transition in the system, 'all parts of the system act *as if* they can communicate with each other, despite their interactions being purely local' (Watts, 2003: 63). This critical point appears as a sufficient number of (random) long-distance links connects a large number of local individual units ordered in all kinds of clusters (groups, communities, organizations). In this way a so-called *small world* is created within a large-scale or global environment. These small worlds have internal links and reveal order because two elements that are connected to a common third element are more likely to establish a link to each other than two elements picked at random. You will more easily become acquainted with a friend of a friend than with a stranger. Figure 2.2 portrays a network connecting a number of small worlds (clusters with strong ties) with long-distance (weak) ties.

Social and media networks in contemporary society increasingly create small worlds and clusters in such a way that any pair of individuals or organizations can be connected via a short chain of intermediaries. This leads to statements, almost platitudes in the mean time, that we live in a connected world and that society is ever more connected. In short, that it is becoming a network society.

THE SEVEN 'LAWS' OF THE WEB

To understand what networks really are and how they 'behave', we have to realize that they have particular structural properties. These can be summarized in a number of 'laws' of the Web (an expression first made by Huberman, 2001). They are not some kind of natural laws. They are defining and enabling conditions that exert pressure on human behaviour in networks, but that can also be changed, as usually happens to structures according to structuration theory. Understanding these 'laws' helps to explain things we can observe on the Web and it assists in finding mechanisms to intervene in the network structures concerned. Seven laws summarize a large part of the general theoretical argument in the following chapters of this book.

BOX 2.4
The law of network articulation

In the network society, the social *relations* are gaining influence as compared to the social *units* they are linking.

The first and most important law is the law of network articulation. In the network society, relations are getting more important in comparison to the units or nodes they are linking. Relations float to the surface in every subsystem of society. They are realized by a combination of social and media networks. Their effect substantially changes the economy, politics, government, culture and daily life.

In Chapter 4, we will see that a network economy is created. In Chapter 5, it will be observed that institutional politics and public administrations transfer power to other units, directly getting into touch with each other via networks: transnational corporations, international bodies, non-governmental organizations (NGOs), local corporations, individual citizens and their social and political organizations. In this way, the national state may be bypassed as the traditional centre of politics. Reacting to this shift of power, the state itself transforms into a 'network state' linking increasingly independent and privatized government agencies. In Chapter 6, we will find out that our current law system based on the notion of independent actors, acts and property items is undermined by networks. In Chapter 7, it will be established that we increasingly select and compose our own social relationships as a matter of network individualization. These relationships are less and less imposed by the social environment. Finally, in Chapter 8, we will observe the rise of a digital culture of hyper-linked creations that will completely transform our current culture of separate creations and media practices. The enormous variety of reactions to the articulation of networks in all fields of society – that we will come across in the following chapters – testifies to the fact that the laws of the Web have no deterministic effects.

BOX 2.5
The law of network externality

Networks have effects on things/ people external to the network. The more people participate in a network, the more others are likely to join. There is a pressure to connect.

The second law is the law of network externality. Networks have effects, called 'network effects' on people and things around them. The more people participate in the network the bigger the effects are. As a network grows it exerts pressure on people to join. This pressure is stepped up at two tipping points. The first occurs when a critical mass of users is reached. When about 20 to 25 per cent of a population is connected, it makes ever more sense for others to join. This happens most of all in communication networks such as email and social networking sites (SNS). After some time, when about two-thirds is connected, a second tipping point arrives. Saturation sets in and connection rates slow down. Yet, from this point onwards, people are more or less forced to participate on the risk of social exclusion. In developed countries, both tipping points have already occurred for email. For SNS the second is fast approaching in the year 2011. This second law partly explains the extraordinarily fast growth of the Web.

Networks also exert influence on things, not only computers, telephones and TV-sets but all kinds of objects as they become increasingly linked by tags with embedded chips. There is a pressure to connect all of them to speed-up and control

production and distribution processes. As networks are systems, their connections have to follow common standards. A network with standards which are accepted by many people has power (Grewal, 2008). This is the power to decide who is able to connect to the network and use it for communication with others. Generally, people prefer a general standard because in that case they can reach many others in the same system. In this way, critical mass can be reached. This is one of the reasons for the steady popularity of Microsoft's operating systems and other software. Next to TCP/IP operating systems such as Windows, Mac OS and Linux, browsers such as Internet Explorer, Mozzilla Firefox and Google Chrome, mark-up languages such as HTML and search engines such as Google, Bing and Yahoo are important software standards.

BOX 2.6
The law of network extension

When networks such as the Web grow, they tend to become too big. Network units lose oversight and do not reach each other anymore. To solve this problem, *intermediaries*, such as search engines, portals and social networking sites are necessary.

The third law of the Web reveals the internal dimension of network growth. The law of network extension holds that networks quickly become too big to directly link every unit or node to every other. When this happens, they form internal structures of clusters of units that can reach each other more easily – see Figure 2.2 for an image. They also create bridges between clusters and central meeting places: these are intermediaries. They characterize the Web as it grows. While in the early days of the Internet many people thought that intermediaries were no longer required, as people would serve themselves and link to each other, the contemporary Internet is dominated by all kinds of intermediaries, from search engines, portals, price comparison sites and market places (such as eBay) to SNS and dating services.

BOX 2.7
The law of small worlds

In large-scale networks, most units are not neighbours, but still can reach almost every other unit in a few steps (six degrees of separation) creating a *small world*. Explanation: units are grouped in clusters with *strong ties*, and they reach people in other clusters by long-distance and often *weak ties*.

Taking these steps, the influence of people by contagion reaches three degrees.