# Chapter 3
# Time

**Abstract** To understand the movement from form to process in maritime policy-making and governance, there is a need to understand more fully the concept of change. This in turn has a close relationship to time. No revolutionary dynamic governance which accommodates the ever-changing characteristics of policy-making and the maritime industry can avoid taking account of temporal issues. Therefore, time is next on the agenda. This chapter looks at the concept of time in the past, present and future and the relationship it has to maritime governance. It continues with a discussion of time and space and the idea of the many different times that co-exist. It concludes by looking at time, form, process and governance and their inter-relationships in the maritime sector.

> Waste of time is thus the first and in principle the deadliest of sins. The span of human life is infinitely short and precious to make sure of one's own election. Loss of time through sociability idle talk, luxury, even more sleep than is necessary to health… is worthy of absolute moral condemnation. Weber (1930: 158), quoted in Urry (2000: 109).

> A maelstrom of perpetual disintegration and renewal, of struggle and contradiction, of ambiguity and anguish. Taylor (2003: 157).

> For since God does nothing without reason, and no reason can be given why he did not create the world sooner; it would follow, either that he has created nothing at all, or that he created the world before any assignable time. that is, that the world is eternal. But when once it has been shown, that the beginning, whenever it was, is always the same thing, the question, why it was not otherwise ordered, becomes needless and insignificant. Leibnitz in reply to a letter by the Rev. Samuel Clarke, in Alexander (1956: 38–39).

To understand the movement from form to process in policy-making and governance, there is a need to understand more fully the concept of change. This in turn has a close relationship to time. No revolutionary dynamic governance which accommodates the ever-changing characteristics of policy-making and the maritime industry can avoid taking account of temporal issues.

> Temporal order provides an alternative in which linkages are less consequential than temporal. Things are connected by virtue of their simultaneous presence or arrival. In a culture with a strong sense of monthly or yearly cycles or of birth cohorts, we should not be overtly surprised by temporal order. In many human situations the most easily identified property of objects or events is the time subscripts associated with them. March and Olsen (1984: 743).



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Therefore time is next on the agenda.

Time has always been a popular subject. Van de Ven and Dooley (1999: 358) exemplify the situation placing it within a dynamic context, but we will begin with looking at time from the traditional approach of past, present and future, or as Schedler and Santiso (1998: 7) suggest:

> the future is uncertain, the past is past, and the present offers no salvation either.

## Time Past

> Without change there is no history; without regularity there is no time. Time and history are related as rule and variation; time is the regular setting for the vagaries of history. Kubler (1962: 72) quoted in Ingold (1993: 157).

Marx and Engels (1968: 96) were explicit about the significance of time and history:

> Men (*sic*) make their own history, but they do not make it just as they please: they do not make it under circumstances chosen by themselves, but under circumstances directly found, given and transmitted from the past. The tradition of all the dead generations weighs like a nightmare on the brain of the living.

It may come as some surprise, but the concept of time needs some defining before we can even begin. There is a substantial literature on time written in only the past few years and substantially more prior to this. Some later contributions include Schivelbusch (1986), Gould (1987), Aveni (1989), Grosz (1995) and Galison (2003). Widely debated across a multitude of disciplines, the meaning of time remains unclear at best and commonly thoroughly confusing. We need to achieve some sort of clarification of what we are considering before we can begin to address the time related issues of dynamic policy and governance in any meaningful way.

Definitions abound, and for the sake of simplicity, we shall consider a minimal number here. As we go on, many others will emerge as varieties of the core concept. Elias (1992: 10) provides a good point from which to start:

> The expression ‘time’ therefore refers to this relating together of positions or segments within two or more continuously moving sequences of events. The sequences themselves are perceptible. The relation between them results from the elaboration of perceptions by human beings possessing knowledge. It finds expression in a communicable social symbol, the concept of ‘time’, which within a certain society can transmit from one person to another a memory picture which can be experienced, but not perceived through the senses.

OK so that is clear. To be fair, if you take it slowly it actually describes what goes on and begins to reveal just how complex and complicated the whole concept of time really is.

Harvey (1969: 412) adds to the debate commenting on Hallowell's (1955: 216) 'formalised reference points' to which all events of the past, present and future can be referred. They include the calendar, clock, seasons and life cycle. These reference points vary between societies leading us again to the idea of a variety of times. Levi-Strauss (1963: 301) illustrates these ideas with the Hopi kinship system which 'requires no less than three different models of time dimension'.

Prigogine and Stengers (1984: xviii) emphasise how time varies with culture. Some view time as cyclical, endlessly recurrent. For others, it 'is a highway stretched between past and future'; others again see human lives as stationary, and the future moves towards us. Individuals vary with their cultural interpretation of time—some looking only to the immediate, others to the far future. And individuals even vary in their time horizon depending on context, circumstances and experience.

Time expectancies are also important—bed time, work time, commercial break times, the length of sports events and songs. There are many more but all are significant in interpreting the meaning of time. More complex is the interpretation of the direction of time. With the discovery of the laws of thermodynamics, it became accepted that there is a continuous and inescapable loss of energy in the universe and as a result, the 'world machine is running down' (Prigogine and Stengers 1984: xix). From this, it follows that one moment is no longer exactly like the last and 'you cannot run the universe backwards to make up for entropy'. Therefore, time has directionality and is irreversible.

This in turn causes some scientific problems. As entropy drains from the universal system, this also reduces the differences within it resulting in increasing homogeneity, a concept that conflicts almost directly with theories of evolution that point towards increasing diversity and complexity. Whilst we cannot even begin to attempt to deal with these issues in a book that focuses on maritime governance, the substance of underlying debates on time remains significant and suggest that time is both important and fundamental.

Entropy has been widely used as a tool to analyse the social sciences (see for example Allen et al. 1985: 66; Li and Qi 2008; Sommers 2009). Meanwhile, Tilly (1994: 271–273) provides a rather more extensive discussion suggesting that time is a 'relational' concept, an invention as the 'humanly negotiated concordance of two or more sequences'. A single sequence cannot establish time, and time always has to be humanly conceived and formulated. It is centred on culture not some sort of 'superhuman reality' and changes as 'shared understandings and choices of sequences change'. It is in many ways artificial, constructed and entirely contextual.

Tilly continues to debate whether some sort of absolute time exists beyond human consciousness and whether time is actually grounded in genetic-based physiological rhythms. This debate between astronomical and seasonal time and locally defined time (for example church bells) continues to this day. This issue of multiple times we shall return to later, but for the moment we can see that there is also a 'prevailing time' which affects many features of life including shipping. One example is that of the original growth of flags of convenience as a response

to prohibition laws in the USA in the 1920s and 1930s. Their development was a consequence of what was then prevailing and which has changed over time; and continues to do so.

Peuquet (2002: 11–32) discusses in depth the history of time suggesting it was regarded as one of the sources of the world in many 'ancient mythological, religious and philosophical systems, including *Chaos* and *Kronos* in ancient Greek mythology, *akasa* and *kala* in Indian philosophy and *Zurvan* in early Zoroastrianism' (Akhundov 1986).

In particular, the Greek concept of movement from Chaos to Cosmos has come to dominate Western philosophy. Chaos is the initial state of the universe, a 'boundless abyss of infinite space' (Peuquet 2002: 13). The God Gaia (Earth) gives birth to Kronos (Time), and order is gradually imposed creating the final state of Cosmos. Ramo (1999) noted that *Kronos* [more precisely, the exact quantification of passing time expressed in successive readings of rationalised and decontextualised devices and tools such as clocks and calendars (Sui 2012: 9)] was seen as complimentary to *Kairos* [human right and timely moments to act judiciously; or to be in the right place at the right time (Miller 1992; Couclelis 1998)]. Kairos was always characterised by three temporal dimensions (Smith 1969)—the right time, a time of tension that calls for a decision, and the opportunity to accomplish the purpose. Cyclical time followed from this based upon seasons, migrations, day and night, etc. The idea of linear, progressive and non-repeating came with the Hebrews and Zoroastrians emphasising either the final salvation of the world or the deliverance of Israel.

Meanwhile, Homer also began to identify an ordering of events with time continuous and open-ended and moving from the past, through the present and into the future, notions he developed through the *Odyssey*. However, Plato (428–347 BC) found it inappropriate to divide time into units of past, present and future. He considered that only 'Being' was real and that 'Becoming' was a journey towards Being. Time was a 'moving image towards eternity' (Peuquet 2002: 15) a concept that was continued through to Newton's days.

By the time of the Renaissance and the work of Copernicus, two significant advances in the understanding of time occurred largely emanating from the rise in scientific thought and a move away from ideas such as the physical distinction between Earth and Heaven. A continuous and unending time was scientifically established; and the concept of relating space and time closely together emerged. In the words of Newton (1962: 6):

> Absolute, true, and mathematical time, of itself and from its own nature always flows equably without relation to anything external and by another name is called duration.

Thus, absolute time forms a backdrop against which all physical objects and events can be measured. Time and space are separated, and the former becomes an 'abstract, universal order that exists by and in itself regardless of what happens *in* time' (Peuquet 2002: 19). However, this view of time continued only until the early twentieth century when Einstein, based on the work of Minkowski,

developed his view of a combined space-time where time formed a fourth dimension of geometry in a 'hypercube multivariate coordinate space'.

The Kantian (1724–1804) view of time developed from that of Newton but used a different perspective which incorporated the idea that we are born with some pre-existing notion of time that is innate and intuitive in order to perceive motion or changes in objects (Kant 1955). Time, along with space, is the 'basis on which the human mind inevitably arranges knowledge' (Peuquet 2002: 21). Kant (1950) considered that time (and space) is as follows:

- Universal—there is a single temporal background.
- Unsuppressible—time is always there and continues regardless of all other things.
- Necessary—for sensory perception.
- Unique—there is only one time.
- Infinite—because time is not an object in itself it can have no boundaries.

The reality we know is filtered by current and previous preconceptions cast in the context of innate space and time and therefore represents Kant's 'construction of thought'. Periodically, we need to revise our basic assumptions to incorporate new knowledge and experience into 'noncontradictory alignment with previous experience' (Peuquet 2002: 23). The accommodation of the theories of Newton, Copernicus and Einstein, for example, are examples of this process of re-examination.

Kant's views were a substantial change from previous conceptions of time with the individual no longer a passive observer, now determining the shape of their own personal time (and space) and as such represents one of the most important developments in modern thought (Wallace 1974). It led in turn to the idea that there are multiple times—geological, astronomical, social, economic and many more—dependent on the context, individual, expectation, experience, etc.

In more recent times, there has continued a debate on the importance and role of time and this has some significant ramifications for any discussion on governance and policy, maritime or otherwise. For example, Davis (1899: 483) considered time in his analysis of the geographical cycle relating changes in the physical landscape which took place with the passage of time concluding that although its scale was important, the amount of change observed was never simply a function of time.

Russell (1926: 122) continued to develop the idea that time was dependent upon the observer suggesting that:

> we cannot point to a time itself, but only to some event occurring at that time. There is therefore no reason in experience to suppose that there are times as opposed to events; the events, ordered by the relations of simultaneity and succession are all that experience provides. Hence, unless we are to introduce superfluous metaphysical entities, we must, in defining what we regard as an instant, proceed by means of some construction which assumes nothing beyond events and their temporal relations.

Hartshorne (1939: 176) had entered the debate on the importance of time (in this case in geography) at an early stage and put forward a number of views about time's place in spatial studies referring in particular to Spethmann (1928), Hettner (1931), Sauer (1925, 1931) and their support for moves in this direction and in opposition to the great majority then in ascendance. He continued this debate some twenty years later (Hartshorne 1959: 81) and remained convinced that actually the role of the scientist was to study the world as it is, and in Hettner's words 'time in general steps into the background'. Hartshorne agreed that the dimension of time was always involved in any analysis but that the majority could take place in the context of the present as interactions amongst phenomena were commonly dependent on current processes.

Harvey (1969: 408) outlines the debate that followed between those who wished to emphasise the significance of time and those who took the opposite view. Hettner and Sauer's views in support of what Harvey calls the 'genetic forms of explanation' received extended support through the development of geomorphology. Not all gave unqualified support to the temporal conception and most were not as definite as Sauer (1963: 360):

> The geographer cannot study houses and towns, fields and factories, as to their where and why without asking himself about their origins. He cannot treat the localization of activities without knowing the functioning of the culture, the process of living together of the group; and he cannot do this except by historical reconstruction. If the object is to define and understand human associations as areal growths, we must find out how they… came to be what they are… The quality of understanding sought is that of analysis of origins and processes. The all-inclusive object is spatial differentiation of culture. Dealing with man and being genetic in its analysis, the subject is necessarily concerned with sequences.

The support for a temporal interpretation certainly grew through the twentieth century further evidenced by contributions from Wooldridge and East (1951: 682) and Sorre (1962: 44).

For example, Carlstein (1981: 43) is convinced of the importance of time to society and as such by implication to policies that affect that society (including those of the maritime sector):

> Temporality is central to the generation and perpetuation of social forms, not incidental to it, and temporality in turn makes no sense without concepts of spatial presence and absence.

Kasperson and Minghi (1969: 200) stress the significance of time in studies of political unification. Referring specifically to the stage of the process of unification that had been reached in addition to the period of history of writing or data collection, they emphasise that these were key elements in understanding what was happening and as such should not be underplayed.

Massey (1999: 267) suggests that history (and by definition time) is critical to the development of all philosophical thought, something discussed in detail by Prigogine and Stengers (1984). Meanwhile, Hagerstrand (1970: 1) emphasises how time had been neglected in scholarly work outside of astronomy—largely a consequence of the general opinion that time was fixed, defined and unquestionable—inevitable. Discussion was therefore pointless. 'As long as the Millennium

and Judgement Day stood out as the ultimate goals, already planned, there was no cause to indulge in fancies about the future'. However, after a period of focussing entirely on the present and the immediate, sociologists of all sorts were beginning to recognise the significance of time to an understanding of the large majority of issues and problems. He goes on to suggest that the earlier in temporal forms had been a mistake and particularly in social terms were simply wrong.

Hagerstrand (1974a: 73) later emphasises that there was much to be learned from plant communities as much as economic and urban/industrial communities about the significance of time. Without proper temporal consideration then any analysis of social systems (including policy-making) would be shallow and insubstantial.

> Organisms, machines and buildings form populations in which generations follow each other as parcels in time. Territories of all sizes are frequently bounded not only in space but also in time.

Gertler (1988: 151) in considering geography broadly suggests that time has been neglected as a concept and deserves considerably more attention and particularly in the analysis of economic issues. Citing support from economics more generally (for example Shackle 1968; Robinson 1974, 1980; Arrow 1978; Bausor 1983), he suggests that the use of time needs to be reconstructed and more closely integrated into geographical studies of this sort. Meanwhile, Adam (1990: 24) comments on Bergson's (1924) contribution:

> To him the future is becoming in a way that can never be a mere rearrangement of what has been.

## Time Present

> 'Time moves very fast these days', says Venturi and Co. But even on the bullet train of post-modernity we're in for a bumpy ride… (O'Connor 1981, in Wark 1988).

Thrift (1977: 69–70) following Parkes and Thrift (1977) provides a discussion on the relationship between temporal level and time suggesting that a hierarchical model of time could be developed which could be applied to any social situation. Four types of time were identified each related to a societal level. Each level includes all the elements of the levels below it, and each is constantly active in trying to subsume that below it. The levels are termed as follows:

- Superstructure,
- Built environment,
- Activity system, and
- Attitude and perception.

With some interpretation, this temporal model can be applied to the maritime sector by marrying up its structure to that of the jurisdictional model identified

by Roe (2013). Thrift suggests that each level exudes its own time signal. Superstructure associates with the global level and has a longer-term, overarching characteristic. The built environment can be seen operating at the supranational level with a shorter time focus, but it still is extensive. The activity system is the national level, whilst the attitude and perception level is much more of an individual concept which can be associated with local action and even with the seafarer or port worker. Thrift continues to suggest that three other times—biological, psychological and socio-ecological—cut across the hierarchy and operate at all levels.

In the most modern of terms, time has been frequently considered as synonymous with money and this in turn reflects its importance to everyday life. Thrift (1996: 178) quotes Lakoff and Johnson (1980: 8):

> In our culture TIME IS MONEY (*emphasis original*) in many ways: telephone message units, hourly wages, hotel room rates, yearly budgets, interest on loans, and paying your debt to society by 'serving time'. They have arisen in modern industrialised societies and structure our basic everyday activities in a very profound way, corresponding to the fact that we act as if time is a valuable commodity – a limited resource, even money – we conceive of time that way. Thus we understand and experience time as the kind of thing that can be spent, wasted, budgeted, invested wisely or poorly, saved or squandered.

They go on to suggest a multitude of metaphors that emphasise further the place that time holds within society:

- You're wasting my time.
- This gadget will save you hours.
- I don't have the time to give to you.
- How do you spend your time these days?
- The flat tyre cost me an hour.
- I've invested a lot of time in her.
- I don't have enough time to spare for that.
- You're running out of time.
- You need to budget your time.
- Put aside some time for ping-pong.
- Is that worth your while?
- Do you have much time left?
- He's living on borrowed time.
- You don't use your time profitably.
- I lost a lot of time when I was sick.
- Thank you for your time.

Low and Barnett (2000) provide an all-encompassing interpretation of the role of time in globalisation suggesting that there is no one scale of time and that globalisation is characterised by multitemporality. Far from diluting the significance of either time or globalisation, this implies an even greater importance to analysing the relationship between the two. They go on to discuss the tendency for globalisation to overwhelm and to the detriment of other significant issues in academic debate such as historicism and other ways that exist of accessing interdisciplinary concepts.

## Time Future

Arrow (1978: 157) considers the relevance of studies in economics of the present compared with looking at those of the future and concludes like Alchian (1950) that the present should be considered relatively 'small and unimportant'. To concentrate on holdings rather than future flows, on the perishable rather than the durable was understandable but short-sighted. Whilst to emphasise the importance of time in economics was hardly new, the need to reconfigure this explicitly rather than implicitly was clear.

Hagerstrand (1970: 1) stresses much the same, seeing the world as moving away from what had been viewed as automatic progress towards increasing chaos. 'If mankind shall have a future at all, we need to be able not only to forecast coming events but consciously and purposely to invent this very future'. To achieve this, the need was (and is) to understand much more about the complex systems of concern to society.

Tilly (1994: 291–293) takes it further, contemplating time in the future and suggesting the emergence of three types. The first was an unfashionable possibility associated with the time of nation-states whereby the process of globalisation does not eradicate the state's potential to control the flows of materials, people, finance and information over controlled time periods. Instead the state retains effective control of citizens' time and much more so than is anticipated.

Secondly, the more fashionable conclusion that the supranational authority will extend its power so that timekeeping will become one more string to its economic, social and political bows. Alternatively, he envisages a final temporal future with citizens living in multiple times for 'protection, production, consumption, procreation, recreation, friendship, worship and other zones of activity, each individual and group knotting them together in their own distinctive times' producing what he sees as a period of unparalleled diversity.

Baumann (2000: 113) sees future time as speeding up and associates this with the consideration of space as well. Time is to become 'processual, mutable and dynamic, not preordained or stagnant'. It will be the continuation of what has been happening for some time—perhaps forever—but with increasing acceleration. Space would be conquered by ever faster machines creating larger usable space but in turn demanding ever greater space and thus faster machines—mirroring the dilemmas of the capitalist society and its chase for ever more spatial fixes. 'Space was the value, time was the tool'. Weber suggests it was necessary to sharpen the tools of society to achieve the future time scenario that was desired. This 'instrumental rationality' focuses on designing ways to perform tasks faster 'while eliminating unproductive, idle, empty and so wasted time'. Baumann (2000: 117–118) takes this further with consideration of the importance of increasing instantaneity as we move into the future. Georg Simmel (1900) provides an interesting view on the value of instantaneity suggesting that values are valuable as far as they are to be gained by foregoing other values. Instant (or effectively instant) anything suggests the expenditure of no time at all, and hence, its value can then be questioned. This in turn devalues the space that the instantaneity has revealed.

## Time and Space

> …social theory must acknowledge, as it has not done previously, time-space intersections are essentially involved in social existence… Giddens (1979: 54).

> An adequate account of human agency must, first, be connected to a theory of the acting subject/the human individual; and second, must situate action in time and space as a continuous flow of conduct, rather than treating purposes, reasons, etc., as somehow aggregated together. Giddens (1979: 2).

Pop (2006) analyses in some depth the contribution of James T. Mangan and his creation, the Nation of Celestial Space—over which he acted from 1948 to 1970 as the first representative. This new nation incorporated the whole of outer space which Mangan claimed as sovereign territory, filing the appropriate documents and making all the traditional claims of sovereignty and inviolability. The story is both fascinating and informative in its dealings with globalisation and the state's role, and although this argument has never formally been recognised, it provides a multitude of lessons about international, global and extraterrestrial relationships and also the relationship of space (in its areal sense) to time.

To quote Pop (2006: 212–213):

> One year after having founded Celestia, Mangan declared that he had willed his claim to the territory to his children, aware that he might not live to see the day when the Nation of Celestial Space would be considered anything but 'fantastic'(Statesville Record 1949). Mangan's death on 14 July 1970 left his son, James C. Mangan, in control of Celestia, in what the inheritor calls 'the biggest inheritance in history' (Suburbanite Economist 1970). While his reign may have reached the bounds of the universe, Mangan's life lasted a mere 73-year-long moment. Perhaps this is because as, suggested by an editorialist in 1949, under the space-time conception, 'the claimant to all space seems to have missed a bet when he failed to stake out a claim to all time too'.

Time has a long history of a close relationship with spatial issues (see for example Wilson 1955; Van Fraassen 1970; Sack 1974), and there has been considerable comment about the significance of this relationship. Maritime governance clearly has close relationships with the spatial characteristics of the industry manifested in the distribution of seafarer origins, ship registration, flag registries, port facilities, the location of financial and insurance services, and so on. These in turn have a temporal dimension which we explore further in this section and which is increasingly seen as inseparable from the spatial.

Crang (2003: 190) cites Kofman and Lebas (1995: 16), quoting Lefebvre (1970: 224):

> Space is nothing but the inscription of time in the world, spaces are the realizations, inscriptions in the simultaneity of the external world of a series of times, the rhythms of the city, the rhythms of urban population… the city will only be rethought and reconstructed on its current ruins when we have properly understood that the city is the deployment of time.

Russell (1926: 121) suggests that the question of time is actually 'rather less complicated than space'. Without wishing to argue with such an authority, this

seems a little doubtful, whilst Schumm and Lichty (1965: 110) note the importance of time in determining form when looking at both physical and human geography where both reflect the impact of history upon their characteristics. Time and space are thus essential to the study of systems.

Harvey (1968: 71) examines the spatial features of objects and events and attempts that had been made to explain the patterns that emerge from the causal mechanisms that generated them. The implication is that spatial patterns could be deduced from temporal processes and although simple sequential mapping could achieve some of this, rather more sophisticated and formal models would be needed. These would include the space-time languages of Carnap (1958) and of course the work of Hagerstrand on time geography, which at the time of Harvey's writing was only in embryonic form.

Hagerstrand (1974a: 80–81) was strongly influenced by the relationship between time and space through his utilisation and adaption of time-space budgeting ultimately to manifest itself in time geography—much more of which in a later chapter. He suggests that 'one accepts spatial location to be strongly determined by the sequence of events in time'. The 'space-time division of power' was unlikely to turn out to be easy but one that would become increasingly necessary. Hagerstrand's views are supported by Pred (1977: 209) who sees a need to 'get away from the overly *strong emphasis upon the spatial cross-sectional view* (Hagerstrand 1974a) of human phenomena and to focus a great deal more on time'.

Sack (1974: 1) quotes Blaut (1961: 3) in expressing doubts about whether the traditional approach of geographers to treat space separately—the *spatial separatist theme*—'all that seems to be required is a belief that withdrawing the temporal dimensions from a section of reality, along with all objects, somehow leaves something spatial behind for the geographers to study'. Lukerman (1965) reaffirmed this with his assumption of 'absolute space'.

Sack continues (1974: 3) citing support for using a space-time system for the identification of facts (rather than a separatist spatial approach) from Russell (1948), Quine (1950), Wilson (1955), Carnap (1958), Strawson (1963) and Harvey (1969). Lukerman (1958: 5) provides further back-up: 'the basic concepts of time and distance relate to all facts' and 'temporal/spatial concepts are used in all theories'.

Van Paasen (1976) looks at space-time relationships in terms of anthropology, whilst Gregory (1978: 119) comments that it is important to assign levels of development their own temporality, following on from the comments of Althusser and Balibar (1970: 99) on the decision by Marx not to follow Hegel in reducing history to a single essence that unfolded through time. Taking this approach, the assumption is that the capitalist mode of production contains 'different rhythms which punctuate the different operations of production, circulation and distribution'. Each has its own temporal agenda and spatial consequences (Vilar 1973: 188), and these may well not coincide. Castells (1977: 442–444) has his own view and that analysis needs to be directed towards 'an historically defined space-time, a space constructed, worked, practised by social relations', and organised 'into specific articulated units according to the arrangements and rhythms of the means of production'.

Seamon (1980: 159–160) analyses the relationship between time and space in terms of 'routines' which encompass both aspects of daily life. Most activities then do not need detailed consideration because they are 'routine' and they are considered (if at all), together. It is meaningless to consider them separately. Their inherent routineness releases time for consideration of those events that need core attention. Seaman also goes on to describe *place-ballets* which are combinations of time-space routines and *body-ballets*. Such notions provide for the combination and analysis of people, space, place and time.

Soja (1980: 210) considers both space and time and within a social context. Quoting Lefebvre (1976: 31):

> Space is not a scientific object removed from ideology and politics; it has always been political and strategic. If space has an air of neutrality and indifference with regard to its contents and thus seems to be 'purely' formal, the epitome of rational abstraction, it is precisely because it has been occupied and used, and has already been the focus of past processes whose traces are not always evident on the landscape. Space has been shaped and moulded from historical and natural elements, but this has been a political process. Space is political and ideological. It is a product literally filled with ideologies.

Much the same could be said of time. Both space and time therefore cannot be separated from social product or practice, and activities and objects must then be considered in both time and space and not one or the other.

Bird (1981: 131) suggests that without a consideration of time, space will always be static and any spatial analysis inadequate. However, space and time possess very different properties despite the energetic attempts of many to integrate the two (for example Thornes and Brunsden 1977; Carlstein et al. 1978; Parkes and Thrift 1980). Bird cites Ullman (1974) who characterises time as the more active and mental construct, while space is the more passive and concrete dimension.

Urry (1985: 21) debates whether time and space can be considered as 'absolute entities, possessing their own natures or particularities'. Is either of them 'causally productive' and possessing their own structure or merely relative and a way of characterising the relations between the constituents of the physical world? This latter view is that of Liebniz (1898) who suggests that space is something merely relative—it is an order of coexistences as time is an order of sequences.

Urry thus sees events as distributed in time-space, structured with specific relationships. These relationships might change spatially, temporally or more commonly on both dimensions but not necessarily to the same extent.

Dear (1986: 374) is convinced of the close proximity of space and time which had taken on a new significance with the onset of postmodernism. Using concepts explored by Jameson (1984: 83–84), the old systems of organisation and perception had been 'destroyed and replaced by a postmodern *hyperspace'*. The boundaries of space and time had been stretched to accommodate the new multinational global space and both were necessary to achieve this. Dear and Flusty (1998: 50) remain convinced some years later suggesting that new geographies of a postmodern era had been created alongside a new time-space fabric.

Gertler (1988: 154) emphasises the close relationship between capital and time which in turn has significant repercussions for the analysis of space and place. Robinson (1953) had stressed much earlier how temporally sensitive capital was; Gertler agreed and went on to link this with a need to add a spatial dimension as well. However, he was not as convinced of Solow's (1956) neoclassical view of the firm and capital as essentially malleable with an almost unrestricted potential for use which is variable in both space and over time in response to changing price signals. This he described as 'vulgar' and 'radical'.

Gertler (1988: 160) continues by emphasising the need to accommodate a temporal dimension into economic studies but is aware of the theoretical failings which remain prominent. He notes one genuine attempt by Massey (1978) to use a geological analogy in interpreting how 'successive rounds of accumulation wash one over another depositing layers of industrial relations and social apparatus which interact dialectically with the prior people, production systems and political characteristics they find'. Massey's approach (but not the principle of temporality) is criticised by Warde (1985) for its failure to specify how one round of accumulation is distinguished from another, something that Gertler also noted.

Harvey (1990: 205) is convinced of the significance of time over space—but without dismissing the importance of the latter. He suggests that social theory has always concentrated on 'social change, modernisation and revolution (technical, social, political). Progress is its object and historical time its primary dimension'. Progress was commonly seen as the conquest of space, removing spatial barriers and the 'annihilation of space through time'. Space reduction is inherent in progress, and the latter is characterised by similar reduction. Thus, computers get smaller, communications get quicker. One facilitates the other. In broad terms, modernity has focussed on *becoming* rather than *being*, something noted earlier. Harvey used Foucault (1984: 70) to summarise wondering why and when it happened that:

> "space was treated as the dead, the fixed, the undialectical, the immobile" (while) "time, on the contrary, was richness, fecundity, life, dialectic."

The inadequacies of space to act as a dominant means of interpretation and the desire to increasingly represent flux and change was a feature of the Futurist art movement desirous of representing speed and motion on a two dimensional canvas, an example of which is shown in Fig. 3.1.

Harvey noted that they took their art beyond canvas to be part of a revolution thus introducing mobility and change. In similar fashion, Walter Pater (see Schoen 1942) argued that art aspires to music, providing a transition to a dynamic medium; the next step was to film and it is interesting to consider that increasingly art forms have become progressively more mobile, less static.

Not everyone agrees and Harvey points out reaction to increasing mobility, speed and flux in the early twentieth century (when the Futurists and other such genre were emerging). In particular, he cites Heidegger (1927) who had


**Fig. 3.1** Natalia Goncharova, cyclist (1913)

proclaimed the permanence of being over the temporariness of becoming. His opposition to 'velocity, instantaneousness and simultaneity' led him to suggest:

> All this implies that this nation, as a historical nation, must move itself and thereby the history of the West beyond the centre of their future 'happening' and into the primordial realm of the powers of being.

In turn, this led him to the 'inner truth and greatness of the National Socialist movement of Germany'. He commented on its withdrawal from the League of Nations and that this would inevitably bind people into the great will of the German state and the people might:

> … grow in its unity as a work people, finding again its simple worth and genuine power, and procuring its duration and greatness as a work state. To the man of this unheard of will, our Fuhrer Adolf Hitler, a three-fold Sieg-Heil! (Taken from Blitz 1981: 217).

I do not think we need to say much more here except to note that the points made by Heidegger concerning *being* over *becoming* may be retrogressive but continue to have some support (for example the recent debate in the UK over EU membership which focuses on the supposed unification of individual will into the British nation-state).

Luke (1991: 320) continues the debate on the relationship between time and space discussing the growth of importance of the 'informational' society and chronopolitics which he saw 'grounded in the pace of exchange; how rapidly the

flows can travel, expand and unfold without meeting resistant barriers or closed borders'. Luke sees society moving at that stage from the Westphalian system of autonomous nation-states to a new system of global networks, transnational flows and informational communities set within a chronopolitical program. The division between the two would remain blurred—the original Westphalian definitions are themselves a product of technological 'velocity', itself reflecting temporarily. The conflict between the chronopolitical pace of today and the geopolitical space of the past which remains dominant both reflects the significance of time and space and the contradiction between their definitions.

Virilio (1995: 2) dismisses space as being superseded by time as 'distances and surfaces become irrelevant in favour of time span'. Meanwhile, Forsberg (1996: 355) reminds us through the work of Walker (1993: 131) that conceptions of space and time cannot be treated as 'some uniform background noise, as abstract ontological conditions to be acknowledged and then ignored'. Forsberg (1996: 365–366) goes on to indicate that territorial identity appears to be in decline because of a number of reasons including the erosion of state sovereignty and more significantly because concepts of time have become more important than those of space. However, this is based on a fallacious argument itself centred on a non-existent dichotomy between time and space. Progress is represented by increasing control over space, and this is achieved more by the 'annihilation of time' than anything else.

Massey (1999: 262) continues the debate quoting Raper and Livingstone (1995: 363):

> Space and time must be considered relative concepts, i.e., they are not determined by the nature and behaviour of the entities that 'inhabit' them (the concept of 'relative space'). This is the inverse of the situation where space and time themselves form a rigid framework which has an existence independent of the entities (the concept of 'absolute' space).

They conclude that time and space cannot be thought of separately but as a combined and fourth dimension—space-time. This is important for maritime policy as much as anything else for as Raper and Livingstone suggest (1995: 262), 'the way that spatio-temporal processes are studied is strongly influenced by the model of space and time that is adopted'. Grossberg comments (1996: 178) 'the bifurcation of time and space was perhaps the founding moment of modern philosophy'; meanwhile, Unwin (1993) suggests that a reconceptualisation of time-space was needed centred upon its reunification. Massey (1999: 263) blames it all on Kant and his emphasis on a debilitating separation of the two concepts. She goes on to contemplate the need for change in representation of space so that time is also given its fair place, so that 'representation is no longer stasis, but an element in a continuous production; a part of it all, and constantly becoming'. Historically, representation has been associated only with space but in truth, it also represents a fixed point in time. Not only is it important that this relationship is recognised but the need to represent space-time as a unity needs to be accommodated.

Dacin et al. (1999: 340) place the consideration of time in an organisational context seeing it important to view sources, mechanisms and outcomes of organisational embeddedness in a 'broad historical and comparative perspective' and stressing the value of historical and longitudinal studies. Others note temporality in situated interactions (Barley 1988), organisational control, group dynamics and interaction (Gersick 1988, 1994), entrainment (Ancona and Chong 1992; Lacey et al. 1998) and within organisations in general (Hassard 1996). Meanwhile, Abbott (1988) looks at the relationship between the sequence of processes in key events and the variation in pattern.

Castells (2000: 13–14) considers the issue of time and space extensively, and we shall return in a later chapter to consider more of his contribution. He sees the emergence of new social structures occurring with the advent of globalisation focussing particularly on the relationship between time and space. He cites Giddens (1984), Thrift (1990), Harvey (1990), Lash and Urry (1994) and Adam (2000) as evidence. Castells suggests that two emergent social forms of time and space were characterising what he termed the new network society. Timeless time and space of flows.

Timeless time he defines by the 'use of new information/communication technologies in a relentless effort to eliminate time'. Time is compressed (for example electronic communications) and desequenced (for example the blurring of life cycle patterns).

Space of flows refers to 'the technical and organisational possibilities of organising the simultaneity of social practices without geographical contiguity'. He suggests that the majority of social functions are now organised with these characteristics drastically changing social networks, physical locations and the relationship that exists between time and place. Place is not irrelevant, but it is the location of networks that matters far more than what he termed the 'spaces of places' which used to be dominant.

The debate over the relationship of space and time has continued into the twenty-first century. Nielsen and Jespersen (2001) extensively discuss their relationship to freight transport. May and Thrift (2003a, b: 2) are convinced that the two are inseparable quoting Massey (1994: 260–261). He stresses that instead of prioritising either space or time we need to:

> Overcome… the very formulation of space/time in terms of this kind of dichotomy…[and to recognise instead] that space and time are inextricably interwoven.

This space-time was 'multidimensional', capable of accommodating multiplicity (Rodowick 1997; Assad 1999).

May and Thrift continue to examine the four prime spatial characteristics of time. Time is shaped by our responses to *rhythms and timetables* which themselves are defined by the relationship between time and space in the natural world. They cite examples such as the diurnal cycle, the tides, the seasons and body rhythms (Parkes and Thrift 1980: Young 1988). These rhythms vary spatially in terms of the impact they have on lives (for example comparing urban and rural life; developed and developing countries); and also according

to social circumstances (for example the impact of the menstrual cycle; the regime of the car assembly worker; and the daily routine of a child going to bed) (Valentine 1997).

*Social discipline* emerges from this discussion both secularly and religiously defined. The former can be seen in the design of workplaces to ensure that employees are adequately monitored during work time (Stein 1995). During family time at home, work may often intervene thus placing a different time-consuming activity in the 'wrong' place—and vice versa in the context of family demands on work time (for example generated by a new baby) (Schivelbusch 1988; Schlor 1998).

The importance of *instruments and devices* also needs to be noted. These range from the more obvious sundial and digital clock to the DVD recorder and iPod. These can play two differing roles—either to flag up the time and its progress (for example the use by a bus driver of their watch) or to disguise these very characteristics (the use of an iPod on a long-haul flight). The extended use of recording devices for visual and audio images has had substantial spatial effects both directly—in freeing up locational constraints that previously existed, requiring listeners/viewers to be in a place at a specific time to experience the occasion—or indirectly in allowing the consumption of information at different times and places and the consequential impacts on life this has. Initially, the land-line and subsequently the mobile phone are significant examples (Kern 1983; Urry 1995).

Finally, May and Thrift (2003a, b: 4–5) suggest that the relationship between time/space and *texts* is important—a rather vaguer concept than the earlier ones referring to 'vehicles of translation (attempts to render social meaning from new conceptualisations of time itself)'.

Rather than privileging space over time or vice versa, this four part social structure of the relationship between the two attempts to provide a balanced account where one characteristic is not necessarily more important than another. May and Thrift suggest that this has commonly been the case citing Thompson on labour control (1967), Kern (1983), Young on the natural universe (1988), Harvey (1990), and Urry on technology (1995). Instead, we should consider various and uneven networks of time stretching over a variable social space. They describe this as 'a multiple, heterogeneous and uneven time-space'.

Amin (2002: 386) considers the 'historicity of spatiality', a concept derived from Agnew (1999: 504) which combines the notions of space and time with respect for the geographical embeddedness of power relationships. In this way, the temporal dimension of spatial characteristics is emphasised with layers of spatial power jostling over time. Herbert and Matthews (2004: 164) comment on Sack (1972) and his suggestion that 'space has limited independent meaning and is in effect a relational concept'. It has to be qualified by time, context and a range of economic, social and political factors'. Meanwhile, Dale and Burrell (2007: 5), for example, note the continued exercise of a dichotomised relationship between space and time.

## Many Times

> It was then I began to understand that everything in the room had stopped, like the watch and the clock, exactly, a long time ago. I noticed that Miss Havisham put down the jewellery exactly on the spot from which she had taken it up. As Estella dealt the cards, I glanced at the dressing table again, and saw that the shoe upon it, once white, now yellow, had never been worn. I glanced down at the foot from which the shoe was absent, and saw that the silk stocking on it, once white, now yellow, had been trodden ragged. Without this arrest of everything, this standing still of all the pale decayed objects, not even the withered bridal dress on the collapsed form could have looked so like grave-clothes, or the veil so like a shroud. *Great Expectations*, Charles Dickens (1861).

It is clear from the discussion so far that the concept of time is not quite as simple as might first be thought. In particular, a variety of times has been identified (Sorokin and Merton 1937: 615–616), and this theme continues to reappear over the decades since then. Reichenbach (1958: 117) reaffirms that there are a number of ways of measuring the differing times that exist, whilst Schedler and Santiso (1998) continue to note how this is related closely to time in its context of past, present and future.

Thrift (1977: 69) suggests that 'just as there are many spaces within spaces, so there are many times within times'. This essential multidimensionality means that any research into life and the world has to 'dynamize' its curriculum. Arrow (1978: 158) notes Hick's (1946) consideration of the variation that exists in time when contemplating commodities and regarding them as different things dependent on the dates they are considered are reflected as much as anything in the price which can be associated with them.

Harvey (1990: 224–225) provides an extensive discussion of the variety of times and in particular refers to Gurvitch's (1964) social tines (Fig. 3.2) each of which derives from different social formations in turn generating their own temporality. Some of these can run concurrently depending on the social formation—he cites the contrast between academic time and revolutionary time in France in 1968. This was reaffirmed some time ago by Sorokin and Merton (1937: 615) who saw time as a 'necessary variable in social change' and also by Graham (1998: 179) citing Thrift (1996: 2)—'time is a multiple phenomenon; many times are working themselves out simultaneously in resonant interaction with each other'.

Urry (2000: 105–106) cites Adam (1995) in commenting upon the variety of times that exists, supported by Hawking (1988: 33): 'there is no unique absolute time, but instead each individual has his own personal measure of time that depends on where he is and how he is moving'. This personal view of time (*eigenzeit*) is stressed by Nowotny (1994) and goes hand in hand with the idea of seeing time as related to its measurement.

Urry continues with a discussion of natural and social times (Urry 2000: 118–119) suggesting that the difference between the two is largely imaginary as social time itself is 'generalised through nature' and thus characteristic of the physical sciences. Consequently, the characteristics of social time such as past, present and future, the

| Type | Level | Form | Social Formation |
|---|---|---|---|
| **Enduring time** | Ecological | Continuous time in which past is projected in the present and future; easily quantifiable | Kinships and locality groupings (particularly rural peasant societies and patriarchal structures) |
| **Deceptive time** | Organized society | Long and slowed down duration masking sudden and unexpected crises and ruptures between past and present | Large cities and political 'publics'; charismatic and theocratic societies |
| **Erratic time** | Social roles, collective attitudes (fashion) and technical mixes | Time of uncertainty and accentuated contingency in which present prevails over past and future | Non-political 'publics' (social movements and fashion followers); classes in process of formation |
| **Cyclical time** | Mystical unions | Past, present and future projected into each other accentuating continuity within change; diminution of contingency | Astrology followers; archaic societies in which mythological, mystical and magical beliefs prevail |
| **Retarded time** | Social symbols | Future becomes present so late as to be outmoded as soon as it is crystallized | Community and its social symbols; guilds, professions etc, feudalism |
| **Alternating time** | Rules, signals, signs and collective conduct | Past and future compete in the present; discontinuity without contingency | Dynamic economic groups; transition epochs (inception of capitalism) |
| **Time in advance of itself** | Collective transformative action and innovation | Discontinuity, contingency; qualitative change triumphant; the future becomes present | Competitive capitalism; speculation |
| **Explosive time** | Revolutionary foment and collective creation | Present and past dissolved into a transcendent future | Revolutions and radical transformations of global structures |

**Fig. 3.2** Typology of social times. *Source* Gurvitch (1964)

qualitative experience of time, are actually all integral to the natural sciences (Adam 1990: 150). The only exception was clock time. However, this has been taken as the determining feature of natural time and in turn is inappropriate because clock time is Newtonian and Cartesian—based on the notion of absolute time that is not liable to change. This absolute time is 'invariant, infinitely divisible into space-like units, measurable in length, expressible as a number and reversible' (Urry 2000: 119). It is Cartesian space because 'it is premised upon the dualisms of mind and body, repetition and process, quantity and quality, form and content, subject and object' (Urry 2000: 119).

The modern conception of time has rejected this Newtonian and Cartesian interpretation:

> Space and time are now dynamic qualities; where a body moves or a force acts, it affects the curvature of space and time – and in turn the structure of space-time affects the way in which bodies move and forces act. (Hawking 1988: 33).

Despite much discussion, this integration of natural and social time into one variable and flexible concept remains elusive, and therefore, it has proved difficult to comprehend how 'nature, society and individuals are embedded in each other and are interdependent' (Elias 1992: 16).

Urry (2000: 127–129) also stresses the significance of instantaneous time, something which has particular relevance to changes in daily life in recent years. This has seen events which are occurring 'now' (or instantaneously) as more important in social consideration than those with some sort of theme. Despite the fact that they share nothing in common, they are all happening instantaneously. This 'collage' effect is accompanied by the intrusion of distant events into everyday life. This space-time compression reflects the presence of instantaneity which in turn diminishes the impact of space. Thus, technology allows multiple and (almost) instantaneous events to be absorbed together and in one location. Time (and space) loses one of its most significant characteristics. Virilio (1986) suggests that this 'violence of speed' transcends and destroys place. Modern youth culture sees the day consisting of 24 h (and not 16 plus sleep during conventional hours) which can be divided up at will through the use of technology and mind-inducing substances.

Crang (2003: 189) takes Lefebvre's use of discrimination between types of cities, using an 'assemblage of different beats' as a basis for distinguishing different times and tempos. Using the city as his example, he suggests that it is the location where 'multiple temporalities collide', quoting Mehrotra (1999: 65–66) and his example of Bombay where there is an:

> inter-twining of times, of attitudes, of the coming together and moving apart of the past and present(which) has historically created Bombay's urban kaleidoscope. It is an urban phenomenon that does not lend itself to simplistic readings of its form, which is pluralistic in nature and does not make explicit its origins, intention or rationale.

Crang goes on to suggest that we think of everyday rhythms in multiple forms including some which are speeding up continuously (for example Bombay), and others which are slowing (daily commuting) and others which are regular (the school run; the annual holiday; shop opening hours, and so on). In Felski's (2000: 18) terms, 'everyday life is above all a temporal norm' and Lefebrvre's vision has been taken up successively by Quick (1998) and retrospectively by de Certeau (1984), Harvey (1985).

Stalder (2006: 156) is emphatic in how many different conceptions of time exist. He notes the work of Urry (1985) who comments on 'computime' and its contrast in temporality with 'glacial time' and that of 'clock time'. Castells' 'timeless time' we shall return to later where he considers how all temporalities come together creating differing interactions. No particular time is dominant overall as

it depends entirely on context. Time is constructed rather than natural, something widely accepted in the social sciences for many years but a much newer idea in the scientific community.

The concept of 'anti-time' provides an alternative perspective to the conventional interpretation of time. The concept is far from new and reflects the attitude that time has only a limited place in the understanding of society. Hartshorne (1939: 176) within a geographical context suggests that to consider the spatial nature of the discipline in its proper context, any consideration of time relations must be 'secondary and merely supplementary'. Others suggest that time is important as it places the phenomena under study into their appropriate point of development—emphasised in particular at that time by Spethman (1928). Hartshorne goes on to discuss the example of Sauer and Meigs' (1927) work on the site and culture of San Fernando de Velicata which he considers 'history rather than geography'.

> The question is whether geographers who wish to study the present geography of a region are required first to produce works for which few of us are technically prepared and which can hardly be distinguished from other fields.

Hartshorne continues to criticise the significance that time is accorded by some geographers and thus remains firmly in the 'anti-time' school of thought. Of course since then, the attitude towards space and time and their interrelationship has changed substantially. Sauer (1974: 190) notes with some surprise how the physical geographer W.M. Davis promoted geomorphology as a discipline 'free of concern with chronology of time and change'. Whilst his cycle of erosion was characterised by temporal phases (youth, maturity and old age), the interpretation was of these phases topically rather than over time and there was no consideration of a phase within time or whether a phase was long or short. Thus, time was relegated to something that was the concern of geologists.

Guelke (1977: 3) identifies theoretical difficulties in incorporating time into any studies that focus upon a real or spatial relationships (and there is an argument that this might also cover the maritime and logistics sectors). He quotes Hartshorne (1939: 184–188), who suggests that time 'steps into the background' and that in geography, the only historical study with validity was one that presented a 'cross section or period picture'. Although dated, specifically focussing upon geography and widely condemned, Hartshorne's comments remained strongly influential.

Massey (1993: 141, 147) spends some considerable effort in assessing the role of time and its significance particularly in contrast to the pre-eminence placed upon space. Evidence for this trend comes from many places. Massey quotes Berger (1974): 'it is space, not time, that hides consequences from us'; 'the difference that space makes' (Sayer 1985); 'the new spatiality implicit in the postmodern' (Jameson 1984); 'it is space rather than time which is the distinctively significant dimension of contemporary capitalism' (Urry 2000); 'the anxiety of our era has to do fundamentally with space, no doubt a great deal more than time' (Foucault 1986). To these clearly spatial opinions, she adds Laclau (1990: 41) who comments in the context of a definition that 'temporality must be conceived as the

exact opposite of space'. This perpetuates the idea of a dichotomy, largely irreconcilable and both thoroughly unhelpful and widely criticised. Massey (1993: 147) continues:

> All the strings of these kinds of opposition with which we are so accustomed to work (mind-body; nature-culture; reason-emotion; and so forth) have been argued to be at heart problematical and a hindrance to either understanding or changing the world.

Such dichotomies are considered to work to the advantage of certain, always dominant, social groups—and this includes all such dichotomies not just temporal/spatial ones, and therefore forms part of a conspiracy typified by the black/white and male/female scenarios.

Forsberg (1996: 371) reaffirms the significance of space over time suggesting that it occupies a stronger mental category:

> I think that it is at least empirically arguable that our daily life, our psychic experience, our cultural languages, are today dominated by categories of space rather than categories of time, as in the preceding of high modernism. Jamieson in Keith and Pile (1993: 2).

Forsberg (1996: 370) continues by emphasising the false dichotomy between time and space. The process of deterritorialisation emphasised by Harvey, amongst many others, reflects the significance of both dimensions and reveals how an attitude of anti-time is both negative and unhelpful.

Timeless time is a concept widely discussed by Castells (for example 2000: 16). He suggests that the characteristics of societal, structural transformations have come from the extensive introduction of information networks as the main organisational form. This stems from the 'simultaneous availability of new, flexible information technologies and a set of historical events which came together by accident around the late 1960s and 1970s.' These include the emphasis upon deregulation and liberalisation of capitalism; the difficulties faced by nation states with respect to intensified globalisation; the rise of 1960s counter-culturalism; and the development of new media adopting 'global hypertext'. Together, these favoured the adoption of information networks reflecting a move towards what Castells terms 'timeless time' where temporality becomes both intensely important (and continuously pursued to annihilation) and yet meaningless (in that by being annihilated it becomes of less significance). Virilio (1995: 1) concurs suggesting that 'real time now prevails above both real space and the geosphere. The primacy of real time, of immediacy, over and above space and surface is a *fait accompli* and has inaugural value'. He focusses far more on the significance of time that stems from its elimination, rather than its belittling. The result is 'global time', a result of increasing instantaneity which is overcoming the local and the spatially bound (1995: 2).

Webster (2002: 108) comments upon Castells' ideas on timeless time and his consideration of well-trodden arguments about space-time compression. Castells' contribution is to envisage a 'network society' within which the significance of time takes on the dichotomy identified above of simultaneous significance and insignificance. Castells' examples include the growth of flexitime to maximise the effective use of time and the emergence of 'electronically managed global capital markets' (Castells 1996: 417). Other vignettes of timeless time include the

blurring of lifestyles as individuals start to ignore or overcome traditionally, temporally defined functions such as childbearing (at an extended age); defying death (through cryogenics); and almost endless other possibilities afforded by genetic engineering. A permanent present is the result, reflected in news stories available anywhere and immediately. What is generated is 'systemic perturbation in the sequential order of phenomena' (Castells 1996: 464; Stalder 2006: 156); constant instantaneity; lack of continuity; and spontaneity.

We shall return to this in discussion of form and process in a later chapter, but the extended debate in social theory between the *contextual* and *compositional* (and its implications for science as a whole) and briefly noted earlier has some relevance here. Thrift (1983: 27–28) provides a detailed consideration of the issues, whilst Subramanian et al. (2003) look at neighbourhoods and social capital, Veenstra (2005) considers health and social capital in British Columbia, Kamphuis et al. (2008) provide an example of application to recreational cycling in Melbourne and Kulu and Boyle (2009) consider fertility in city suburbs. Stemming from a number of writers but perhaps most significantly the work of Hagerstrand (1974b), with major contributions from Simpson (1963) and Kennedy (1979) (the latter distinguishing between the *immanent* and *configurational*), the compositional approach finds its highest point in the 'structural-genetics' of Marx. The activity of humans is divided into a set of structural categories which have homogeneity and are derived through a process of abstraction. These categories can then be combined to form an explanation of society. Meanwhile, Thrift (1983: 28) sees elements of the contextual approach in the work of Schutz (1967) on phenomenology, in Berger and Luckmann's phenomenological–dialectical approach (Berger and Luckmann 1991), in Goffman's (1986)frame analysis, and in Hagerstrand's (for example 1970) time geography. Human activity is considered a series of situated, social events within their immediate spatial and temporal settings. Kennedy explains the immanent (unchanging) properties of matter and energy and the likewise unchanging processes and principles arising therefrom (Simpson 1963: 24) as his equivalent of the compositional. Meanwhile, the configurational (relating to and or determined by unique conditions of time and space) is a concept which enables physicists to separate their scientific concerns from the complexities of change over time and the influence of history upon the present and future. The consideration of time is never dull.

## Time, Form and Process

> …without time we cannot study change. Thus process is a word liberally introduced… Thrift (1977: 65).

> Truly temporal processes are continuous or invisible in the sense that, the very process of differentiating them into phases of before and after serves, not to separate them into a 'patchwork of disjointed parts' as Dewey puts it, but on the contrary, to relate their phases as aspects of the same dynamic unity. Shotter (1983: 21).

Le Poidevin (2003: 14–15) examines Aristotle's view (384–322 BC) of time which on the one hand dismissed it as not existing and on the other saw it represented by change in the form of things. Time and change were considered one and the same, and without change in form, there was no time to observe. In some ways, Plato (429–347 BC) was the source of this view as he accounted for the birth of time when the celestial bodies started to move for the first time. Thus, change in form represented time and without those changes, time did not exist.

Eichenbaum and Gale (1971: 531) comment on how Schaefer (1953: 243) is dismissive of the importance of time as 'purely geographical laws contain no reference to time or change' an opinion backed by Bunge (1966: 199) referring to the science of geography as one of locations. Schaefer continues (1953: 243–244): we cannot 'deny that the spatial structures we explore are, like all structures anywhere, the result of processes', but 'the geographer, for the most part, deals with them as he finds them, ready made'. Despite its focus on geography, these comments are of relevance in suggesting a failure to appreciate the significance of time in the study of form (and by assertion, other issues such as governance and policy). The implication is that the temporal dimension can be discarded leaving the true elements of the system behind to be analysed.

Schumm and Lichty (1965: 110) are some of the earliest commentators on the relationship between form and time referring back to the debates by Strahler (1950, 1952), Von Bertalanffy (1952: 109). Although directed specifically towards the debate within the field of geomorphology, their comments are both interesting and relevant. Von Bertalanffy was significantly opposed to the idea that time was particularly relevant to the study of form:

> In physical systems events are, in general, determined by the momentary conditions only. For example, for a falling body, it does not matter how it has arrived at its momentary position, for a chemical reaction it does not matter in what way the reacting compounds were produced. The past is, so to speak, effaced in physical systems. In contrast to this, organisms appear to be historical beings.

Schumm and Lichty (1965: 110) disagree considering that landforms reflect systems influenced by history. Thus, the geomorphologist must try to relate causality to evolution and ultimately to form, only possible by accommodating the temporal context.

Berry (1973: 8) cites Harvey (1969) in suggesting that it would be profitable to examine 'interactions between temporal process and spatial form'. Berry goes on to consider these relationships:

> Not only is the 'reality' of any element within a system relative to the entire system of elements; it is also time-relative. To seek any fixed thing is to deal in false imagination, therefore 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.

He considers that to search for absolute, geometric form is understandable as it stems from a society that tends to understand things through a process of codifying and classifying reality. However, to advance science is conditional upon

recognising the 'relativity of existence and the relative truth of perceptions'. Hinting at what we shall discuss in some depth in a later chapter, Berry suggests that what we need is 'a more continuous intellectual process… that recognises that every system and every interpretation needs assessment in the light of a more complete system'. Or to put it more succinctly—the temporal dimension is as essential as the spatial.

Hagerstand (1974a: 76) considers the potential for developing a new framework for analysis that incorporates both spatial and temporal concepts. The majority of geographers, planners and even statisticians always evaluate their findings in spatial terms including location and distribution. Even Harvey's early writings (1969: 410) considering space-time issues focus upon the redistribution of real income in an urban system and revolve around issues of accessibility and proximity, both essentially spatial. Hagerstrand goes on to consider how to accommodate the temporal dimension to the same extent that the spatial dimension has been making 'form and process not so different as they seem'. Combining the two was realistic—both represent resources to be consumed and this is doneso normally together. The significance of time must be emphasised.

The tendency to neglect the issue of time when compared with the consideration of space was maintained over a considerable period. Gertler (1988: 152) considers how wide discussions on inter-regional convergence and divergence tended to focus upon 'putative outcomes, results or spatial distributions' and as a result largely ignore issues of process or how such divergence or convergence evolve through time (Borts and Stein 1964; Romans 1965; Lande and Gordon 1977; Smith 1979). However, Sabatier (1988: 102), in his discussion of the application of the 'advocacy coalition framework', was more positive in consideration of the relationship of process to time rather than space suggesting that policy interpretation requires an appreciation of 'hundreds of actors from dozens of organisations seeking to influence the overall policy process over periods of a decade or more in situations where relatively technical information concerning problem severity and causes cannot be ignored'. Meanwhile, Virilio (1986, 1999) provides support for Sabatier arguing that the 'acceleration of communication has led to a replacing of geographical space with time' (Elden 2005: 8).

These arguments were never satisfactorily resolved and in fact remain rumbling on today at least to a certain extent. The view that change and time are synonymous can only work if there is a universal and constant time against which to measure change as the latter is only observable in relative terms. In that case, time must exist but rather than this helping to cement time's position *vis a vis* space, it seems to have if anything done the reverse. Consequently, space and form have dominated discussion. The whole situation is summarised through what is known as the 'experience argument'.

1. During a period of time without change, there would be no experience at all—since experience itself is a form of change—and so there can be no experience of the period of time without change.
2. A period of time by itself changes nothing, and so makes no difference to what we could experience after that period.

3. We can establish that some contingently true statement is true only if its being true could make some difference to what we experience, either now or at some later stage.

*Therefore,*

1. We cannot possibly establish that a period of time without change has occurred.
2. If it is impossible to establish whether or not some statement is true (or likely to be true) than that statement has no meaning.

*Therefore,*

1. Any statement to the effect that a period of time without change has occurred would have no meaning.

At which point we shall leave this argument. Suffice to say that there remains substantial disagreement about time and change and their relationship to form and space.

Rhoads (2005: 133), in contrast to others in their consideration of Davis's 'Cycle of Erosion', considers it as developmental change within a physical system which equates process with time:

> Time, thus became, at least for many of those concerned with adapting the evolutionary notion to wider fields, almost synonymous with 'development' and 'change' such that it was viewed not merely as a temporal framework within which events occur but as a process itself. It was in this sense that Davis employed the concept of evolution as the basis for the cycle of erosion. (Chorley et al. 1973: 193).

Cram (2011: 637–638) is clear about the importance of time and its relationship to process highlighting a number of scholars who had criticised analyses of current developments that were based upon 'snapshots' and focussing on historical institutionalist approaches (Bulmer 1994; Pierson 1993, 2004; Thelen and Steinmo 1992). She stresses that the temporal dimension is central with the present only understood in the context of the past. However, the past itself can change as new narratives emerge and these in turn have an effect on the future.

## Time and Governance

> Understanding the process of policy change – and the role of technical information therein – requires a time perspective of a decade or more. Such a time-span is also necessary to get a reasonable assessment of policy impacts. Sabatier (1988: 99).

Soja (1980: 210) provides commentary on the notion of space as a social (and therefore policy) construct, but his contribution to this debate could equally be

applied to time. Quoting Lefebvre (1976: 31) and adapting what he says for our purposes (noted in parentheses) the similarity between the two concepts clearly can be seen:

> Space (time) is not a scientific object removed from ideology and politics: it has always been political and strategic. If space (time) has an air of neutrality and indifference with regard to its contents and thus seems to be 'purely' formal, the epitome of rational abstraction, it is precisely because it has been occupied and used, and has already been the focus of past processes whose traces are not always evident on the landscape. Space (time) has been shaped and molded (*sic*) from historical and natural elements, but this has been a political process. Space (time) is political and ideological. It is a product literally filled with ideologies.

Lefebvre's comments on space clearly are heavily interrelated with temporal issues as well with the frequent reference to process and history, so that even without the interpretation made here, time rears its head as a serious political dimension of policy-making.

Harvey (1990: 202) emphasises the significance of the choice of time horizon to policy decision-making and effectiveness suggesting that differing time horizons will generate different policy decisions. The result is that efficient governance requires the tangible inclusion of a temporal dimension if it is to be meaningful.

Tilly (1994: 271) is interested in the relationship of time to the state and particularly the state's role as policy-maker. He saw three dimensions—the time of eras within which a state was located over an extended period of time characterised in recent time as 'powerful, sharply bounded, relatively centralised coercion-wielding organisations; the medium of time within which states existed which are characterised by the 'temporal organisations of other actors with which agents of states had to contend'; and the influence that states have in influencing their subjects through the organisation of time.

Tilly (1994: 273) also suggests that the features of life vary considerably depending upon the time in which they take place. Shipping is a prime example of a time influenced activity with maritime policies changing as circumstances around them change. Thus, flags of convenience emerged as a response to policies towards alcohol prohibition in the USA between 1919 and 1923. Meanwhile, environmental and security policies since 2001 have had an immense effect upon the industry. Tilly goes on to cite Aminzade (1992) who suggests four temporal features that can affect the social meaning of processes (including policy-making)—pace, duration, cycles and trajectory.

The importance of the state in shaping prevailing time was also considered by Tilly (1994: 275). He noted three different effects:

- By pre-empting and ordering citizens' time directly, as in government employment, conscription or obligatory voting.
- By absorbing portions of citizens' times indirectly in such activities as earning to pay taxes, answering official inquiries or attending political meetings.
- By establishing their own inescapable temporal references; clock times, calendar times, schedules of school and work, cycles of military service, and so on.

Marsh and Smith (2000: 11) focus upon an analysis of agricultural policy in the UK since the 1930s and to do this identify a number of dialectical relationships. These are identifiable only because a temporal perspective is taken—without this the policies would have remained obscure and hidden. Snapshots of policy networks would provide little to analyse, and a true understanding of policies could only be obtained once how they were formed was understood and how they have changed over time.

Stoker (1998: 26) considers that traditional governance is time and place specific. This is far from adequate in that almost as soon as defined, the policies emerging from this governance process are out of date. He urges policy-makers to accommodate 'an evolutionary way to capture the processes of adaptation, learning and experiment'. This dynamic dimension to governance mirrors the discussion in Chap. 1 reflecting the need for a policy-making process that accommodates change.

LaGro (2007: 4) suggests that the issue of temporality and its place in governance is not a new one but that discussion of temporal issues in political analysis is so far inadequate. The limited number of academic works in this area is almost all specifically aimed at the EU dimension (Schedler and Santiso 1998; Pierson 2000; Tilly 1994, 1995; Schmitter and Santiso 1998; Ekengren 1997, 2002; Jerneck 2000; Goetz 2006; and Meyer-Sahling 2007). LaGro goes onto note the example of time inconsistency that is apparent in EU policy-making and governance (noted also by Tocci 2005: 78), whereby reforms are completed in the relatively short-term, whilst membership is long-term. Tocci comments: 'the process is front-loaded with obligations and back-loaded on the delivery of the benefits'.

In a similar vein to Marsh and Smith's earlier (2000) work, Cram (2011: 636–637) emphasises the importance of the temporal dimension in interpreting and understanding new modes of governance. This is founded upon the problem of 'snapshot' governance noted in earlier work by Cram.

These policy relationships with time are clearly emphasised through transport in general and shipping in particular suggesting that a 'snapshot' governance can never be adequate. There are many examples that could be taken. Bird (1981: 137) considers decision-making in port policy finding that decision-makers in European ports react to decisions forced upon them commonly by ship owners who in turn have to react to international competition. Decisions by each are made with appropriate consideration of the time when they are made but with little consideration of the long-term implications before being projected onto space in the form of port location and structure in a hypothetico-deductive sequence.

Meanwhile, Shaw (2006: 237) stresses the relatively minor attention given to time in transport research. He notes examples of where it has been important including using travel time as an impedance measure in spatial interaction models and studies of time in activity-based modelling. In addition, the work of Janelle (1969, 1975) on time-space convergence and that of Knowles (2005) on the differential collapse of time-space relationships can be noted. Shaw goes on to suggest that modern communications changes and the growth of instantaneity have lessened the value of conventional time-space models such as the gravity model, facility locations models and spatial choice models. More focus is needed on time

in general and real time in particular, and their relationship to classical modelling. Brooks and Pallis (2008: 414) re-emphasise this in relation to the ports sector how policies take time to have an effect—sometimes lengthy, and governance changes can be even more protracted.

## Conclusions

Time is clearly a big issue. A big issue in policy and governance as much as anywhere and the changes in communications with their impact upon globalisation have made the incorporation of a temporal dimension essential.

Maritime governance is no different from many other governance frameworks worldwide in neglecting time as a dimension, producing a series of static frameworks and policies that fail to recognise the significance that time can play. However, the intensely global nature of the shipping industry makes the absence of a temporal framework that much more significant.

Rather curiously, the increasing time compression that has characterised the moves towards globalisation has meant that the time and the changes in its significance have become more important rather than less. This is the case when considering the increased importance of process and change over place and form and is essential if governance in the maritime sector is to be improved and reflect better the policy issues towards which it is directed. Time is a formidable element in attempts to improve maritime governance and reflect the dynamic nature of the sector. The near disappearance of time with the growth of virtually instantaneous communications has made its presence even more important in governance (Urry 2000: 125).

Time is also highly related to the concept of reducibility. It is traditional in the maritime sector to attempt to reduce time to a minimum. Sometimes, there are conflicting trends (for example in the maritime sector, cruise liners and also slow steaming), but the broader trend is clear. Progress is quicker, not slower. In contrast, there is considerable emphasis on reducing time to its smallest elements at which point change is measurable and time itself becomes more important. Both trends—reducing time and raising its status by reducing its size—are two sides of the same coin. Both reflect the importance of time.

Time is also rearranged to reduce its significance. It is sometimes considered in extremely small units—and thus, its impact in consideration of a context can be minimised. It can be enclosed (and thus ignored) and events can be explained entirely by their causal antecedents which have resulted in ‘now’. Meanwhile, we shall return to look at complexity and chaos in a later chapter where these concepts view time as irreducible, ever present and uni-directional (Turner 1999).

Change and time have also been identified as serious partners that need to be considered together. Change can be of varying speed from the infinitesimally slow to the almost instantaneous. Some would say that there is always change and that a static situation is a mere reflection of the human inability to measure the change

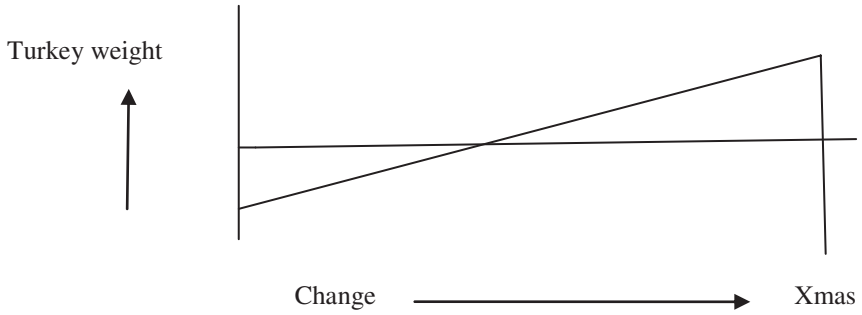


**Fig. 3.3** Turkeys at Christmas

going on. Others would suggest that if you cannot identify the change occurring then effectively there is none.

We conclude this discussion with a thought for turkeys at Christmas who provide a widely used example of variations in the interpretation of changes in time (Fig. 3.3). The turkey is lulled into believing that humans are kind, providing accommodation, food and good company over a number of months through the year… until one day just before Christmas, chop. And the moral—even if you do not believe change is coming, it always is albeit often slowly (see for example Taleb 2007).

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