.

Meanwhile, Budd et al. (1990: 176) suggest that:

> Unless it is reflexive and critical, nomadic subjectivity is unlikely to organize meaningful political thought or activity, especially against elites whose thinking is more organized and purposeful. People who are nomads cannot settle down.

Cresswell (1997: 364) places nomadology in the context of state versus individual and stasis in comparison with dynamism, something that is familiar in an appreciation of maritime governance. The nomad is:

> never re-territorialized, unlike the migrant who slips back into the ordered spaces of arrival. The metaphorical space of the nomad is the desert, flat, smooth, curiously isotropic. The nomad shifts across this tactile space making the most of circumstance, not unlike the rhizomic vegetation that shifts location with changes in the weather.

This individualism, dynamism, flexibility contrasts with that of the state, which acts in Cresswell's terms as 'the metaphorical enemy of the nomad, attempting to take the tactile space and enclose and bound it' something re-emphasised by Miller (1993: 13). The state is dedicated to controlling flows, evidenced repeatedly in its failure to address dynamism in governance, to make them 'run in conduits'. In Deleuze and Guattari's view, the nomad represents all that is mobile, free, flowing, dynamic—rioting, revolution, guerrilla warfare:

> Nomads provide new models for existence and struggle. The nomad-self breaks from all molar segments and cautiously disorganizes itself. Nomad life is an experiment in creativity and becoming, and is anti-traditional and anti-conformist in character. The postmodern nomad attempts to free itself of all roots, bonds and identities and thereby resist the state and all normalizing powers. Best and Kellner (1991: 103).

Urry (2001: 239) contrasts the nomad with the desires of the state whose main task is to 'striate the space over which it reigns… not only to vanquish nomadism, but to control migrations and, more generally, to establish a zone of rights over an entire exterior, over all flows. Deleuze and Guattari (1986: 59)'. All things can be perceived as a journey, not least the process of policy-making and the challenges this presents can also be woven into this journey characterised by the actions and desires of the major stakeholders, characteristically in our case shipowners and their allies.

Gilroy (1993: 4) takes this further using the metaphor of the ship in his discussion of the dispersion of Afro-Caribbean diaspora. He sees it as a 'living, micro-cultural, micro-political system in motion'.

> Ships were the living means by which the points within that Atlantic world were joined. They were mobile elements that stood for the shifting spaces in between the fixed spaces that they connected. Accordingly they need to be thought of as cultural and political units… (ships) were… a distinct mode of cultural production. Gilroy (1993: 16–17).

Nomads have a clear relationship with territory explored by a number of authors and this also has a close connection with our discussion of nation-states and governance. Malkki (1992: 31) agrees quoting Deleuze and Guattari (1988: 23) who suggest:

> History is always written from a sedentary point of view and in the name of a unitary State apparatus, at least a possible one, even when the topic is nomads. What is lacking is a Nomadology, the opposite of a history.

They also go on:

> We know about the problems States have always had with journeymen's associations, or compagnonnages, the nomadic or itinerant bodies of the type formed by masons, carpenters, smiths etc. Settling, sendetarising labour power, regulating the movement of the flow of labour, assigning it channels and conduits, forming corporations in the sense of organisms, and, for the rest, relying on forced manpower recruited on the spot (corvee) or among indigents (charity workshops) – this has always been one or the principal affairs of the State, which undertook to conquer both a band vagabondage and a body nomadism. Deleuze and Guattari (1988: 368).

Continuing in this vein, they emphasise that nomads have their own territories moving from one point to another, aware of points with value—water, dwelling, assembly, etc. However, what makes them nomadic is that the territory is always subordinate to the paths between them. They are thus focussed on the process rather than the form; the movement rather than the stationary; dynamism rather than stasis; and as such, their configuration is very much a mirror of how governance should be.

Noyes (2004: 159) stresses the links between nomads and territory in that although society increasingly focuses upon individuals, shopping and surfing the Internet like nomads, with technologies increasingly releasing us from vocational ties to territory, we remain confronted by territorial demands and constraints. Thus, on the one hand, society desires a more nomadic existence and on the other the importance of territory (land and property ownership, a national focus, a home) remains a contradiction which is undeniable. The maritime industry is much the same but exhibiting perhaps a more deliberate trade-off of the territorial ised/deterritorialised dialectic (national flag, domestic subsidy versus global markets and regulations) taking the best from each and rejecting the less palatable. Braidotti (1994: 5) suggests:

> Not all nomads are world travellers; some of the greatest trips can take place without physically moving from one's habitat. It is the subversion of set conventions that defined the nomadic state, not the literal act of travelling.

Urry (2000a: 28) considers the relationship between nomad and territory to be fundamental, if negative. Thus, he talks of nomad territorialisation which aims to 'challenge disciplinary limits and hegemonic cultural practices, to *marginalise the centre* and especially the masculinist, imperial, white and academic culture of the *west*' (italics original).

Cresswell (1997: 365) locates nomadic territory in urban space, understandable if considering a true and unadulterated nomad rather than the nomadic metaphor

we have adopted. Utilising Deleuze and Guattari's notion of smooth and striated space, he locates the nomad in the former, threatening the power which is found in the striated space of the city. This smooth space is:

> sprawling, temporary, shifting shantytowns of nomads and cave dwellers, scrap metal and fabric, patchwork, of which the striations of money, work, or housing are no longer even relevant. Deleuze and Guattari (1988: 481).

Consequently, one of the main tasks of the modern state is to striate the space which it controls—something relatively easy in urban areas but which is almost impossible when we come to the sea which despite its proximity to national power, remains elusive and consequently of great value to the smooth space searching shipowner who acts almost as if nomadic. Despite addressing the urban nomad, this all sounds eerily familiar in a maritime world where vessels are moved around both physically and virtually, between temporary and shifting registers, characterised by a patchwork of regulations and institutions. However, the regulated striations of housing, work and money, the product of government regulators of all jurisdictions are increasingly irrelevant. True nomads are never accommodated or incorporated within the striated spaces of power and the nomadic maritime equivalent is much the same.

All this can be seen from a postmodern viewpoint (see Roe 2013 once again for a maritime perspective). Mobility as a concept is essentially postmodern in that it emphasises change, movement, dynamism and flux in opposition to stability and stasis—the latter in direct contrast to much of the postmodern movement. We return to this later with a discussion of time geography and its attempts to accommodate place not as statically rooted but as an arena for people as they act out 'place ballets'—the 'collective effect of individual bodies moving through space' (Seamon 1980). Seamon and Nordin (1980: 35–36) use the example of a Swedish marketplace to illustrate the value of such an approach in understanding the structure of society, an arena where institutions and individuals move together to generate the daily activity of a particular location or event. The maritime sector falls easily into place here and the use of metaphors of this type to understand what is actually going on beneath the labyrinth of attitude, power, emotion and the associated subtleties can be valuable.

Cresswell (2006: 29) sees movement as essentially dysfunctional as the principle of least effort is always more rational—generally speaking nothing moves unless it has to. Thus, not only nomads, but all forms of transport (including shipping) are inefficient and policy-making (at least conventionally) should be trying to minimise this.

Not everyone agrees of course—this is postmodernism. Morley (1999: 158) for example suggests that the 'idea that somehow we all experience some new form of postmodern nomadology… appears little more than a cruel nonsense', particularly there are in effect many different relations of space and place and none of us can escape from at least some of these relationships. Meanwhile, Noyes (2004: 160) discusses the duality of 'nomad capitalism' first identified by Williams (1989: 124) which in turn led to the emergence of Palan's (2003) 'nomad millionaires'. This new

breed had lifestyles 'increasingly dependent on a virtual world-space, a technological negation of both physical space and solar time'. This generates an increasing divide between the mobile rich and poor; between the traditional and the postmodern nomad; between the disembodied wanderer and the brute reality of the vagabond.

However, despite the obvious differences between two groups characterised in particular by the same feature (excessive mobility), they co-exist and the same can be seen throughout postmodern society; across differing communities, societies, cultures, industries, professions and so on. The maritime sector is far from exempt, and the contrast between the rich and poor shipping interests, between the sophistication of a new Maersk vessel and that of an ageing tramp, between third and first world port facilities, and between supply chains in Africa and Europe is clear, and yet all characterised by a desire for mobility.

Peters (1999: 32–33) brings it all together seeing nomads as central to a postmodern conception of life with 'passing' far from traumatic but rather a 'characteristic motion of subjectivity through signs, otherness and time. Most of them see in the nation-state no promised land, just another Pharaoh to challenge'. In Deleuze and Guattari's minds; a postmodern hero.

Cresswell (2006: 26) sees all this in metaphysical terms contrasting the sedentarist with the nomad requiring an appreciation of the relationships between mobility, spatial order and place. The sedentarist places mobility into the realm of place and rootedness making mobility 'morally and ideologically suspect, a by-product of a world arranged through… spatial order'. The nomad places themselves first revelling in 'notions of flow, flux and dynamism'. Place is an 'irrelevance, trapped in the past, both confining and reactionary as well as practice and material culture'. Thus, sedentarists see mobility as a threat, a disorder that needs controlling, reflecting much of the existing framework for maritime governance with its strict structures and focus on stasis.

> The drifter, the shiftless, the refugee and the asylum seeker have been inscribed with immoral intent. So too, the travelling salesman, the gypsy traveller, and the so-called wandering Jew. These have all been portrayed as figures of mobile threat in need of straightening out and discipline.

Existing maritime governance is equally as dismissive of flux and change, opting for a structure to policy-making that dates from at best the early twentieth century and at worst some centuries before this. This sits uncomfortably with the shipping industry and its enthusiastic attitude for embracing some of the impacts of globalisation (for example, flag-hopping; tonnage tax; global markets for seafarers) which are inherently mobile and rely on the ephemeral characteristics of mobility to prosper. This in turn is more a reflection of the desire of the maritime sector to compete within a globalised world than some sort of moral or metaphysical position.

Malkki (1992: 32) can help us to understand this considering sedentarist attitudes reaffirming a:

> common-sense segmentation of the world into things like nations, states, countries and places. This process is so ingrained as to be invisible… such thoughts actively territorialize identities in property, in region, in nation – in place. They simultaneously produce discourse and practice that treats mobility and displacement as pathological.

As Hannam (2009: 103) indicates, 'mobility, then, as a concept, has circulated metaphorically', and the nomad can help to 'fill contemporary discourses of social and spatial mobility' reflecting a need to reverse the obsession in western society for order whether for society, the organisation of space or how it is all governed. In reaction to this, the ideas of complexity and disorder, with an appreciation that perhaps there is not always an order or even a truth that is objective and that all such interpretations are expressions of power that need to be understood, reflected or resisted in the development of governance itself.

In the words of Zembylas and Vrasidas (2007: 71), the nomad therefore is someone who 'learns to live with the discomfort of uncertainty and the complexity of change', and as a consequence forms an ideal contrast to the fixity of current maritime governance and a reflection of the direction in which it needs to move.

Global Fluids

> Neither boundaries nor relations mark the difference between one place and another. Instead, sometimes boundaries come and go, allow leakage or disappear altogether, while relations transform themselves without fracture. Sometimes then social space behaves like a fluid. (Mol and Law 1994: 643).

We can now return to the ideas of fluids, an interpretation of the impact and mechanism of globalisation that has become increasingly popular (see for example Peters 2002: 11–12). Hier and Greenberg (2007: 321–322) consider the significance of fluidity to mobility, privacy and resistance utilising the concepts of liquidity and solidity as a basis for understanding changes in human mobility. Taking Bauman's (2000) approach, they see liquidity as a metaphor for modernity, something which may have value for maritime governance. Mol and Law (1994) took blood and more specifically anaemia as a vehicle to illustrate issues of networks, regions and power. However, this time we will take the concepts of movement and flux and their metaphorical interpretation and use the fluid analogy to clarify the need for flexibility, change and progress in maritime governance.

To get a clear definition of what is meant by the term global fluid, we can turn to the originator of the concept. Urry (2000a: 38, 2010) moves away from Bauman's 'gardener' interpretation of policy-making, turning to 'game-keeping' metaphors (Spaargaren and Mol 2008: 352) suggesting they are 'remarkably uneven and fragmented flows of people, information, objects, money, images and risks across regions in strikingly faster and unpredictable shapes'. The emphasis is away from networks and upon 'heterogeneous, uneven and unpredictable mobilities'. Mol (2007: 302) sees them as 'spatial patterns structured neither by boundaries nor by more or less stable relations, but by large flexibility, liquidity, gel-like movement and permissible boundaries'. Others have contributed to this debate even in some cases, if they do not all realise it—see for example Deleuze and Guattari (1986, 1988), Lefebvre (1991), Mol and Law (1994), Waters (1995), Albrow (1996), Kaplan (1996), Eade (1997), Shields (1997), Mol and Spaargaren (2005: 97), Morgan (2005: 28), Hannam et al. (2006), and Kemp (2009: 90–91).

Hannigan (2002: 281–282) suggests that the significance of global fluids in globalisation has been captured particularly well by Appadurai (1990) outlining five dimensions that in turn characterise globalisation.

- Ethnoscape: this is the 'landscape of persons who constitute the shifting world in which we live—tourists, immigrants, refugees, exiles, guest workers and other groups and individuals on the move'.
- Technoscape: this is the configuration of global technology moving information at high speed across national boundaries almost at will.
- Finanscape: typified by the flow of 'megamonies' through currency markets, commodity exchanges and stock exchanges.
- Mediascapes: 'image-centred, narrative-based accounts of reality and the infrastructure required to produce and disseminate them'.
- Ideoscapes: these are also image-based but relate to the 'ideologies of states and the counter-ideologies of social movements'. They are inherently political.

Each of the five 'scapes' is interrelated. Hannigan suggests that modern cinema provides excellent examples citing Mira Nair's *Monsoon Wedding*.

> Set in the week before the wedding of the daughter of a well-to-do Punjabi family in New Delhi…. The groom is a computer engineer living in Houston and the bride works in a television station where she is having an affair with her boss, a talk show host. Others in the wedding party have flown in from Australia. Even as the routines of a traditional arranged marriage unfold, everyone is constantly talking on their cell phones, including the wedding coordinator who calls himself an 'event planner' and distributes business cards with his new email address. The bride's younger brother frequently skips school and spends most afternoons watching cooking shows on television. There is a sense here that members of these two Indian families are constantly in motion, actively re-inventing their lives, even as they continue to embrace tradition.

There are a number of key features upon which most agree and summarised by Urry (2000a: 38–39):

- They demonstrate no clear point of departure or arrival, just de-territorialised movements or mobility. It is here that the concept of rhizomatic in contrast to arboreal raises its head;
- They are channelled along particular territorial 'scapes' or 'routeways' which can wall them in;
- They are relational in that they productively affect relations between the spatially varying features of a scape which would otherwise remain functionless;
- The move in a particular direction at certain speeds but with no necessary end-state or purpose;
- They possess different properties of viscosity and, as with blood, can be thicker or thinner and hence move in different shapes at different speeds;
- They move according to certain temporalities, over each minute, day, week, year and so on;
- They do not always keep within walls—they may move outside or escape like white blood corpuscles through the wall of the scape into tinier and tinier capillaries;

- Their power is diffused through these various fluids into very many often minute capillary-like relations of domination/subordination;
- Their power is exercised through the intersection of various fluids working on diverse senses;
- Different fluids spatially intersect in the empty meeting grounds of the non-places of modernity, such as motels, airports, service stations, the Internet, international hotels, cable television and expense account restaurants.

Urry (2005a: 245–246) provides a number of examples: world money (Eatwell and Taylor 2000), automobility (Urry 2004a), social movements (Sheller 2000), digitized information (Brand 1999), the Internet (Plant 1997), international terrorism (Gunaratna 2002), to which could be added shipping. Urry stresses the ambiguity in all this with one of the best examples of a global fluid (itself an excellent example of globalisation) being the anti-globalization movement:

> Like a virus, uncontrollable and untameable, this inspiration flowed from city to city, country to country, spreading at the same speed as the trillions of dollars involved in the reckless unsustainable money game of international capital… Capital's dream of super fast networks… was turned on its head. Aingers et al. (2003: 65).

Hannigan (2002: 278) provides an interpretation of Urry's definition placing global fluids within his understanding of the relationship between culture, social cohesion and globalisation and using three metaphors of space—regions, networks and global fluids. The regions can be represented by the bounded nation-state, the continental trade and the global economy; the networks are the flows and their interconnections that bind these states together (financial, physical, communications, etc. exemplified by stock exchange markets, commodity trades, street gangs and drug traffickers); and global fluids which are a much more chaotic and flexible 'de-territorialized movement(s) of people, information, objects, money, images and risks across regions in undirected and nonlinear fashion and at variable speeds' (Hannigan 2002: 278). They have purpose, speed and definition but not necessarily any particular end-state.

Hannam (2009: 106) also provides a link between the flexibility and chaos of the nomad with the use of fluids as metaphors and in so-doing provides a framework for understanding the needs of effective maritime governance, the latter lying as it does, within a chaotic yet patterned globalised marketplace, exhibiting the flexibility and mobility associated with fluids. Hassan cites Urry (2003: 101) who suggests that society is not wholly organised according to 'globally integrated networks', characterised by structures such as transnational corporations with, in Hassan's words, 'the ability to nullify (and exploit) space-time constraints'. Instead, there are global fluids, defined by Urry as highly mobile and viscous formations whose shapes are uneven, contingent and unpredictable and which 'create over time their context of action'. Can we recognise the international shipping industry here acting as a global fluid? Adaptable, moveable, coherent yet multifaceted, taking advantages of every possibility in the space-time encyclopaedia of options.

Before we go on to look at global fluids in more detail and their contribution to the debate on maritime governance, we need firstly to spend some time looking

at the use of fluids as metaphors more generally. Padgett (1980: 584) is emphatic about the failure of networks as a metaphor for governance systems because most organisations do not utilise a process of fluid participation and are constrained by much more rigid structures.

Kennedy (2007: 272) emphasises the increasing reliance upon movement metaphors which includes those referring to fluids:

> Thus, the globalization literature is replete with concepts and metaphors attempting to clarify… altered or intensified spatial (and related temporal) realities including the experience of movement; de-spatialization and de-territorialization (Appadurai 1990; Scholte 2000); time-space compression (Harvey 1989); scapes (Appadurai 1990); the space of flows (Castells 1996); diverse mobilities, global fluids, globally integrated networks and complex human and inhuman hybrids (Urry 2003); the ubiquity of nomadic lives and place polygamy (Beck 2000); and the possibility of leading bi-focal and multi-focal lives in several locations simultaneously through the new trans-national migration spanning borders (Basch et al. 1994; Vertovec 1999).

Thus, the increasingly global governance demanded by the maritime sector has to reflect increasing place-bound and mobile societies, based upon the impact of proximity and distance but also the new human inter-relationships operating through machines, objects, texts, symbols and images (Urry 2000a, 2003, and cited in Kennedy 2007: 273). Sheller and Urry (2000: 11–12) see the impact of global fluids in particular on public institutions, diluting their national characteristics. Instead, we have a range of global institutions which they categorise into three types:

- Those associated with orchestrating consumption (Olympic movement, World Football Cups, CNN, MTV, etc.) (Roche 2000);
- Global economic publics, such as stockholders in multinationals, the World Bank, IMF and WTO
- Global political publics (at state level such as the EU, UN, IMO and IATA); international NGOs (Amnesty International, Greenpeace, Amnesty International) and international social movements (anti-WTO; Zapatistas of Mexico, anti-globalists).

They also see the emergence of a global public, with a strong sense of communication and mobile opportunities, living within cultures that are mobile and flexible. This is exemplified by the changes that have occurred in what they term the ‘staging of publicity’. Communication has always been with us although its extent, reach and speed have changed markedly in recent years. What has also changed are the characteristics of this ‘publicity’ as national citizenship manifesting itself through the public broadcasting of the twentieth century, has given way to the broadcast of opportunities and the prime use of mass communication as a marketing and sales opportunity. This has been accompanied by the extension of flows of fluids of information, images, sounds and the like, reinforcing the development of global fluids which necessitate new mechanisms for effective governance. The maritime sector reflects all the best and worst in these changes, with clear examples of global fluids in the effectively free movement of information, money, people, goods and the like across national boundaries and with increasing

speed and simplicity. What makes it perhaps more interesting is its ability to take advantage of these features of fluid globalisation to enhance its position both within its own bounds and across other global activities, for example within major global or supranational political organisations where its influence can appear at times to be over-stated. Classic examples of the industry's influence at the European Commission enabling it to 'bend' the normally fiercely upheld principles of the Treaty of Rome (tonnage tax, liner shipping exemptions, etc.) are notable. Shipping is fluid and consequently the globalisation of this fluidity is more marked.

Not everyone is so enamoured by the concept. By definition, global fluids are chaotic and unpredictable and consequentially commonly attract criticism for these very features. Hannigan (2002: 281) for example suggests that they are indisciplined because they are neither hierarchically nor territorially bound, lacking the formality and predictability that such features would inject.

Kemp (2009: 91) suggests that global fluids have their place but commonly lack analytical rigour. Urry's tendency to categorise fluids generally—for example regarding all travelling people together as one fluid—inevitably means that the fluid is unpredictable, heterogeneous and variable. Kemp goes on to cite McLennan (2003: 555) who suggests that a more finely devised separation of the constituent parts of fluids would make more sense and be more useful. 'The *flows* of refugees and transnational capitalists are likely to have different characteristics and logics'.

McLennan (2003: 555) suggests that Urry's (2000b: 186) concept of global fluid also demands acceptance of another 'implausible and polarisation' of society rather than accepting 'successive styles of understanding and enablement/control'. Urry suggests that the idea of societal fluids only applies to the present era and that not long ago movements of people, things, money, ideas, images and wastes were inconsequential. McLennan suggests that mobilities have been tracked by sociologists for many years and certainly since the Industrial Revolution from the eighteenth century. 'Fluids and their associated networks are not new, but changed'. 'Commerce, ideas, fashions, machinery, cuisine, cultures of fellowship and association have always been on the move, filtered and stylized through particular networks and associations, passing through many channels of transmission'. Urry (2000b: 192) quotes Law (1994: 23): 'left to their own devices, human actions and words do not spread very far at all'. McLennan describes this as 'extraordinarily shallow' as human actions and words are never left to their own devices, and what seems far today will seem close tomorrow.

Angelides and Caiden (1994: 227) provide us with a link between the concept of global fluids and policy-making that helps to illustrate the benefits that might be realised from taking such an approach to governance in any sector, maritime included. They start by identifying those features of current policy-making that we have noted earlier, which in turn make effective maritime governance unlikely:

- definition of problems abstracted from their environment and believed to be solvable;
- searches for a best solution and quantification of information;

- reliance on data and models as modes of enquiry;
- assumption that the scientist is an unbiased observer outside the system being studied;
- tendency to ignore the individual in the search for generality;
- time is viewed as linear in which the past is separate from the present and future;
- assumption of linearity—with no discontinuities, no critical thresholds;
- supremacy of rationality over intuition in decision-making;
- incrementalism; notion of absolute control; reliance on scapegoating when things go wrong;
- a tendency to exclude the interests of future generations.

This range of what he describes as 'global pragmatics and future problematics' present 'difficult challenges' to contemporary maritime policy-making. How to:

- Tolerate and live with uncertainty, ambiguity and complexity without resorting to simplification and reductionism;
- How to acquire freedom, develop and embrace creative and innovative learning;
- How to develop new limits of knowledge and a new kind of 'thick knowing' to replace the existing 'thin' form of detached and reductionist reasoning;
- How to get rid of old and heavy ideological baggage and move beyond the many dichotomies in order to redesign institutions that will better function in a fluid and uncertain manner;
- How to embrace complementarity and acknowledge that conceptual pluralism is necessary to provide a full account of reality;
- How to start thinking in terms of both/and rather than either/or.

Global fluids present one opportunity to address some of these fundamental issues that may well in some cases be unachievable but which in Angelides and Caiden's terms need to be 'articulated'. Peters (2002: 13) agrees seeing policy-making as addressing 'streams of problems, solutions, opportunities and actors', acting with fluidity.

Complexity

> Hegel said that true thinking is thinking that looks death straight in the face. We could add that true thinking is thinking that looks disorder and uncertainty straight in the face. Morin (2002: 329).

> Facets of public policy are more difficult to study systematically than most other phenomena investigated empirically by political scientists. Our attempt to test hypotheses with some rigor demonstrated that public policy becomes troublesome as a research focus because of inherent complexity – specifically because of the temporal nature of the process, the multiplicity of participants and policy provisions, and the contingent nature of theoretical effects. Greenberg et al. (1977: 1532).

> The protestors are winning. They are winning on the streets. Before too long they will be winning the arguments. Globalisation is fast becoming a cause without credible arguments. Financial Times (17th August, 2001).

The comment from the Financial Times in particular provides a vital link between globalisation, governance and complexity in that the process of change (here exemplified by globalisation and the effect of protest) is typically and almost inevitably complex. Taking this idea further, McLennan (2003: 555) provides a link between the global fluids of the last chapter and notions of complexity which are central to the difficulties of designing and implementing meaningful maritime governance. He follows the line of Urry (2000b) in focussing upon:

> the loose ends, by-products and chaotic spillovers of systems, phenomena and their interaction. If we are compelled to conclude that spiralling global disequilibrium and constant disorder are prevalent today… then we need a greater armoury of notions that register this non-linearity.

The convention of establishing conceptual and social ordering for the processes that drive governance needs to be replaced by systematic pluralisation. The existing orderly conventions have a long history. Thomas More in *Utopia* (1965: 102) for example suggests that there is a type of person who: 'rather than live in wretched poverty at home, volunteers for slavery in Utopia'. Parker (2009: 1297) suggests that this:

> is what organization means to them. A steady job, shops with food in them, and a police force that enforces the law: this has its attractions, and anyone who studies organization will understand the importance of certain sorts of predictability. Lucifer would rather 'reign in Hell than serve in Heaven' (More 1965: 263).

And this is central to a demand that the role of metaphors be accepted to replace the questionable 'deeper, leaner and more revelatory vocabulary'. He cites global fluids as a move in this direction and later (Urry 2004b: 18) confirms the relationship between fluids, globalisation, complexity and order seeing the fluid model reflecting the organisation that exists within the disorder. Law and Urry (2004: 401) follow this up suggesting that complexity theory is based on three assumptions which in turn provide a definition:

1. There is no necessary proportionality between causes and effects
2. Individual and statistical levels of analysis are not equivalent
3. System effects do not result from the simple addition of individual components.

Complexity theory has many contributors including Thorn and Welford (1994: 667), Medd and Marvin (2005: 44–45) and Celek and Er (2006: 879–887). Thrift (1999: 35) treats complexity theory as a 'set of metaphors concerning holistic emergent order', something that harmonises with recent discussions of governance and holism, particularly in the EU maritime sector. The metaphors of complexity theory are 'able to travel and gradually become a *commonplace* structure of intelligibility'. Thus, the metaphor provides the mechanism for complexity to be

understood within the context of governance and its inherently diverse, nonlinear and dynamic characteristics. And governance is inherently complex:

> If you see the whole thing - it seems that it's always beautiful. Planets, lives… But close up a world's all dirt and rocks. And day to day, life's a hard job, you get tired, you lose the pattern. Le Guin (1974) quoted in Marston et al. (2005: 416).

> Or as Thrift believes, knowledge is no longer based in eternal 'truths' but is simply 'an archipelago of islands of epistemic stability in a sea of disorder, fluctuations, noise, randomness and chaos. Thrift (1998: 32) in Herod et al. (1998: 4).

Urry also questions the relationship between our earlier discussion of metaphor and complexity (2004b: 15) asking 'whether complexity can generate productive metaphors' for the analysis of the post-societal world? He goes on to take a positive view of the relationship as social scientists are 'in the business of formulating the metaphors for this new science, metaphors that with luck, will guide the way these sciences are done over the next fifty years or so' (Arthur 1994: 680). Well we are at least 20 years into that period and although the value of complexity and the metaphor has been recognised, there remains much to be done in their application particularly to governance and even more so in the maritime sector. Urry (2005a: 249) continues in a later paper to quote Gray (2001) who suggests that the current state of the globe is 'an intractably disordered world' but one which Urry feels complexity can provide metaphors for analysing the disorderliness.

Artigiani (1987: 251–252) notes Prigogine and Stengers's (1984) contribution to the development of complexity theory and in particular the 'dissipative structures' model that can be applied to both scientific and social disciplines (see also Gemmill and Smith 1985: 708–709; Allen et al. 1985: 85). Although he looks at its application to political revolution, the value and applicability of the approach is clear. The model itself focuses upon bifurcation points (similarly stressed by Wilson 1981) and the significance of change:

> Locatable moments at which a destabilized structure can make an unpredictable leap to one of several alternative stable states. There, randomly joined elements can form a nucleation with a privileged relationship to the system, determined by feedback loops that enable it to become dominant, producing a new structure. The stable state chosen is selected as a result of local conditions that are completely aleatory. But bifurcation points are reached through historical processes that can be fully described because they are essentially deterministic. Thus history, the record of its experiences as a system in time, defines a dissipative structure, while the randomly generated leaps at bifurcation points which generate its evolutionary growth are inherently non-deterministic. Artigiani (1987: 251).

Despite attacks on philosophical grounds (see for example Edens 2001; and Bishop 2004), the principles of the model have become widely accepted and the issue of organisational system change has become established in organisational learning (Argyris and Schon 1978; Argyris 1982; Golombiewski et al. 1975; Sheldon 1980; Davis 1982; Miller and Friesen 1982). Later, Nicolis and Prigogine (1989: ix) see two disciplines as essential to the early development of complexity theory—non-equilibrium physics and dynamical systems, the latter particularly characterised by instability, and as both problems of equilibrium and instability

characterise governance this makes its application beyond the physical sciences that much more relevant.

Dillon (2000: 4) quotes Stengers (1997: 4): 'the theme of complexity has played an ambiguous role in discourses on science', deriving from the physical sciences, nonlinear mathematics and microbiology. Its application to the social sciences, and therefore its applicability to the issues of governance, has been a long and tortuous one that now has applications to international politics, strategic thinking, military science and all aspects of globalisation (including shipping) (Alberts and Czerwinski 1997; Cebrowski and Gartska 1998; de Landa 1991; Jervis 1997; Rosenau 1992). This has not been achieved without a struggle:

> We usually opt for one level of analysis exclusively, without considering the range of other alternatives. To judge from the literature this choice is a private act of faith, not to be reported publically. Watson (1978) quoted in Meentemeyer (1989: 163).

And this is despite the recognition of complexity that prevails; that:

> logic and philosophy are messy, that language is messy, that chemical kinetics is messy, that physics is messy and finally that the economy is naturally messy. And it's not that this is a mess created by the dirt that's on the microscope glass. It's that this mess is inherent in the systems themselves. You can't capture any of them and confine them to a neat box of logic. Arthur (1994), cited in Waldrop (1993: 329) and quoted in Thrift (1999: 32).

Benko and Strohmeyer (1997: 291) add their view that a process of *reflexive accumulation* is going on that is inherently complex in nature, linking together culture and the economy bringing together the decline of the 'national' along with the rise of the 'regional' and 'local'. Thus, globalisation itself is a concept where it is helpful to take a complex approach.

Smith and Jenks (2006: 4) suggest that the origins of complexity theory are as complex as the issue itself although Urry (2005b: 3) is insistent that 'complexity' does not necessarily mean 'complicated':

> Complex systems analysis investigates the very many systems that have the ability to adapt and co-evolve as they organize through time. Such complex social interactions are likened to walking through a maze whose walls rearrange themselves as one walks through… Complexity investigates emergent, dynamic and self-organizing systems that interact in ways that heavily influence the probabilities of later events.

Some of the earliest moves came with Lorenz, noted in Gleik (1987: 11–31) whilst constructing computer models of weather systems. Meanwhile, many others have noted the development of complexity theory over time including Hayles (1991, 1999), Eve (1997), Price (1997) who relates it to Postmodernism, Cilliers (1998), Byrne (1998) and Schnitman and Schnitman (2002).

Urry (2005b: 1) notes the origins of the 'incursion' of complexity into the social sciences from the 1980s derived from developments in the formal sciences along with economics and emerging from what Fraser et al. (2005) consider neovitalism in social thought. This was accompanied by a more general increase in complexity in the 'structure of feeling' which challenged the existing social order.

Urry continues identifying 'transformations' such as chaos, complexity, nonlinearity and dynamical systems analysis. There was a 'shift from reductionist analyses to those that involve the study of complex adaptive (*vital*) matter that shows ordering but which remains on *the edge of chaos*'. Urry goes on to identify a range of applications where complexity has now become a significant intellectual contributor including alternative healing, architecture, consultancy, consumer design, economics, defence, fiction, garden design, geography, history, literary theory, management, New Age, organisational studies, philosophy, politics, post-structuralism, small world analyses, sociology, stock car racing and town planning (Thrift 1999).

He also provides a reading list to die for (or perhaps to die as a consequence of attempting to read them all). They include Stewart (1989), Kauffman (1993), Cohen and Stewart (1994), Casti (1994), Arthur (1994), Nicolis (1995), Luhmann (1995), Krugman (1996), Capra (1996), Prigogine (1997), Jervis (1997), Rescher (1998), Holland (1998), Byrne (1998), Kelly (1998), Cilliers (1998), Hayles (1999), Watts (1999), Rycroft and Kash (1999), Rasch and Wolfe (2000), Capra (2001), Gladwell (2002), Buchanan (2002), Wolfram (2002), De Landa (2002), Barabasi (2002), Taylor (2003), Watts (2003), Surowiecki (2004), Ball (2004). And that is only up to 2004. These all followed the earliest developments noted in Keil and Elliott (1996) and to which can be added Buchanan (2002).

Thrift (1999: 39) adds to the list of complexity contributions suggesting contributions by de Lillo (1990), Argyros (1991), Mirowski (1994), Jones (1994), Barnett et al. (1996), Isard (1996), Benitez-Rojo (1996), Jencks (1996), Khalil and Boulding (1996), Livingston (1997), and Ferguson (1997), in areas additional to those cited by Urry including town planning, regional science, literary theory, anthropology, art, film and drama.

However, an understanding of complexity theory is far from complete and continues to develop. McLennan (2003: 4) for example notes that:

> complexity and emergence are still in the mode of general ideas rather than modelled solutions and so whilst the trail of suggestive notions – phase transitions, constrained generating procedures, state trajectories, time irreversibility, self-organizing criticality, increasing returns, positive feedback, strange attractors, networks, nodes, co-evolution, membranes of reorganization, broken symmetries and the rest - is exciting to follow, it is less clear that these leads are *applicable* as such.

The definition of complexity is as complex as the concept itself although as Pollitt (2009: 213) remarks it is part of a very abstract and generalised theory 'about almost everything, rather than a theory about some specific sector, process or problem'. Consequently, it is ambitious and underneath it has the aim of understanding the modern condition of governance amongst many other things. As such, it has much to offer an understanding of maritime governance and policy-making.

Mihata (1997: 31) notes that complexity takes much from how global structures arise from both local interactions as well as a series of 'simple rules' emerging from a process of central coordination. Law and Urry (2004: 400–401) see complexity as 'a wide array of innovative notions that… take social investigation a long

way from conventional linear analysis of structure or action/agency'. It is characterised by 'unpredictable' yet patterned results can be generated, with 'small causes on occasions producing large effects and vice versa'. Derived from this notion, complexity theory is based upon three assumptions (Law and Urry 2004: 401):

1. There is no necessary proportionality between cause and effect;
2. Individual and statistical levels of analysis are not the same;
3. System effects do not result from the simple addition of individual components.

Lee (1997: 20–21) also contributed to the complex task of defining complexity, suggesting it:

> has to do with the interrelatedness and interdependence of components as well as their freedom to interact, align, and organize into related configurations. The more components and the more ways in which the components can possibly interact align and organize, the higher the complexity.

Elliott and Kiel (1997: 65) suggest that complexity remained a relatively new concept at the time they were writing and as such there was no generally agreed definition. Mayer-Kress (1994) for example proposed that definitions were an annoyance as they hindered understanding the very complex nature of complexity. Gell-Mann (1994) considered that complexity was a function of interactions between elements in a system rather than behaviour, the latter preferred by Nicolis and Prigogine (1989). However, all commentators seem agreed that complex systems exhibit nonlinear behaviour (see for example Lewin 1992; Waldrop 1992 and Morgan 1998: 222, 2005: 27). Coveney and Highfield (1991: 7) for example suggest that complexity theory comprises:

> …the study of the behaviour of macroscopic collections of (interacting) units that are endowed with the potential to evolve in time. Their interactions lead to coherent collective phenomena, so-called emergent properties that can be classified only at higher levels than those of individual units.

Or to put it another way:

> From the interaction of the individual components (of a system)… emerges some kind of property… something you couldn't have predicted from what you know of the component parts… And the global property, this emergent behaviour, feeds back to influence the behaviour… of the individuals that produced it. (Langton, quoted in Thrift 1999: 33–34).

Urry (2005a: 237) taking the work of Mitleton-Kelly (2003) suggests that complexity 'science' is designed to 'investigate systems that adapt and evolve as they self-organize through time'. Consequently, it tends to focus upon 'emergent, dynamic and self-organizing systems that interact in ways that heavily influence the probabilities of later events' (Prigogine 1997: 35). As such, it is particularly pertinent for the development of meaningful governance where the issue of later events is central to policy-making and the concepts of emergence and dynamism need to be a focus. Urry cites Axelrod and Cohen's (1999: 14) use of the term 'dynamical zoo', 'wildly unlike the smoothly additive changes of their simpler cousins'. This is once again familiar in our consideration of existing maritime governance and its placid acceptance of unchanging governance, stable policies and

amendments to existing policy which are clearly additive. He contrasts this simplistic view to the real world, full of 'avalanches, of founder effects, self-restoring patterns, apparently stable regimes that suddenly collapse, punctuated equilibria, butterfly effects and thresholds as systems tip from one state to another'. In the same year (Urry 2005b: 5), he goes on to stress the importance of emergence in complexity, the spontaneous development of collective properties or patterns which are not implicit in individual components, non-reducible and nonlinear (Nicolis 1995).

Urry rejects what he calls the 'dichotomies of determinism and chance' as well as stasis and change suggesting that there is always both order and disorder in any system including maritime governance, commonly in balance but close to chaos—something we return to later. Prigogine (cited in Capra 1996: 184) agrees—'islands of order' located within increasing turbulence and disorder. 'Very small perturbations or fluctuations can become amplified into gigantic, structure-breaking waves' (Prigogine and Stengers 1984: xvii):

> Elements at one location have significant time-space effects elsewhere through multiple connections and trajectories, such as individual local decisions to drive by car (rather than to use slower modes, take public transport or live closer to work or family) resulting in extensive emergent 'far from equilibrium' effects of an 'out-of-control' global car system (see Cilliers 1998; Urry 2004a). Urry (2005a: 238).

Thrift (1999: 34) notes how there have been innumerable claims of the appropriateness of applying complexity theory to many disciplines—chaos theory, fractal modelling, artificial life, cellular automata, neural nets—and an associated vocabulary that has grown up—chaos, attractors, fractals, emergent orders, self-organisation, implicate order, autopoiesis, etc. suggesting an ill-defined but expansive discipline. Given the wide-reaching nature of maritime governance, this may be a hopeful sign.

Buijs et al. (2009: 37–38) provide another perspective suggesting 'complex causation and trajectories in and between complex cases' (Byrne 2005). They also see as essential an understanding of patterning which may be simple or less so but which always underlies complex systems. Two types of complexity are identified. General complexity assumes a set of general rules from which emergent complexity follows. They suggest that this forms the basis from which 'rules of pattern and order' follow (Holland 1998). Situated complexity assumes that reality is 'deeply complex and inherently contingent' and that general rules do not always apply. However, both the general and situated complexities have in common that they deal with patterns. These patterns may be simple and linear, distinct and obvious, indistinct and light, oscillating or continuous. But patterning there is.

And finally, Law and Urry (2004: 402) see 'criss-crossing societies (as) diverse systems in complex interconnections with their environments', that order and chaos are always found together, and that self-organisation in society is predominant, and consequently the application of complexity theory to the social sciences is obvious. Kemp (2009: 84) stresses the value of taking a complexity perspective on things and the social sciences in particular, bringing its own 'vocabulary and explanatory repertoire to account for the social world'. It 'offers concepts that are

held to apply to both the social and natural worlds, rather than arguing of a clear cut division between the two in the manner of interpretive social thought'—something also to be found in the school of critical realism (Archer 1998). Kemp (2009: 85) links this to the work of Urry (particularly *Global Complexity*, 2003), in bringing together the issues of globalisation and complexity and consequently providing empiricism to what was increasingly seen as a theoretical distraction.

So in terms of defining this rather difficult to define concept perhaps Thompson's attempt is clearest (2004: 412) and also benefits from being one of the very latest, taking its roots from the work of many others. The reader is asked to think the 'maritime governance and the maritime industry' all the whilst in considering Thompson's definition:

> Complexity is the term used to refer to self-reinforcing dynamic systems with many feedback mechanisms. In these complex systems operating in a social context, behaviour is modified as a reaction to what other agents do. The non-linearity of these systems means that small amounts of a change in inputs can have dramatic and unexpected effects on outputs. Formally, complexity is equated with the number of different items or elements that must be dealt with simultaneously by the organism or organization. But its distinctive feature is to stress the world as a system in construction, a dynamic formulation encouraging the notion of a continual process of spontaneous emergence. Multiple possible outcomes are typically associated with the mathematically inscribed non-linear modelling techniques used to isolate the network topologies. Turbulence and uncertainty abound in this environment, often further described as 'open system ecologies', where perpetual novelty results. Filling one niche simply provides new niches, and small perturbations can affect the future of multiple combinations of events.

This focus upon nonlinearity is seen by Elliott and Kiel (1997: 69) as central to the value of complexity theory in understanding policy-making and governance. Complexity should be recognised and accommodated whenever an analyst is 'aware of changing relationships between variables… and when a study involves a highly multivariate phenomenon in which multiple interactions also present the potential for non-linear behaviour'. Maritime governance is a clear candidate.

The whole issue is made more confusing by the variation in terminology that has been used. Complex systems are probably the most commonly found deviant. Dennis and Urry (2009: 59–60) use them to analyse the role of the private motor car whilst Smith and Jenks (2006: 13) provide an extensive definition which is remarkably similar to those for complexity we have already covered. Others who refer to them directly include Buijs et al. (2009) in considering public management, Engelen (1988) looking at urban areas, Mihata (1997: 31) and Lansing (2003) who takes it all on a step further to examine Complex Adaptive Systems (CAS). The latter also represent a minor deviation to core complexity theory along with Choi et al. (2001: 352–365) in particular who consider a range of issues that they believe are central to CAS—logistics, supply chains, governance and dimensionality included and illustrated with a range of examples from supply chain management with its obvious relevance to the maritime sector. Pel (2009) also provides examples of complexity and its application to transport and more specifically traffic management.

Urry (2005a) identifies a range of applications for complexity theory, reflecting Thrift's earlier (1999) contribution. He suggests that much has been borrowed from physical science and is progressively being applied in the social sciences something further emphasised by Buijs et al. (2009: 40–43) in their consideration of positivism and post-positivism and their relationship to complexity—and incidentally also the reverse where physicists are turning to the sociology of social networks (for example Watts 1999, 2003; Barabasi 2002; Buchanan 2002). All this activity is based on much earlier work by Giddens (1990) who implicitly applied complexity concepts in conceiving the modern world as a 'driverless out-of-control juggernaut which has set in motion irreversible processes across the globe' (Urry 2005a: 235). Clear divisions between the social and physical sciences are consequently unrealistic (Wallerstein 1996: 61, 63). Harvey's interpretation of time-space compression is also clearly orientated towards the complex (Harvey 1989); Bauman's 'liquid modernity' similarly so (Bauman 2000); and Hardt and Negri's (2000: 136) discussion of nation-states and globalisation rings particularly true in the light of our discussion of governance. They also note the contribution of Marx (Urry 2005a: 240–243) to the discussion of change throughout The Communist Manifesto and in particular its relevance to globalisation:

> the need for a constantly changing market chases the bourgeoisie over the whole surface of the globe. It must settle everywhere, establish connexions everywhere. (Marx and Engels 1952: 46–47. Originally published 1848).

Law and Urry (2004: 400) provide justification for considering complexity as some sort of bridge between the physical and social sciences. Both are dominated by complexity and quoting the Gulbenkian Commission on the Restructuring of the Social Sciences of the 1990s, one should not be conceiving of humanity as mechanical, but rather instead conceiving nature as active and creative, to ensure that 'the laws of nature (are) compatible with the idea of events, of novelty, and of creativity' (quoted in Wallerstein 1996: 61, 63). Thus, application of complexity theory to the social sciences (and consequently policy-making and governance) makes sense.

> Criss-crossing societies may be seen as diverse systems in complex interconnections with their environments; that there are many chaotic effects distant in time and space from their location of origin; that there are positive feedback mechanisms that mean that order and chaos are always intertwined; that there are self-organizing global networks and global fluids moving systems far from equilibrium; and that a social order is never accounted for by purified social processes…. Material worlds (are) unpredictable, unstable, sensitive to initial conditions, irreversible and rarely societally organized. Law and Urry (2004: 401).

There is much in maritime governance that needs to accommodate these complex issues; and much that currently does not.

Urry (2010: 358) later also points out the contribution of Byrne (1998), Cilliers (1998) and Wallerstein (1998) but particularly emphasises complexity's roots in science where mathematical formulae and computer algorithms can be applied to the large number of iterative events that can occur (Prigogine and Stengers 1984). However, he also suggests that sociology can be similarly as

complex and thus susceptible to theoretical applications of complexity. Although limited examples exist (see for example Mingers 1995), much more could be done. Governance and policy-making are notably complex and hence may have much to offer.

Complexity, Space and Time

> Scientific analysis based on the dynamics of the non-equilibria, with its emphasis on multiple futures, bifurcation and choice, historical dependence, and… intrinsic and inherent uncertainty should be the model for the social sciences. Ilya Prigogine (in Wallerstein 1996: 61).

Kiel (1991: 431) outlines the emergence of what he calls a new 'paradigm in the natural sciences' during the twentieth century with various strands including nonlinear dynamics, chaos theory and the science of complexity, citing Gleik (1987) and Pagels (1988) to support his claim. This new paradigm is centred around nonlinearity, instability and uncertainty and moves away from Newtonian simplicity, linearity and certainty to that of nonlinearity, asymmetry and the unexpected.

Nicolis and Prigogine (1989: 2) see complexity everywhere, across all spaces, places and times although they also see it as complex behaviour rather than a complex system (1989: 8). Teisman et al. (2009: 7–13) note three characteristics of governance complexity that relate to space and time. Firstly, nonlinear dynamics is a clear function of governance, albeit along with linear dynamics as well. The nonlinearity refers to the erratic nature of governance and the issues to which it has to be applied in all sectors, maritime included. Thus, an 'incentive given to a certain sub-system may result in a certain kind of behaviour at a certain time, but a repetition of this incentive may result in a different response'. One need only think of countless differing responses to environmental stimuli by maritime stakeholders, all attempting to be defined by the same governance framework. Thus, governance, nonlinearity and complexity come together.

Secondly, complexity is often found along with self-organisation. Thus, shipping companies will continuously adapt to remain successful within a marketplace or in response to changing global economic environments. Routes and ports may be changed, vessels adapted, cargoes changed, crews recruited elsewhere, flags hopped—all common features of the shipping sector and examples of self-organisation that governance needs to embrace and which are inherently complex.

Thirdly co-evolution, where actors come together in a process of polycentric adaption and mutual recognition and adaptation (Norgaard 1984, 1994; McKelvey 2002; Gerrits 2008). This notion of co-evolution is easily recognisable in the shipping sector where professional bodies and industrial representatives bring participants together in a complex process of discussion, development and reformation as well as the subtle and indefinable process of political lobbying. Teisman et al.

(2009: 12) stress the irregularity of co-evolution, how it is interspersed with patterns of competition and resistance rather than collaboration and this intensifies the complexity. However, overall the industry develops because of co-evolution and the mutual interaction it represents with all the complexity this suggests.

Law and Urry (2004: 401) make a strong case for the role of complexity and its relationship to space and time. Complexity they feel helps to explore how:

> components of a system can, through dynamic interaction, spontaneously develop collective properties or patterns… that are not implicit in the same way within its components… Complexity argues against reductionism, against reducing the whole to the parts.

They relate this to the issues of space and time suggesting complexity 'transforms scientific understanding of far-from-equilibrium structures, of irreversible times and of non-Euclidean mobile spaces. Space and time are not containers of bodies that move along various dimensions (Capra 1996). They are internal to the processes by which the physical world operates helping to constitute the very power of objects' (Law and Urry 2004: 401), something particularly pertinent to shipping where its very activity makes space and commodities accessible and can compress time between them. There are multiple times and spaces partly dependent in the maritime case on the type and usage of vessel, the weather, the administrative arrangements in ports, the flexibility of the financial system and so on. Complexity abounds.

The value of a holistic rather than a reductionist approach has been emphasised by many commentators. These include Freeman (1991: 34) with respect to neuro-science, Zohar (1997: 43) who refers back to 'old paradigm science' and the ancient Greek philosophers who focussed upon separation and fragmentation (with four atomic elements—earth, air, fire and water) in contrast to modern holism, and Angelides and Caiden (1994: 226) who consider that 'the properties of the parts can only be understood through an understanding of the dynamics of the whole' and this is exacerbated because the 'dynamics of the whole may be greater than the summation of the parts'. They agree with Mintzberg (1989: 344) who considers that the powerful hold that reductionism has held on policy-making needs to be removed enabling the connections between the effects and implementation of policies to be realised. The alternative is a series of ad hoc policies that address specific and individualised problems in a world where the interconnections between them are far more significant (if more complex). In Angelides and Caiden's terms, 'governance systems thus learn how to be objective in their superficiality'. Or as William Blake suggested in contemplating how man could gain clarity of perception through reducing all things to their elements, 'if the doors of perception were cleansed every thing would appear to man as it is, infinite. For man has closed himself up, till he sees all things thro' narrow chinks of his cavern' (Blake 2000).

White (1992: 132–133) is not quite so convinced by the holistic argument, suggesting that what he calls the structuralist argument is extreme, 'the antipodes to individualism', claiming that all action is shaped by the overall. He accepts that context does shape actions and in particular in the social where culture and

perception are so important not least throughout governance, but he sees it as a diversion within locality and boundary issues rather than a fundamental need to tend towards reductionism or holism:

> Augustine's theology… conceives of an (priestly) order almost exclusively with reference to the individual who exercises it… Such a view would have been impossible to hold but for the virtual breakdown of the old, jealously corporate notion of the local Church and its local ministry during the two preceding generations. Augustine's theory is in itself a proof that by circa AD 400 that idea was extinct as a living force. Dix (1957).

White continues his campaign against holism and supporting the reductionist position with another quote this time referring to an earlier period:

> Earlier Christianity began as a renewal movement within Judaism brought into being through Jesus… after AD 70 Pharisaism gained the upper hand in Judaism, and the Christians were excommunicated… Wandering charismatics were the decisive spiritual authorities in the local communities, and local communities were the indispensable material and social basis for the wandering charismatics. Both owed their legitimation and existence to their relationship to the transcendental bearer of revelation. It was the homeless wandering charismatics who handed on what was later to take independent form as Christianity… the local groups of sympathizers remained within the framework of Judaism… entangled in the old situation… Wandering prophets and teachers were still the decisive authorities at the time of the Didache (in the first half of the second century)… Their superiors were still the 'apostles' who were all allowed to stay no more than three days in one place. All these wandering charismatics had a higher reputation than local ministers. Theissen (1978: 7).

Urry (2004b: 15) is also clear about the importance of complexity to space and time. He notes the failures of the social sciences to understand the new relationships in space and time generated by globalisation and suggests that complexity theory has a significant role to play:

> Complexity maintains that there is no 'structure' and no 'agency', no 'macro' and no 'micro' levels, no 'societies' and no 'individuals', and no 'system-world' and no 'life-world' – in that each of these is presumed to be separate and distinct essences brought into external juxtaposition with its other. Overall the argument here is one of 'relationality', a position not only central to complexity but also to actor-network theory and various post-structuralist formulations… and relationality is effected through a wide array of networked or circulating relationships implicated within different overlapping and increasingly convergent mobile, material worlds.

Time and space are drawn to complexity by the very nature of their characters and consequently globalisation dominated as it is by time and space is also embroiled. And we know the relationship between shipping and globalisation. Therefore, governance of the maritime sector itself is dominated by time and space issues, and consequently is complex. The elements of globalisation 'interact physically and because of de-materialising transformations' (or otherwise referred to as time-space compression), 'informationally over multiple time-spaces'. Interactions are commonly nonlinear (as we have seen), determined by a mix of the local and global, and operate through a variety of temporal and spatial 'distanced effects… through multiple connections and mobile trajectories'. The complexities identifiable in globalisation—and consequently its governance and by association that of

the maritime sector—are frighteningly large. But to ignore them is to condemn maritime governance to an irrelevant impotence.

To quote Urry again (2004b: 17):

> Thus criss-crossing societies are diverse systems in complex interconnections with their environments, there are many chaotic effects time-space distanced from where they originate, there are positive as well as negative feedback mechanisms that mean that order and chaos are always intertwined, there are self-organising global networks and global fluids moving systems far from equilibrium, and there is not social order accounted for by purified social processes. Such complexity-thinking enables the transcendence of the dichotomies of determinism and free will, especially through seeing material worlds as unpredictable, unstable, sensitive to initial conditions, irreversible and rarely societally organised.

Urry continues the theme (2005b: 4) suggesting that Pre-twentieth-century science (and even later it could be claimed) viewed time as Newtonian—'invariant, infinitely divisible into space-like units, measurable in length, expressible as a number and reversible…' Objects are viewed as being contained within such boundaries of absolute time and space (Coveney 2000). However, since then things have changed stemming as much as anywhere from Einstein's view that time is never fixed or absolute, independent of the system to which it refers and inherently complex:

> Time is a local, internal feature of any system of observation and measurement. It varies on where and how it is measured. It can stretch and shrink. Further time and space are not separate from each other but are fused into a four-dimensional time-space curved under the influence of mass. Time and space are internal to the processes by which the physical and social worlds themselves operate, helping to constitute their powers… Space and time are dynamic qualities; when a body moves, or a force acts, it affects the curvature of space and time, and in turn the structure of time-space affects the way in which bodies move and forces act. Urry (2005b: 4).

Complexity and Governance

> One shouldn't complicate things for the pleasure of complexity, but one should also never simplify or pretend to be sure of such simplicity where there is none. If things were simple, word would have gotten round. Derrida (1988: 119).

> If Russia can be destroyed, the United States can also be beheaded. They are like little mice. (Osama Bin Laden, quoted in Reeve and Foden 2001 and Urry 2002).

White (1992: 116) links the role of institutions in policy-making with increasing complexity in society whilst Lee (1997: 20) suggests that complexity is a key concept in modelling 'change processes' and in so-doing hints at the importance of complexity to governance. Blom-Hansen (1997: 670) says much the same emphasising that political systems were getting increasingly fragmented and specialised. As a consequence, policy formulation involved an increasing number of institutions and the role of interdependencies had increased alongside. Societal problems

were getting more and more complex and the need for governance to match this degree of complexity was clear. Meanwhile, much later, both Van Gils et al. (2009: 76) and Boons et al. (2009: 231) provide examples of where complexity and governance collide in particular in public management and decision-making (for example, Kaufman 1991; Allen 1997; Haynes 1999; Morcul 2003; Teisman 2005; Gerrits 2008; Dennard et al. 2008). Boons et al. (2009: 233) go on to stress the links between the dynamics inherent in complexity to the characteristics of governance to reflect upon how the relationship is so close. They cite a number of reasons for this:

- (Maritime) Governance processes normally develop in dynamic ways that cannot be predicted from previous processes and/or from the initial conditions at the beginning of the process.
- Due to self-organisation within (maritime) processes, the coevolution between processes, the occurrence of change events and interactions within a multiple and ever-changing context, nonlinearity in processes and outcomes often occurs.
- The desire for change may initiate (maritime) governance processes and new processes and dynamics, but the initiator does not control the dynamics that occur after initiation. A specific governance initiative is just one manifestation of self-organizing capacity within societies.
- Initiators of (maritime) governance processes facing complex (maritime) governance systems develop and apply simplified pictures of these systems, often over-estimating their knowledge as well as their ability to change and control the system. Due to these limited boundary judgements, their actions often generate more nonlinear dynamics.

McLennan (2003: 554) notes Urry's (2000b: 186) acceptance that there is a need to move from a vision of post-nationalism to one of post-societalism as globalisation progresses. To achieve this, there is a requirement to accommodate both complexity and chaos. The new rules of globalised governance make a simplistic approach inadequate. The pre-eminence of a national dimension has been difficult to shrug off (and continues to be) but McLennan's view is that society is now most definitely non-national and consequently approaches to governance, including that for the maritime sector, must accept this or fail.

Angelides and Caiden (1994: 225) had earlier said much the same thing emphasising how the:

> interaction between global pragmatics and future problematic imposes great difficulties on the formation of accurate, up-to-date and complete images or present and future realities. One in particular is the gap between the phenomena with which governance is faced and those it perceives and with which it is prepared to deal.

Policy-makers simplify in the light of the complexity that surrounds them, much to the detriment of governance. The maritime sector is a good example where the complexities of the market, the global environment and the ambitions of the stakeholders that make up the industry present a dizzying mélange that seems almost impossible to manage. However, addressing the issues of complexity

head-on may present an opportunity to accommodate and overcome some of these problems. They go on to suggest how to do this:

- Recognise uncertainty and distinguish between what can and cannot be known, thereby admitting areas of ignorance and separating substantive from speculative analysis.
- Guard against oversimplification, especially by over-relying on common sense, by recognising that complexity is the only means of handling complexity and only variety can handle variety.
- Adopt advanced notions of policy reasoning by merging intuition and reason, logic and feeling, that is the two sides of the brain (Trist 1980).
- Allow for emerging strategies, which call for abilities to change one's mind, improvise and engage in constant rejection and self-evaluation, i.e. policies need to be allowed to 'form without necessarily being formulated' (Mintzberg and Jorgenson 1987: 219).
- View decisions as fuzzy gambles (Dror 1990) and bets (Godet 1980).
- Tolerate value trade-offs, contradictions, paradoxes and dilemmas as being inherent to complexity and uncertainty.

Many of these points can be seen to be clearly relevant to the maritime sector with issues such as common sense, the failure to admit ignorance and the significance of speculation often predominant in policy-making decisions.

Getting right up to date, Klijn and Snellen (2009: 17) point out that although issues of complexity have been recognised in public administration and consequently governance and policy-making by all public institutions including government ministries, the UN and IMO, the European Union and more locally at local and regional level, there remains a shortage of application. 'The history of the field of public administration could be viewed as an on-going attempt to search for concepts to grasp the complexity of day-to-day practices in policy-making and decision-making' (Klijn et al. 2009: 17). Policy-makers meanwhile have been evident in their ability to avoid such complexity, commonly adopting 'policy escapism', focussing more easily upon what they wish to avoid rather than what they hope to achieve. The need to address complexity is reduced consequently. In Lindblom's words (1965: 147): 'they deal more confidently with what is wrong than with what in the future may or may not be right'.

Complexity and Chaos

> Moral condemnation, the sacred alliance against terrorism are in direct proportion to the prodigious jubilation at seeing this global superpower destroyed. Jean Baudrillard (*Le Monde*, November 3rd, 2001).

Elliott and Kiel (1997: 73) suggest that the link between complexity theory and chaos is so close that knowledge of the former could help to control the latter. This

would be achieved by identifying the 'small perturbations in chaotic systems in an effort to alter or smooth its dynamics'. Taking the idea that very unimpressive and easily overlooked changes in a complex environment can have major chaotic effects, then minimal effort might be employed to have the maximum effect—in the words of Peat (1991), this 'gentle action' could be used to stimulate adjusting feedback to alter the temporal dynamics' of society. Kiel (1991: 431) notes much the same suggesting that minimal change taking place in a complex environment is akin to nonlinear systems where dynamic relationships occur between variables in which the relationship between cause and effect may not be proportionate. The significance of nonlinearity is well supported (see for example Loye and Eisler 1987; Baumol and Benhabib 1989; Saperstein and Mayer-Kreiss 1988 amongst many others). The result can be chaos. We can see much the same across large swathes of maritime governance where, for example, a minor environmental piece of legislation may have serious ramifications for the prosperity of shipowners, ferry operators or fish farmers in remote islands, or calamitous implications ultimately for climate change. The invention of the sea container and its impact on globalisation can be viewed similarly.

Arrighi and Silver (1999: 21–22) and Morgan (2005: 27) emphasise the significance of chaos whilst Thietart and Forgues (1995: 20) provide an introduction to chaos theory and its origins in the natural sciences (see for example Ruelle and Takens 1971; Swinney 1983) where it was defined as a 'system behaviour which is apparently random even though it is driven by deterministic rules'. Angelides and Caiden (1994: 224) took this up and were part of a number of researchers who applied it to the social sciences noting that increasingly policies have to reflect 'greater adversity, turbulence, conflict and possibly chaos', consequences of a future that is more 'complex, novel and uncertain', and a view supported by Back (1997: 49–50) who suggests that chaos theory has its roots in complex structures. However, Allen et al. (1985: 65) emphasise that there is often order in chaos—a 'hidden constancy underlying processes of apparent change'.

Eve (1997: 270) stresses that chaos and complexity are not the same thing at all, although there is plenty of literature that seems to suggest that this is the case, and by definition chaos always tends towards the chaotic and sometimes the unpredictable, characteristics with which the shipping industry has much affinity. Eve also believes that there is always order in chaos (1997: 271) and that the concept is universally applicable if not always dominant. Complex phenomena commonly exhibit what Smith and Jenks (2006: 5) term patterned limits, pathways and recurrences, and chaos characterised by upheaval and randomness is not an appropriate term. The poststructuralist interpretation of chaos—more randomness, more conventionality and a presumed emphasis upon deconstruction, interpretation and reconstruction—confirms this. Complex systems can and do exhibit 'different degrees of complexity, interdependence and robustness of self-organisation. They can also die' (Smith and Jenks 2006: 5–6). Meanwhile, McLennan (2003: 556–557) links complexity and chaos together in the social sciences, reflecting the increased dynamism we have noted that is sadly lacking in maritime governance.

Turning to chaos and away from its direct links to complexity, Brock (1986) provides a mathematical interpretation whilst Lorenz (1993) looks in detail in excess of the analysis needed here. At the same time, Thietart and Forgues (1995: 20) suggest a simple explanation for chaos theory:

> Chaos theory takes its roots in the study of nonlinear dynamic systems. Nonlinear dynamic systems have special properties that mathematicians have studied for more than a century (Poincare, 1892-1899)… interest in these systems has grown among researchers of different scientific fields such as physics, chemistry and economics. Interest has been mainly stimulated by these systems' capabilities in representing what were perceived, in the past, as noise and randomness.

Thietart and Forgues (1995: 21) go on to indicate areas of the social sciences where, at the time of writing, attention had been drawn to the possibilities of using chaos theory including economics (Grandmont 1986; Anderson et al. 1988); organization science (Gemmill and Smith 1985); social systems transformation (Smith 1986); firm self-renewal (Nonaka 1988); organizational chaotic behaviour (Priesmeyer and Baik 1989); management systems (Rasmussen and Mosekilde 1988); management (Stacey 1992, 1993); and strategic processes (Zimmerman 1990).

Dooley and Van de Ven (1999: 358) are highly critical of the approaches to chaos up to that date suggesting that the focus had been far too much upon the implications of chaos and needed to be looking much more at how organisational chaos comes about. This would require a more dynamic view (something that rings true in the maritime sector) looking for patterns of events (Abbott 1990). Using models developed in this way, chaotic events and processes could be better understood and predicted and they suggest 'interventionist strategies' (Glick et al. 1990; Pettigrew 1990; Van de Ven and Poole 1990). They also call for a closer examination of alternative patterns of organisational behaviour that can be identified—for example, periodic, coloured noise and white noise.

Dennis and Urry (2009: 52–53), along with Dooley and Van de Ven (1999: 358) citing Dooley et al. (1995) and Goldstein (1994), bring this discussion of chaos theory back to some of our earlier considerations of time whilst Collier and Esteban (1999: 179) did the same for process supporting the idea that chaos and complexity have a role to play in understanding the needs of governance. Chaotic systems can be viewed over time and should always be seen as processes where change is a permanent feature, characterised by both stability and instability. The chaotic model should be seen as a mechanism for holding in 'check both the tendency to emphasise purpose at the expense of responsiveness and the impulse to respond to the external environment in a way which disregards purpose' referring also to the relationship between minor events and their major consequences which has also been noted (Stacey 1996: 284).

Chaos also has a direct relationship to governance. Collier and Esteban (1999: 178) point out that 'understanding of governance in the participative organization can most usefully be based on non-linear dynamics and chaos theory, or more properly *complexity theory*' (Black 1962: 240) with a foundation in open systems theory (Scott 1992; Flood and Jackson 1991). Cheng and Van de Ven (1996:

594–595) provide a link between chaos, governance and innovation which can be traced through change and dynamism:

> Chaos requires a dynamic model. That is, the variables at any given time are a function, at least in part, of the same variables at an earlier time. Also the functional form of the model must be nonlinear in the variables. It need not be very complicated (May 1976). Nonlinearity simply requires that there be at least two not-entirely-compatible underlying forces or sources of demands. Stated differently, this means that there must be both positive and negative feedback loops. With this type of system, irregular and unpredictable behaviour can arise endogenously – that is without any exogenous, truly random inputs. This occurs when the balance between the positive and negative feedbacks is especially severe. (Koput 1992: 20–21).

Much of this we can identify in maritime governance. The maritime sector reflects earlier events at all times with both tradition and history vital components. There is at times severe nonlinearity (think of climate change and the environmental impact of shipping; the cataclysmic effect of containerisation, IT and communication changes). The demands that underlie shipping commonly contradict and both negative and positive feedback loops are present—the former exemplified by the relationship between cheap labour, flag-hopping and safety, the latter by environmental control and improvement of ships and market demand for quality.

Thus, maritime governance is positioned directly within a framework determined by process, in itself largely described by characteristics of complexity and chaos, fluid in its significance and ever-changing—all of which need to be incorporated in its design and application if it is to be effective. Almost none have even been considered despite widespread recognition of the need to do so and the failure within the maritime sector that results.

Two characteristics of this idealised dynamic governance for the maritime sector remain to be considered in the next two chapters—flow and speed, and it is to these issues that we now turn.

References

Abbott, A. (1990). A primer on sequence methods. *Organizational Science, 1*(4), 375–392.

Aingers, K., Chesters, G., Credland, T., Jordan, J., Stern, A., & Whitney, J. (2003). *We are everywhere: The irresistible rise of global anti-capitalism*. London: Verso.

Alberts, D. S., & Czerwinski, T. (1997). *Complexity, global politics and national security*. Washington, DC: National Defense University.

Albrow, M. (1996). *The Global Age*. Cambridge: Polity Press.

Allen, P. (1997). *Cities and regions as self-organizing systems*. London: Taylor and Francis.

Allen, P. M., Sanglier, M., Engelen, G., & Boon, F. (1985). Towards a new synthesis on the modelling of evolving complex systems. *Environment and Planning B, 12*, 65–84.

Alvesson, M. (1993). The play of metaphors. In J. Hassard & M. Parker (Eds.), *Postmodernism and organisations*. London: Sage.

Anderson, P. W., Arrow, K. J., & Pines, D. (Eds.) (1988). *Economy as an evolving complex system* (Vol. V), Santa-Fe Institute Studies in the Science of Complexity. Redwood City, CA: Addison-Wesley.

Angelides, C., & Caiden, G. (1994). Adjusting policy-thinking to global pragmatics and future problematic. *Public Administration and Development, 14*, 223–239.

Appadurai, A. (1990). Disjuncture and difference in the global cultural economy. In M. Featherstone (Ed.), *Global culture: Nationalism, globalization and modernity* (pp. 295–310). London: Sage.
Archer, M. (1998). Introduction: Realism in the social sciences. In M. S. Archer, R. Bhaskar, A. Collier, T. Lawson, & A. Norrie (Eds.), *Critical realism: Essential readings* (pp. 189–205). Abingdon: Psychology Press.
Argyris, C. (1982). *Reasoning, learning and action*. San Francisco: Jossey-Bass Publishing.
Argyris, C., & Schon, D. (1978). *Organizational learning: A theory of action perspective*. Reading, MA: Addison-Wesley.
Argyros, A. J. (1991). *A blessed rage for order: Deconstruction, evolution and chaos*. Ann Arbor, MI: University of Michigan Press.
Arrighi, G., & Silver, B. J. (1999). *Chaos and governance in the modern world system*. Minneapolis, MN: University of Minnesota Press.
Arthur, B. (1994). *Increasing returns and path dependency in the economy*. Ann Arbor, MI: University of Michigan Press.
Artigiani, R. (1987). Revolution and evolution: Applying Prigogine's dissipative structures model. *Journal of Social and Biological Structures, 10*, 249–264.
Axelrod, R., & Cohen, M. (1999). *Harnessing complexity*. New York: Free Press.
Bachelard, G. (1942). *Water and dreams: An essay on the imagination of matter*. Farrell, TX: Pegasus.
Back, W. W. (1997). Chaos and complexity. Necessary myths. In R. Eve, S. Horsfall, & M. Lee (Eds.), *Chaos, complexity and sociology* (pp. 39–51). Thousand Oaks, CA: Sage.
Bailey, N. T. J. (1957). *The mathematical theory of epidemics*. New York: Hafner.
Ball, P. (2004). *Critical mass: How one thing leads to another*. London: Heinemann.
Barabasi, A.-L. (2002). *Linked: The new science of networks*. Cambridge, MA: Perseus.
Barfield, T. (1993). *The nomadic alternative*. Englewood Cliffs, NJ: Prentice Hall.
Barnes, T. J., & Duncan, J. S. (Eds.). (1992). *Writing worlds: Discourse, text and metaphor in the representation of landscape*. London: Routledge.
Barnett, W. A., Kirman, A. P., & Salmon, M. (Eds.). (1996). *Nonlinear dynamics and economics*. Cambridge: Cambridge University Press.
Basch, L., Schiller, N. G., & Blanc, C. S. (1994). *Nations unbound: Transnational projects, post-colonial predicaments and deterritorialized nation states*. New York: Gordon and Breach.
Bauman, Z. (1998). *Globalization: The human consequences*. Cambridge: Polity Press.
Bauman, Z. (1999). *Postmodern ethics*. London: Blackwell.
Bauman, Z. (2000). *Liquid modernity*. Cambridge: Polity Press.
Baumol, W. J., & Benhabib, J. (1989). Chaos, significance, mechanism and economic applications. *Journal of Economic Perspectives, 3*, 77–105.
Beck, U. (2000). *What is globalization?*. Cambridge: Polity Press.
Bendor, J., Moe, T. M., & Shotts, K. W. (2001). Recycling the garbage can: an assessment of the research program. *American Political Science Review, 95*(1), 169–190.
Benko, G., & Strohmeyer, U. (1997). *Space and social theory. Interpreting modernity and post-modernity*. Oxford: Blackwell.
Benitez-Rojo, A. (1996). *The repeating island*. Durham, NC: Duke University Press.
Benjamin, A. (1995). Complexity: Architecture/art/philosophy. *Journal of Philosophy and the Visual Arts, 6*, 6–23.
Bennett, C. (1991). What is policy convergence and what causes it? *British Journal of Political Science, 21*, 215–233.
Bennett, C. J. (1997). Understanding ripple effects: The cross-national adoption of policy instruments for bureaucratic accountability. *Governance, 10*(3), 213–233.
Bennett, C. J., & Howlett, M. (1991). *When states learn do they change? American lessons, Canadian learning and the conceptualization of policy change*. Annual Meeting of the American Political Science Association.
Bergson, H.-L., Ansell-Pearson, K., & Mullarkey, J. (2002) *Henri Bergson: Key writings*. London: Continuum-3PL.

Berry, B. J. L. (1973). A paradigm for modern geography. In R. J. Chorley (Ed.), *Directions in geography* (pp. 3–21). London: Methuen.
Berry, F. S., & Berry, W. D. (1990). State lottery adoptions as policy innovations. *American Political Science Review, 84*(2), 395–416.
Best, S., & Kellner, D. (1991). *Postmodern theory: Critical interrogations*. New York: Guilford Press.
Bicchieri, C. (1988). Should a scientist abstain from metaphor? In A. Klamer, D. McCloskey, & R. Solow (Eds.), *The consequences of economic rhetoric*. Cambridge: Cambridge University Press.
Bishop, R. C. (2004). Non-equilibrium statistical mechanics Brussels-Austin style. *Studies in the History and Philosophy of Modern Physics, 35*, 1–3.
Black, M. (1962). *Models and metaphors*. Ithaca, NY: Cornell University Press.
Blake, W. (2000). *The marriage of Heaven or Hell*. New York: Dover Publications.
Blom-Hansen, J. (1997). A 'new institutional' perspective on policy networks. *Public Administration, 75*, 669–693.
Bogue, R. (2004). Apology for nomadology. *Interventions, 6*(2), 169–179.
Boons, F., Van Buuren, A., Gerrits, L., & Teisman, R. (2009). Towards an approach of evolutionary public management. In G. R. Teisman, A. van Buuren, & L. Gerrits (Eds.), *Managing complex governance systems: Dynamics, self-organization and coevolution in public investments* (pp. 231–249). New York: Routledge.
Borzel, T. (1998). Organizing Babylon—On the different conceptions of policy networks. *Public Administration, 76*, 253–273.
Braidotti, R. (1994). *Nomadic Subjects*. New York: Columbia University Press.
Brand, S. (1999). *The clock of the long now*. New York: Basic Books.
Brock, W. A. (1986). Distinguishing random and deterministic systems: Abridged version. *Journal of Economic Theory, 40*, 168–195.
Browning, D. (1965a). Preface. In D. Browning (Ed.), *Philosophers of process* (pp. xxiii–xxv). New York: Random House.
Browning, D. (1965b). Process. In D. Browning (Ed.), *Philosophers of process* (pp. 305–312). New York: Random House.
Buchanan, M. (2002). *Small world: Uncovering nature's hidden networks*. London: Weidenfeld and Nicolson.
Budd, M., Entman, R. M., & Steinmann, C. (1990). The affirmative character of US cultural studies. *Critical Studies in Mass Communication, 7*(2), 169–184.
Buijs, J.-M., Eshuis, J., & Byrne, D. (2009). Approaches to researching complexity in public management. In G. R. Teisman, A. van Buuren, & L. Gerrits (Eds.), *Managing complex governance systems: Dynamics, self-organization and coevolution in public investments* (pp. 37–55). New York: Routledge.
Buttimer, A. (1982). Musing on helicon: Root metaphors and geography. *Geografiska Annaler B, 64*(2), 89–96.
Byrne, D. S. (1998). *Complexity theory and the social sciences*. London: Routledge.
Byrne, D. S. (2005). Complexity, configuration and cases. *Theory, Culture and Society, 22*(5), 95–111.
Calhoun, C. (1995). *Critical social theory*. Oxford: Blackwell.
Cameron, L., & Low, G. (Eds.). (1999). *Researching and applying metaphor*. Cambridge: Cambridge University Press.
Capra, F. (1996). *The web of life*. London: HarperCollins.
Capra, F. (2001). *The hidden connections: A science for sustainable living*. London: HarperCollins.
Carlson, B. L., Koenig, J., & Reid, G. L. (1986). *Lessons from Europe: The role of the employment security system*. Washington, DC: National Governors' Association.
Castells, M. (1996). *The rise of the network society*. Oxford: Blackwell.
Casti, J. (1994). *Complexification*. London: Abacus.

Cebrowski, A., & Gartska, J. (1998). *Network-centric warfare: Its origins and future*. Annapolis MD: United States Naval Institute Proceedings.
Celek, M., & Er, I. D. (2006). *Application requirements of catastrophe theory in maritime transportation industry* (pp. 879–887). 3rd International Conference on Maritime Transport, Barcelona.
Cheng, Y.-T., & Van de Ven, A. H. (1996). Learning the innovation journey: Order out of chaos? *Organization Science, 7*(6), 593–614.
Choi, T. Y., Dooley, K. J., & Rungtusanatham, M. (2001). Supply networks and complex adaptive systems: Control versus emergence. *Journal of Operations Management, 19*, 351–366.
Chorley, R. J., & Kennedy, B. A. (1971). *Physical geography: A systems approach*. London: Prentice Hall.
Cilliers, P. (1998). *Complexity and postmodernism*. London: Routledge.
Clifford, J. (1992). Travelling cultures. In I. Grossberg, C. Nelson, & P. A. Treichler (Eds.), *Cultural studies*. New York: Routledge.
Clifford, J. (1997). *Routes. Travel and translation in the late twentieth century*. Cambridge, MA: Harvard University Press.
Cohen, J., & Stewart, I. (1994). *The collapse of chaos*. Harmondsworth: Penguin.
Coleman, J. S., Katz, E., & Menzel, H. (1966). *Medical innovation: A diffusion study*. Indianapolis, IN: Bobbs-Merrill Co.
Coleman, W. D. (1994). Policy convergence in banking: A comparative study. *Political Studies*, *XLII*, 274–292.
Collier, J., & Esteban, R. (1999) Governance in the participative organisation; Freedom, creativity and ethics. *Journal of Business Ethics*, *21*, 2/3, 173–188.
Collier, D., & Messick, R. E. (1975). Prerequisites versus diffusion: Testing alternative explanations of social security adoption. *American Political Science Review, 69*(4), 1299–1315.
Congreve, W. (1923). In M. Summers (Eds.), *The complete works* (4 Vols.). London: Nonesuch Press.
Coveney, P. (2000). A clash of doctrines: the arrow of time in modern physics. In P. Baert (Ed.), *Time in contemporary intellectual thought*. Amsterdam: Elsevier.
Coveney, P., & Highfield, R. (1991). *The arrow of time*. New York: Fawcett Columbine.
Cox, R. (1999). *Ideas*, *policy borrowing and welfare reform*. Conference on global trajectories: Ideas, international policy transfer and models of welfare reform, Florence, Italy, March 25–26.
Crain, R. L. (1966). Fluoridation: The diffusion of an innovation among cities. *Social Forces, 44*(4), 467–476.
Cresswell, T. (1997). Imagining the nomad: Mobility and the postmodern primitive. In G. B. Benko & U. Strohmeyer (Eds.), *Space and social theory* (pp. 360–382). London: Wiley-Blackwell.
Cresswell, T. (2006). *On the move*. London: Routledge.
Cribb, R. (1991). *Nomads in archaeology*. Cambridge: Cambridge University Press.
D'Andrea, A. (2004). Global nomads: Techno and new age as transnational countercultures in Ibiza and Goa. In G. Saint-John (Ed.), *Rave Culture and Religion* (pp. 236–255). London: Routledge.
D'Andrea, A. (2006). Neo-nomadism: A theory of post-identarian mobility in the global age. *Mobilities, 1*(1), 95–119.
Da Vinci, L. quoted in Richter (2008). *The Notebooks of Leonardo da Vinci*. CreateSpace, pp. 402–403.
Davis, S. (1982). Transforming organizations. The key to strategy is context. *Organizational Dynamics, 10*, 64–80.
De Landa, M. (1991). *War in the age of intelligent machines*. New York: Zone Books.
De Landa, M. (2002). *Intensive science and virtual philosophy*. London: Continuum.
De Lange, M. (2009). *Digital nomadism: A critique*. Draft version Ph.D. http://blog.bijt.org.
Deleuze, G., & Guattari, F. (1986). *Nomadology*. New York: Semiotext(e).
Deleuze, G., & Guattari, F. (1988). *A thousand plateaus. Capitalism and schizophrenia*. Minneapolis, MI: University of Minnesota Press.

De Lillo, D. (1990). *White noise*. New York: Picador.
Dennard, L., Richardson, K., & Morcul, G. (Eds.), (2008) *Complexity and policy analysis: Tools and concepts for designing robust policies in a complex world* (*Exploring Organizational Complexity Volume 2*). Goodyear, AZ: ISCE Publishing.
Dennis, K., & Urry, J. (2009). *After the car*. Cambridge: Polity Press.
Derrida, J. (1987). *Positions*. London: Athlone Press.
Derrida, J. (1988). *Limited Inc.* Evanston, IL: Northwestern University Press.
Dillon, M. (2000). Restructuralism, complexity and poetics. *Theory, Culture and Society, 17*(5), 1–26.
Dix, G. (1957). The ministry of the early church. In K. E. Kirk (Ed.), *The apostolic ministry* (pp. 183–303). London: Hodder and Stoughton.
Dolowitz, D. (1997). *Where's the State? The political process of globalisation*. Globalisation Critical Perspectives Conference, University of Birmingham, UK.
Dolowitz, D., & Marsh, D. (1996). Who learns from whom: A review of the policy transfer literature. *Political Studies, 44*, 343–357.
Dommergues, P., Sibille, H., & Wurzburg, E. (1989). *Mechanisms for job creation: Lessons from the United States*. Paris: OECD.
Dooley, K., Johnson, T., & Bush, D. (1995). TQM, chaos and complexity. *Human Systems Management, 14*, 1–16.
Dooley, K. J., & Van de Ven, A. H. (1999). Explaining complex organizational dynamics. *Organization Science, 10*(3), 358–372.
Dror, Y. (1990). Fateful decisions as fuzzy gambles with history. *The Jerusalem Journal of International Relations, 12*(3), 1–12.
Eade, J. (Ed.). (1997). *Living the global city*. London: Routledge.
Eatwell, J., & Taylor, L. (2000). *Global finance at risk*. New York: The New Press.
Edens, B. (2001). *Semigroups and symmetry: An investigation of Prigogine's theories.* Institute for History and Foundations of Science, Utrecht University. Ph.D. Thesis. http://philsci-archive.pitt.edu/documents/disk0/00/00/04/36/.
Edwards, R., Nicoll, K., Solomon, N., & Usher, R. (2004). *Rhetoric and educational discourse*. London: Routledge.
Eichenbaum, J., & Gale, S. (1971). Form, function and process: A methodological inquiry. *Economic Geography, 47*(4), 525–544.
Eisen, A. M. (1986). *Galut: Modern Jewish reflection on homelessness and homecoming*. Bloomington, IN: Indiana University Press.
Eisenstein, S. (1969). Through theatre to cinema, in S. Eisenstein. In *Film form*: *Essays in film theory* (p. 3). Boston MA: Harcourt.
Elliott, E., & Kiel, L. D. (1997). Nonlinear dynamics, complexity and public policy. Use, misuse and applicability. In R. A. Eve, S. Horsfall, & M. Lee (Eds.), *Chaos, complexity and sociology* (pp. 64–78). Thousand Oaks, CA: Sage.
Emerson, R. W. (1981). *Selected writings of Ralph Waldo Emerson, edited by Donald McQuade*. New York: Modern Library.
Engelen, G. (1988). The theory of self-organization and modelling complex urban systems. *European Journal of Operational Research, 37*, 42–57.
Etheredge, L. S. (1981). Government learning. An overview. In S. L. Long (Ed.), *The handbook of political behavior* (Vol. 2). New York: Pergamon.
Evans, M., & Davies, J. (1999). Understanding policy transfer: A multi-level, multi-disciplinary perspective. *Public Administration, 77*(2), 361–385.
Eve, R. A. (1997). Afterword. So where are we now? A final word. In R. A. Eve, S. Horsfall, & M. Lee (Eds.), *Chaos, complexity and sociology* (pp. 269–279). Thousand Oaks, CA: Sage.
Eyestone, R. (1977). Confusion, diffusion and innovation. *Political Science Review, 71*, 441–447.
Farina, C., & Kelly, M. (1983). Innovation policy and the social sciences. *Policy Studies Review, 3*, 21–28.
Ferguson, N. (Ed.). (1997). *Virtual history: Alternatives and counterfactuals*. London: Picador.

Fischer, F. (1993). Burger, Experten und Politik nach dem 'Nimby' – Prinzip: Einn Pladoyer fur die Partizipatorische Policy-Analyse. *PVS-Sonderheft, 24*, 451–470.
Fischer, F., & Forester, J. (Eds.). (1993). *The argumentative turn in policy analysis and planning*. Durham, NC: Duke University Press.
Flood, R. L., & Jackson, M. C. (1991). *Critical systems thinking*. Chichester: Wiley.
Forster, E. M. (1931). *Howard's End*. London: Penguin.
Fraser, B. (1979). The interpretation of novel metaphors. In A. Ortony (Ed.), *Metaphor and thought*. Cambridge: Cambridge University Press.
Fraser, M., Kember, S., & Lury, C. (Eds.) (2005). Inventive life: Approaches to the new vitalism. *Theory, Culture and Society*, *22*(1), 1–14.
Freeman, R. (1999) *Policy transfer in the health sector*. School of Social and Political Science, University of Edinburgh, Working Paper.
Freeman, W. J. (1991). The physiology of perception. *Scientific American*, February 34–41.
Game, A., & Metcalfe, D. (1996). *Passionate sociology*. London: Sage.
Gay, P., Hall, S., Janes, L., Madsen, A. K., Mackay, H., & Negus, K. (1996). *Doing cultural studies: The story of the Sony Walkman*. London: Sage.
Gell-Mann, M. (1994). *The quark and the jaguar: Adventures in the simple and the complex*. New York: Freeman.
Gemmill, G., & Smith, C. (1985). A dissipative structure model of organization transforming. *Human Relations, 38*(8), 751–766.
Gerrits, L. M. (2008). *The gentle art of coevolution managing and developing estuaries in Germany, Belgium and the Netherlands*. Ph.D. Thesis, Erasmus University, Rotterdam.
Ghosh, A. (1986). The Imam and the Indian. *Granta, 20*(Winter), 135–146.
Giddens, A. (1990). *The consequences of modernity*. Stanford, CA: Stanford University Press.
Gilroy, P. (1993). *The black Atlantic: Modernity and double consciousness*. London: Verso.
Gladwell, M. (2002). *Tipping points: How little things can make a big difference*. Boston, MA: Little Brown and Co.
Gleik, J. (1987). *Chaos: Making a new science*. New York: Viking.
Glick, W., Huber, G., Miller, C., Doty, D. H., & Sutcliffe, K. (1990). Studying changes in organizational design and effectiveness. *Organizational Science, 1*(3), 293–312.
Godet, M. (1980). Europe facing its futures. *Technological Forecasting and Social Change, 18*(2), 161–173.
Goldstein, J. (1994). *The unshackled organization*. Portland, OR: Productivity Press.
Golombiewski, R., Billingsley, K., & Yeager, S. (1975). Measuring change and resistance in human affairs: Types of change generated by OD designs. *Journal of Applied Behavior Science, 12*, 133–157.
Grandmont, J. M. (Ed.). (1986). Symposium on nonlinear economic dynamics. *Journal of Economic Theory*, *40*(1), 1–196.
Gray, J. (2001). The era of globalisation is over. *New Statesman*, 24th September.
Gray, V. (1973). Innovation in states; A diffusion study. *American Political Science Review, 67*(4), 1174–1185.
Gregor, J. (1971). *An introduction to metapolitics*. New York: The Free Press.
Greenberg, G. D., Miller, J. A., Mohr, L. B., & Vladeck, B. C. (1977). Developing public policy theory: Perspectives from empirical research. *American Political Science Review, 71*(4), 1532–1543.
Griffin, D. R. (1998). Process philosophy. In E. Craig (Ed.), *Routledge encyclopedia of philosophy*. London: Routledge.
Gunaratna, R. (2002). *Inside Al-Qaeda: Global networks of terror*. New York: Columbia University Press.
Haas, E. B. (1990). *When knowledge is power: Three models of change in international organizations*. Berkeley, CA: University of California Press.
Hagerstrand, T. (2004). The two vistas. *Geografiska Annaler B, 86*(4), 315–323.
Hancher, L., & Moran, M. (1989). Organizing regulatory space. In L. Hancher & M. Moran (Eds.), *Capitalism, culture and economic regulation* (pp. 271–299). Oxford: Clarendon Press.

Hannam, K. (2009). The end of tourism? Nomadology and the mobilities paradigm. In J. Tribe (Ed.), *Philosophical issues in tourism* (pp. 101–134). Bristol: Channel View.
Hannam, K., Sheller, M., & Urry, J. (2006). Editorial. Mobilities, immobilities and moorings. *Mobilities, 1*, 1–22.
Hannigan, J. (2002). Culture, globalization, and social cohesion; Toward a de-territorialized, global fluids model. *Canadian Journal of Communication, 27*, 277–287.
Hanson, S., & Pratt, G. (1995). *Gender, work and space*. London: Routledge.
Hardt, M., & Negri, T. (2000). *Empire*. Cambridge, MA: Harvard University Press.
Hartshorne, C. (1965). Introduction. The development of process philosophy. In D. Browning (Ed.), *Philosophers of Process* (pp. v–xxii). New York: Random House.
Harvey, D. (1989). *The condition of postmodernity*. Oxford: Blackwell.
Hayles, D. (Ed.). (1991). *Chaos and order*. London: University of Chicago Press.
Hayles, N. K. (1999). *How we became posthuman*. Chicago, IL: University of Chicago Press.
Haynes, P. (1999). *Complex policy planning: The government strategic management of the social care market*. Aldershot: Ashgate.
Heclo, H. (1974). *Modern social politics in Britain and Sweden*. New Haven, CT: Yale University Press.
Hernes, G. (1976). Structural change in social processes. *American Journal of Sociology, 82*, 513–547.
Herod, A., O'Tuathail, G., & Roberts, S. M. (Eds.). (1998). *An unruly world? Globalization, governance and geography*. London: Routledge.
Hier, S. P., & Greenberg, J. (2007). *The surveillance studies reader*. New York: McGraw Hill.
Holland, J. A. (1998). *Emergence*. Reading, MA: Addison-Wesley.
Hogwood, B. W., & Peters, B. G. (1983). *Policy dynamics*. Brighton: Wheatsheaf Books.
Huggett, R., & Perkins, C. (2004). Landscape as form, process and meaning. In J. A. Matthews & D. T. Herbert (Eds.), *Unifying geography: Common heritage, shared future* (pp. 224–239). London: Routledge.
Ikenberry, G. J. (1990). The international spread of privatization policies; inducements, learning and 'policy band wagoning'. In E. Suleiman & J. Waterbury (Eds.), *The political economy of public sector reform and privatization*. Boulder, CO: Westview Press.
Inkeles, A. (1999). *One world emerging? Convergence and divergence in industrial societies*. Boulder, CO: Westview Press.
Isard, W. (1996). *Commonalities in art, science and religion*. London: Avebury.
Jencks, C. (1996). *The architecture of the jumping universe, a polemic: How complexity science is changing architecture and culture*. London: Academy Editions.
Jervis, R. (1997). *System effects: Complexity in political and social life*. Princeton, NJ: Princeton University Press.
Jokinen, E., & Veijola, S. (1994). *The death of the tourist. Seven improvisations*. XIIIth World Congress of Sociology, Bielefeld, Germany.
Jones, S. (1994). Demonology: Some thoughts towards a science of chaos in recent British theatre. *Contemporary Theatre Review, 11*, 49–59.
Kaplan, C. (1996). *Questions of travel*. Raleigh, NC: Duke University Press.
Kaufamn, H. (1991). *Time chance and organizations: Natural selection in a perilous environment*. Chatham, NJ: Chatham House.
Kaufmann, S. (1993). *The origins of order*. New York: Oxford University Press.
Kelly, K. (1998). *New rules for the new economy*. London: Fourth Estate.
Kemp, S. (2009). Unpredictability and nonlinearity in complexity theory. *A critical appraisal, Emergence: Complexity and Organization, 11*(1), 84–93.
Kennedy, P. (2007). Global transformations but local 'bubble' lives: Taking a reality check on some globalization concepts. *Globalizations, 4*(2), 267–282.
Kerr, C. (1983). *The future of industrial societies: Convergence or continuing diversity?*. Cambridge, MA: Harvard University Press.
Khalil, E. L., & Boulding, K. E. (Eds.). (1996). *Evolution, order and complexity*. London: Routledge.

Khazanov, A. (1984). *Nomads and the outside world*. Cambridge: Cambridge University Press.
Kiel, L. D. (1991). Lessons from the nonlinear paradigm: Applications of the theory of dissipative structures in the social sciences. *Social Science Quarterly, 72*(3), 431–442.
Kiel, L., & Elliott, E. (Eds.). (1996). *Chaos theory in the social sciences*. Ann Arbor, MI: University of Michigan.
Klijn, E.-H., & Snellen, I. (2009). Complexity theory and public administration. In G. Teisman, A. Van Buuren, & L. Gerrits (Eds.), *Managing complex governance systems* (pp. 17–36). New York: Routledge.
Knoepfel, P., & Kissling-Naf, I. (1998). Social learning in policy networks. *Policy and Politics, 26*(3), 343–367.
Kolodny, A. (1973). *The lay of the land: Metaphor as experience and history in American life and letters*. Chapel Hill, NC: University of North Carolina Press.
Koput, K. (1992). *Dynamics of innovation idea generation in organizations: Randomness and chaos in the development of a new medical device*. Unpublished Ph.D. Dissertation, School of Business, University of California at Berkeley, CA.
Kristeva, J. (1982). *The powers of horror: An essay on abjection*. New York: Columbia University Press.
Krugman, P. (1996). *The self-organizing economy*. Cambridge, MA: Blackwell.
Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago, IL: University of Chicago Press.
Lancaster, W., & Lancaster, F. (1998). Who are these nomads? What do they do? Continuous change or changing continuities. In J. Ginat & A. Khazanov (Eds.), *Changing nomads in a changing society*. Portland, OR: Sussex.
Landau, M. (1972). *Political theory and political science*. New York: Macmillan.
Lansing, J. S. (2003). Complex adaptive systems. *Annual Review of Anthropology, 32*, 183–204.
Law, J. (1994). *Organizing modernity*. Oxford: Blackwell Publishers.
Law, J., & Urry, J. (2004). Enacting the social. *Economy and Society, 33*(3), 390–410.
Law, R. (1999). Beyond 'women and transport': Towards new geographies of gender and daily mobility. *Progress in Human Geography, 23*(4), 567–588.
Lee, M. E. (1997). From enlightenment to chaos: toward nonmodern social theory. In R. A. Eve, S. Horsfall, & M. E. Lee (Eds.), *Chaos, complexity and sociology* (pp. 15–29). Thousand Oaks, CA: Sage.
Lefebvre, H. (1991). *The production of space*. Oxford: Blackwell.
Le Guin, U. (1974). *The dispossessed: An ambiguous utopia*. New York: Harper and Row.
Lewin, R. (1992). *Complexity. Life at the edge of chaos*. New York: Macmillan.
Lindblom, C. E. (1965). *The intelligence of democracy*. New York: Free Press.
Lindblom, C. E., & Cohen, D. K. (1979). *Usable knowledge: Social science and social problem-solving*. New Haven, CT: Yale University Press.
Livingston, I. (1997). *Arrow of chaos: Romanticism and postmodernity*. Minneapolis, MN: University of Minnesota Press.
Livingstone, D. N., & Harrison, R. T. (1980). The frontier: Metaphor, myth and model. *The Professional Geographer, 32*, 127–132.
Livingstone, D. N., & Harrison, R. T. (1981). Meaning through metaphor: Analogy as epistemology. *Annals of the Association of American Geographers, 71*(1), 95–107.
Locke, J. (1996). *An essay concerning human understanding*. London: Penguin.
Locke, R., & Jacoby, W. (1997). The dilemmas of diffusion. *Politics and Society, 25*(1), 34–65.
Lorenz, E. N. (1993). *The essence of chaos*. London: UCL Press.
Loye, D., & Eisler, R. (1987). Chaos and transformation: Implications of non-equilibrium theory for social science and society. *Behavioral Science, 32*, 53–65.
Luhmann, N. (1995). *Social systems*. Stanford, CA: Stanford University Press.
Lury, C. (1987). The objects of travel. In C. Rojek & J. Urry (Eds.), *Touring cultures* (pp. 75–95). London: Routledge.
Lynn, L. (Ed.). (1978). *Knowledge and policy: The uncertain connection*. Washington, DC: National Academy of Sciences.

Majone, G. (1993). Wann ist poicy-deliberation wichtig? *PVS Sonderheft, 24*, 97–115.
Malkki, L. (1992). National geographic: The rooting of peoples and the territorialisation of national identity among scholars and refugees. *Cultural Anthropology, 7*(1), 24–44.
Marston, S. A., Jones, J. P, I. I. I., & Woodward, K. (2005). Human geography without scale. *Transactions of the Institute of British Geographers NS, 30*, 416–432.
Marx, K., & Engels, F. (1952). *The manifesto of the communist party*. Moscow: Foreign Languages Publishing House.
Matless, D. (1995). Culture run riot? Work in social and cultural geography, 1994. *Progress in Human Geography, 19*, 395–403.
May, R. M. (1976). Simple mathematical models with very complicated dynamics. *Nature, 261*, 459–467.
Mayer-Kress, G. (1994). *Presentation at chaos and complexity: Their meaning for business, economics and society*. Dallas, TX: University of Texas.
McCloskey, M. A. (1964). Metaphors. *Mind. New Series, 73*(290), 215–233.
McDowell, L. (1996). Off the road. Alternative views of rebellion, resistance and 'the beats'. *Transactions of the Institute of British Geographers NS, 21*, 412–419.
McKay, G. (1996). *Senseless acts of beauty: Cultures of resistance since the sixties*. London: Verso.
McKelvey, B. (2002) *Managing coevolutionary dynamics*. 18th FGOS Conference, Barcelona.
McLennan, G. (2003). Sociology's complexity. *Sociology, 37*(3), 547–564.
McVoy, E. C. (1940). Patterns of diffusion in the United States. *American Sociological Review, 5*, 219–227.
Medd, W., & Marvin, S. (2005). From the politics of urgency to the governance of preparedness: A research agenda on urban vulnerability. *Journal of Contingencies and Crisis Management, 13*(2), 44–49.
Meentemeyer, V. (1989). Geographical perspectives of space, time and scale. *Landscape Ecology*, *2*(3/4), 163–173.
Mihata, K. (1997). The persistence of 'emergence'. In R. Eve, S. Horsfall, & M. Lee (Eds.), *Chaos, complexity and sociology* (pp. 30–38). Thousand Oaks, CA: Sage.
Miller, C. L. (1993). The postidentitarian predicament in the footnotes of *A Thousand Plateaus*: Nomadology, anthropology and authority. *Diacritics, 23*(3), 6–35.
Miller, E., & Friesen, P. (1982). Structural change and performance: Quantum vs piecemeal-incremental approaches. *Academy of Management Journal, 25*(4), 867–892.
Mills, W. J. (1982). Metaphorical vision: Changes in western attitudes to the environment. *Annals of the Association of American Geographers, 72*(2), 237–253.
Mingers, J. (1995). *Self-producing systems*. New York: Plenum.
Mintzberg, H. (1989). *Mintzberg on management: Inside our strange world of organizations*. New York: The Free Press.
Mintzberg, H., & Jorgenson, J. (1987). Emergent strategy for public policy. *Canadian Public Administration, 30*(2), 214–229.
Mirowski, P. (1994). *Natural images in economic thought*. Cambridge: Cambridge University Press.
Mitleton-Kelly, E. (2003). *Complex systems and evolutionary perspectives of organisations*. London: Elsevier.
Mol, A. P. J. (2007). Boundless biofuels? Between environmental sustainability and vulnerability. *Sociologica Ruralis, 47*(4), 297–315.
Mol, A. P. J., & Law, J. (1994). Regions, networks and fluids: Anaemia and social topology. *Social Studies of Science, 24*, 641–671.
Mol, A. P. J., & Spaargaren, G. (2005). From additions and withdrawals to environmental flows. *Organization and Environment, 18*(1), 91–107.
Morcul, G. (2003). *Complexity and public administration.* Public Administration Theory Network Annual Conference, Anchorage, AK.
More, T. (1965). *Utopia*. London: Penguin.

Morgan, A. (2005). The global dimension. Contexts within contexts. *Zeitschrift fur Internationale Bildungsforschung und Entwicklungspadagogik, 28*(2), 26–28.
Morgan, G. (1998). *Images of organization*. Thousand Oaks, CA: Sage.
Morin, E. (2002). The notion of the subject. In D. F. Schnitman & J. Schnitman (Eds.), *New paradigms, culture and subjectivity*. New Jersey, NJ: Hampton Press.
Morley, D. (1999). Bounded realms: Household, family, community and nation. In H. Naficy (Ed.), *Home, exile, homeland* (pp. 151–168). New York: Routledge.
Morris, M. (1988). At Henry Parkes Motel. *Cultural Studies, 2*, 1–47.
Nash, W. (1989). *Rhetoric: The wit of persuasion*. Oxford: Blackwell.
Nedley, A. (1999). *Policy transfer and the developing country experience gap: Taking a southern perspective*. York: University of York.
Nibley, H. (1966). Tenting, toll and taxing. *Western Political Quarterly, 19*, 599–630.
Nicolis, G. (1995). *Introduction to non-linear science*. Cambridge: Cambridge University Press.
Nicolis, G., & Prigogine, I. (1989). *Exploring complexity: An introduction*. New York: Freeman.
Nonaka, I. (1988). Creating organizational order out of chaos: Self-renewal in Japanese firms. *California Management Review, 30*(3), 57–73.
Nordlinger, E. (1981). *On the autonomy of the democratic state*. Cambridge, MA: Harvard University Press.
Norgaard, R. B. (1984). Coevolutionary development potential. *Land Economics, 60*(2), 160–173.
Norgaard, R. B. (1994). *Development betrayed: The end of progress and a coevolutionary revisioning of the future*. London: Routledge.
Noyes, J. K. (2004). Nomadism, nomadology, postcolonialism. *Interventions, 6*(2), 159–168.
Nullmeier, F. (1993). Wissen und Policy Forschung, Wissen spolitologie und rhetorisch-dialektisches Handlungsmodell. *PVS-Sonderheft, 24*, 175–196.
O'Loughlin, J. O., Ward, M. D., Lofdahl, C. L., Cohen, J. S., Brown, D. S., Reilly, D., et al. (1998). The diffusion of democracy 1946–1994. *Annals of the Association of American Geographers, 88*(4), 545–574.
Ortony, A. (Ed.). (1979). *Metaphor and thought*. Cambridge: Cambridge University Press.
O'Toole, L. J. (1993). Multiorganizational policy implementation: Some limitations and possibilities for rational-choice contributions. In F. W. Scharpf (Ed.), *Games in hierarchies and networks*. Campus: Frankfurt.
Padgett, J. F. (1980). Managing garbage can hierarchies. *Administrative Science Quarterly, 25*(4), 583–602.
Paechter, C. (2004). Metaphors of space in educational theory and practice. *Pedagogy, Culture, Society, 12*(3), 449–464.
Pagels, H. (1988). *The dream of reason*. New York: Simon and Schuster.
Palan, R. (2003). *The offshore world: Sovereign markets, virtual places and nomad millionaires*. Ithaca, NY: Cornell University Press.
Parker, M. (2009). Angelic organization: Hierarchy and the tyranny of heaven. *Organization Studies, 30*(11), 1281–1299.
Peat, F. D. (1991). *The philosopher's stone. Chaos, synchronicity and the hidden order of the world*. New York: Bantam.
Pel, B. (2009). The complexity of self organisation. Boundary judgements in traffic management. In G. Teisman, A. Van Buuren, & L. Gerrits (Eds.), *Managing complex governance systems* (pp. 116–133). New York: Routledge.
Peters, B. G. (2002). *Governance: A garbage can perspective*. Institut fur Hohere Studien (HIS), Wien, Austria.
Peters, J. D. (1999). Exile, nomadism and diaspora. In H. Naficy (Ed.), *Home, exile, homeland* (pp. 17–41). New York: Routledge.
Pettigrew, A. (1990). Longitudinal field research on change. *Organizational Science, 1*(3), 267–292.
Plant, S. (1997). *Zeros and ones*. London: Fourth Estate.

Platt, J. (1970). Hierarchical growth. *Bulletin of the Atomic Scientists*, *26*(9), 2–4, 46–48.
Pollitt, C. (2009). Complexity theory and evolutionary public administration. In G. R. Teisman, A. van Buuren, & L. Gerrits (Eds.), *Managing complex governance systems: Dynamics, self-organization and coevolution in public investments* (pp. 213–230). New York: Routledge.
Polsby, N. W. (1984). *Political innovation in America: The politics of policy initiation*. New Haven, CT: Yale University Press.
Porteus, J. (1985). Smellscape. *Progress in Human Geography, 9*, 356–378.
Pratchett, T. (1989). *Guards! Guards!*. London: Victor Gollancz.
Price, B. (1997). The myth of postmodern science. In R. Eve, S. Horsfall, & M. Lee (Eds.), *Chaos, complexity and sociology* (pp. 3–14). Thousand Oaks, CA: Sage.
Priesmeyer, H. R., & Baik, K. (1989). Discovering the patterns of chaos. *Planning Review*, *17*(6), 14–21, 47.
Prigogine, I. (1997). *The end of certainty*. New York: Free Press.
Prigogine, I., & Stengers, I. (1984). *Order out of chaos*. London: Heinemann.
Punter, D. (2007). *Metaphor*. London: Routledge.
Radaelli, C. M. (2000). Policy transfer in the European Union: Institutional isomorphism as a source of legitimacy. *Governance, 13*(1), 25–43.
Rao, A. (Ed.). (1987). *The other nomads: Peripatetic minorities in cross-cultural perspective*. Cologne: Bohlau.
Rasmussen, D. R., & Mosekilde, E. (1988). Bifurcations and chaos in a generic management model. *European Journal of Operational Research, 35*, 80–88.
Rasch, W., & Wolfe, C. (Eds.). (2000). *Observing complexity*. Minneapolis, MN: University of Minnesota Press.
Reeve, S. and Foden, G. (2001) A new breed of terror, *The Guardian*, September 12th.
Rescher, N. (1998). *Complexity*. New Brunswick, NJ: Transaction.
Rescher, N. (2000). *Process philosophy*. Pittsburgh, PA: University of Pittsburgh Press.
Roche, M. (2000). *Mega events and modernity*. London: Routledge.
Roe, M. S. (2013). *Maritime governance and policy-making*. London: Springer.
Rogers, E. M. (2003). *Diffusion of innovations*. London: Simon and Schuster.
Rogers, E. M., & Shoemaker, F. (1971). *Communications of innovations: A cross-cultural approach*. New York: Free Press of Glencoe.
Rojek, C., & Urry, J. (Eds.). (1997a). *Touring cultures. Transformations of travel and theory*. London: Routledge.
Rojek, C., & Urry, J. (1997b). Transformations of travel and theory. In C. Rojek & J. Urry (Eds.), *Touring cultures. Transformations of travel and theory* (pp. 1–22). London: Routledge.
Rose, R. (1988). Comparative policy analysis: The program approach. In M. Dogan (Ed.), *Comparing pluralist democracies* (pp. 219–241). Boulder, CO: Westview.
Rose, R. (1991). What is lesson drawing? *Journal of Public Policy, 11*(1), 3–30.
Rose, R. (1993). *Lesson-drawing in public policy*. Chatham, NJ: Chatham House.
Rosenau, J. (1992). *Governance without consent: Order and change in world politics*. Cambridge: Cambridge University Press.
Ruelle, D., & Takens, F. (1971). On the nature of turbulence. *Communications in Mathematical Physics, 20*, 167–192.
Russell, B. (1912). The philosophy of logical atomism. *The Monist, 28*(4), 495–527.
Ryan, B., & Gross, N. C. (1943). The diffusion of hybrid seed corn in two Iowa communities. *Rural Sociology, 13*, 15–24.
Rycroft, R., & Kash, D. (1999). *The Complexity challenge*. London: Pinter.
Sabatier, P. A. (1978). The acquisition and utilization of technical information by administrative agencies. *Administrative Science Quarterly, 6*, 386–411.
Sabatier, P. A. (1993). Policy change over a decade or more. In P. A. Sabatier & H. Jenkins-Smith (Eds.), *Policy change and learning: An advocacy coalition approach*. Boulder, CO: Westview.

Sachs, S. (1978). *On metaphor*. Chicago, IL: University of Chicago Press.
Said, E. (1994). *Culture and imperialism*. London: Vintage.
Salo, M. T. (1986). *Peripatetic adaptation in historical perspective* (pp. 7–36). Commission on Nomadic Peoples, Osaka, Japan, 21/22.
Salo, M. T., & Salo, S. (1982). Romnichel economic and social organisation in urban New England 1850–1930. *Urban Anthropology, 11*(3–4), 273–314.
Saperstein, A. M., & Mayer-Kreiss, G. (1988). A non-linear dynamic model of the impact of SDI on the arms race. *Journal of Conflict Resolution, 32*, 636–671.
Savage, R. L. (1985). Diffusion: Research traditions and the spread of policy innovation in a Federal system. *Publius, 15*(4), 1–28.
Scharpf, F. W. (1993). Positive und negative Koordination in Verhandlungssystemen. *PVS-Sonderheft, 24*, 57–83.
Schneider, A., & Ingram, H. (1988). Systematically pinching ideas: A comparative approach to policy design. *Journal of Public Policy, 8*(1), 61–80.
Schnitman, D. F., & Schnitman, J. (Eds.). (2002). *New paradigms, culture and subjectivity*. Cresskill, NJ: Hampton Press.
Scholte, J. A. (1996). Beyond the buzzword: Towards a critical theory of globalization. In E. Korfman & G. Youngs (Eds.), *Globalization, theory and practice* (pp. 50–51). London: Cassel.
Scholte, J. A. (2000). *Globalization: A critical introduction*. Basingstoke: Macmillan.
Schon, D., & Rein, M. (1994). *Frame reflection: Toward the resolution of intractable policy controversies*. New York: Basic Books.
Scott, W. R. (1992). *Organizations: rational, natural and open systems*. Englewood Cliffs, NJ: Prentice Hall.
Seamon, D. (1980). Body-subject, time-space routines and place ballets. In A. Buttimer & D. Seamon (Eds.), *The human experience of space and place* (pp. 148–165). London: Croom Helm.
Seamon, D., & Nordin, C. (1980). Marketplace as place ballet. A Swedish example. *Geografiska Institutonem, Goteborg, Series B*, 35–41.
Sfard, A. (1998). On two metaphors for learning and the dangers of losing just one. *Educational Researcher, 27*(2), 4–13.
Sheldon, A. (1980). Organizational paradigms: A theory of organizational change. *Organizational Dynamics, 8*, 61–80.
Sheller, M. (2000). *The mechanisms of mobility and liquidity. Re-thinking the movement in social movements*, Sociology Department, Lancaster University.
Sheller, M., & Urry, J. (2000). *Mobile transformations of 'public' and 'private' life*. American Sociological Association Annual Conference, Washington, DC.
Sheller, M., & Urry, J. (2006). The new mobilities paradigm. *Environment and Planning A, 38*, 207–226.
Shields, R. (1997). Flow as a new paradigm. *Space and Culture, 1*, 1–4.
Shrivastava, P. (1983). A typology of organizational learning systems. *Journal of Management Studies, 20*, 7–28.
Simmons, B. A., & Elkins, Z. (2004). The globalization of liberalization: Policy diffusion in the international political economy. *American Political Science Review, 98*(1), 171–189.
Singer, O. (1993). Policy Communities und Diskurs-Koalitionen: Experten und Expertse in der Wirtschaftspolitik. *PVS-Sonderheft, 24*, 149–174.
Sitwell, O. F. G. (1981). Elements of the cultural landscape as figures of speech. *Canadian Geographer, 25*, 167–180.
Smith, C. (1986). Transformation and regeneration in social systems: A dissipative structure perspective. *Systems Research, 3*(4), 203–213.
Smith, J., & Jenks, C. (2006). *Qualitative complexity*. London: Routledge.
Spaargaren, G., & Mol, A. P. J. (2008). Greening global consumption: Redefining politics and authority. *Global Environmental Change*, 350–359.

Stacey, R. D. (1992). *Managing chaos: Dynamic business strategies in an unpredictable world*. London: Kogan Page.
Stacey, R. D. (1993). *Strategic managment and organizational dynamics*. London: Pitman.
Stacey, R. D. (1996). *Complexity and creativity in organizations*. San Fransisco: Berrett-Koehler Publications.
Stallybrass, P., & White, A. (1986). *The politics and poetics of transgression*. London: Methuen.
Stengers, I. (1997). *Power and invention: Situating science*. Minneapolis, MI: Minnesota University Press.
Stewart, J. (1989). *Does god play dice? The mathematics of chaos*. Oxford: Basil Blackwell.
Stone, D. (1999). Learning lessons and transferring policy across time, space and disciplines. *Politics, 19*(1), 51–59.
Stone, D. (2001). *Learning lessons. Policy transfer and the international diffusion of ideas*, CSGR Working Paper 69/01, Centre for the Study of Globalisation and Regionalisation, University of Warwick, Coventry.
Surowiecki, J. (2004). *The wisdom of crowds*. London: Little Brown.
Swinney, H. (1983). Observations of order and chaos in nonlinear systems. *Physica, 7D*, 3–15.
Taylor, M. (2003). *The moment of complexity: Emerging network culture*. Chicago, IL: University of Chicago Press.
Taylor, W. (1984). Metaphors of educational discourse. In W. Taylor (Ed.), *Metaphors of education*. London: Heinemann.
Teisman, G. R. (2005). *Public management on the edge of chaos and order*. The Hague: Academic Services (in Dutch).
Teisman, G. R., Gerrits, L., & Van Buuren, A. (2009). An introduction to understanding and managing complex process systems. In G. Teisman, A. Van Buuren, & L. Gerrits (Eds.), *Managing complex governance systems* (pp. 1–16). New York: Routledge.
Theissen, G. (1978). *The social setting of Pauline christianity*. Philadelphia, PA: Fortress Press.
Thietart, R. A., & Forgues, B. (1995). Chaos theory and organization. *Organizational Science, 6*(1), 19–31.
Thompson, G. F. (2004). Is all the world a complex network? *Economy and Society, 33*(3), 411–424.
Thoreau, H. D. (2007). *Walking*. Rockville, MD: Arc Manor.
Thorn, C. E., & Welford, M. R. (1994). The equilibrium concept in geomorphology. *Annals of the Association of American Geographers, 84*(4), 666–696.
Thrift, N. (1998). The rise of soft capitalism. In A. Herod, G. O'Tuathail, & S. M. Roberts (Eds.), *An unruly world? Globalization, governance and geography* (pp. 25–71). London: Routledge.
Thrift, N. (1999). The place of complexity. *Theory, Culture and Society, 16*(3), 31–69.
Toulmin, S., & Goodfield, J. (1962). *The architecture of matter*. London: Hutchinson.
Trist, E. (1980). The environment and system-response capability. *Futures, 12*(2), 119–120.
Tuan, Y. (1978). Sign and metaphor. *Annals of the Association of American Geographers, 68*, 362–372.
Urry, J. (2000a). *Sociology beyond societies*. London: Routledge.
Urry, J. (2000b). Mobile sociology. *British Journal of Sociology, 51*(1), 185–203.
Urry, J. (2001). Transports of delight. *Leisure Studies, 20*, 237–245.
Urry, J. (2002). The global complexities of September 11th. *Theory, Culture and Society, 19*(4), 57–69.
Urry, J. (2003). *Global complexity*. Cambridge: Polity Press.
Urry, J. (2004a). The 'system' of automobility. *Theory, Culture and Society, 21*(4–5), 25–39.
Urry, J. (2004b). The complex spaces of scandal. In J. O. Baerenholdt & K. Simonsen (Eds.), *Space odysseys, spatiality and social relations in the 21st century* (pp. 15–25). Aldershot: Ashgate.
Urry, J. (2005a). The complexities of the global. *Theory, Culture and Society, 22*(5), 235–254.
Urry, J. (2005b). The complexity turn. *Theory, Culture and Society, 22*(5), 1–14.

Urry, J. (2010). Mobile sociology. *The British Journal of Sociology, 61*, 347–366.
Van de Ven, A., & Poole, A. S. (1990). Methods for studying innovation development in the Minnesota innovation research program. *Organizational Science, 1*(3), 313–335.
Van Gils, M., Gerrits, L., & Teisman, G. R. (2009). Non-linear dynamics in port systems, change events at work. In G. Teisman, A. Van Buuren, & L. Gerrits (Eds.), *Managing complex governance systems* (pp. 76–96). New York: Routledge.
Van Potter, R. (1971). *Bioethics*. Englewood Cliffs, NJ: Prentice-Hall.
Vertovec, S. (1999). Conceiving and researching transnationalism. *Ethnic and Racial Studies, 22*, 447–462.
Vico, G. (1968). *The new science of Giambattista Vico*. Ithaca, NY: Cornell University Press.
Waldrop, M. M. (1992). *Complexity: The emerging science at the edge of order and chaos*. New York: Simon and Schuster.
Waldrop, M. M. (1993). *Complexity*. New York: Viking.
Walker, J. L. (1969). The diffusion of innovations among the American states. *American Political Science Review, 63*, 880–899.
Walker, J. L. (1974). *The diffusion of knowledge and policy change: Toward a theory of agenda setting*. Annual Meeting of the American Political Science Association.
Wallerstein, I. (1996). *Open the social sciences. Report of the Gulbenkian Commission on the Restructuring of the Social Sciences*. Stanford, CA: Stanford University Press.
Wallerstein, I. (1998). *The heritage of sociology; The promise of social science*. Presidential Address, 14th World Congress of Sociology, Montreal.
Waters, M. (1995). *Globalization*. London: Routledge.
Watson, M. K. (1978). The scale problem in human geography. *Geografiska Annaler B, 60*, 36–47.
Watts, D. (1999). *Small worlds*. Princeton, NJ: Princeton University Press.
Watts, D. (2003). *Six degrees: The science of a connected age*. London: Heinemann.
Weimar, D. R. (1966). *The city as metaphor*. New York: Random House.
Weiss, C. (1977a). Research for policy's sake; The enlightenment function of social research. *Policy Analysis, 3*, 531–545.
Weiss, C. (1977b). *Using social research in public policy-making*. Lexington, KY: D.C. Heath.
White, H. C. (1992). *Identity and control. A structural theory of social action*. Princeton, NJ: Princeton University Press.
Whitehead, A. N. (1929). *Process and reality*. Cambridge: Cambridge University Press.
Whitehead, A. N. (1967). *Adventures of ideas*. New York: Free Press.
Whitehead, A. N. (1978). In D. R. Griffin & D. W. Sherburne (Eds.), *Process and reality: An essay in cosmology*, *corrected edition.* New York: Free Press.
Whyte, L. L. (1944). *The next development in man*. London: The Cresset Press.
Williams, R. (1989). Mining the meaning: Key words in the miners' strike. In R. Gable (Ed.), *Resources of hope*. London: Verso.
Wilson, A. G. (1981). *Catastrophe theory and bifurcation*. London: Croom Helm.
Wolff, J. (1993). On the road again: Metaphors of travel in cultural criticism. *Cultural Studies, 7*, 224–239.
Wolff, J. (1995). On the road again: Metaphors of travel in cultural criticism. In J. Wolff (Ed.), *Resident alien: Feminist cultural criticism* (pp. 115–134). Cambridge: Polity Press.
Wolfram, S. (2002). *A new kind of science*. Champaign, IL: Walfram Media Inc.
Wolman, H. (1992). Understanding cross national policy transfers. *The case of Britain and the US, Governance, 5*(1), 27–45.
Zembylas, M., & Vrasidas, C. (2007). Globalization, information and communication technologies, and the prospect of a 'global village': promises of inclusion or electronic colonization? *Journal of Curriculum Studies, 37*(1), 65–83.
Zimmerman, B. J. (1990) *Nonequilibrium: The flipside of strategic processes*. Working Paper, Faculty of Administrative Studies, York University, North York, Canada.
Zohar, D. (1997). *Rewiring the corporate brain*. San Francisco, CA: Berrett-Koehler Publishers.