

Commentary

Spatiality of risk

Space matters! In this paper this expression commonly used to highlight the importance that should be given to spaces will be considered in the context of risk. What does examining space and risks in conjunction actually mean? Risks are often studied on the basis of the context within which they emerge. Many studies also emphasise the local characteristics that determine risk identification (eg Baxter and Greenlaw, 2005; Bickerstaff and Walker, 2003; Cummins et al, 2007; Day, 2007; Hinchcliffe, 1997; Jerrett and Finkelstein, 2005; Mustafa, 2002). These studies clearly show that the relationship between risk and territory is highly complex, and that only a detailed analysis of local areas and contexts can help us to understand risks. Numerous studies have been done on spatial inequalities and risk, giving rise to a wealth of literature on vulnerability (eg Cutter et al, 2000; Wisner et al, 2004) and the extension of the notion of environmental justice to include these issues (cf Bolin et al, 2000; Cutter et al, 1996; Maantay, 2002; Zimmerman, 1993, and also Walker and Bickerstaff, 2000; Walker and Bulkeley, 2006). It has also been demonstrated that one's relationship to territory (in particular whether or not one is a resident) has a bearing on the way risks are assessed (Masuda and Garvin, 2006).

These studies address, however, only one facet of the relationship between risk and territory, since they fail to take into account the way in which the risks themselves help to transform spaces. I will show that both facets of this relationship need to be addressed in order to understand risks, and that the spatial dynamics of risk must be taken into account if we are to achieve a comprehensive understanding of risk. Such a comprehensive view is all the more unusual because risks tend to be studied in isolation, and only very rarely considered in combination. Only by studying this dual relationship and by examining various types of risk within the same study will it become possible to identify what I call the 'spatiality of risk'.

My intention in this paper is to summarise the main findings of various case studies (November, 2002; 2004a; 2004b; November et al, 2007; Ruegg et al, 2004). These studies addressed various types of risk (electrical failure or blackout, floods, fire risk, road safety, risks in public spaces, pandemic), in an effort to gain a comprehensive understanding of the relationship between risk and territory. Using three examples, I will show how risks transform spaces and how spaces subsequently lead to changes in the nature of risks themselves.

My first example is fire risk in Geneva. For the Geneva fire service a longstanding concern has been the issue of poorly maintained apartment buildings, where many fires have occurred. However, the fire department has recently switched its attention to industrial estates where it has seen the emergence of 'grey areas', with premises either in a poor state of maintenance following changes in use or ownership, or being used for purposes for which they were not designed. In recent years, areas designed for industrial use or warehouses designed for the storage of toxic chemicals have begun to be used by the organizers of large parties or by individuals working on personal projects. The use of these areas for purposes other than those for which they were originally intended has turned them into high-risk zones for the emergency services. In addition to the usual fire risk, the explosive mixture of large crowds and the illegal and uncontrolled use of certain substances have also become causes for concern.

Changes in the way these areas are used (which also reflect changes in the spatial practices of the inhabitants of the city⁽¹⁾) have led to the emergence of new, previously unforeseen risks. This may seem like a classical case of a territory changing over time, thereby altering the nature of the risks it faces. However, the situation is more complex if we consider that industrial areas are not simply converted into ordinary parts of the urban fabric, but retain their special focus on industrial activity. Nevertheless, the emergence of new risks means that industrial estates need to be redefined to reflect these new developments. Risk management and prevention services take on the role of drawing attention to this reconfiguration of the sociospatial environment.

Our study of the SHOC Room (Strategic Health Operation Room) of the World Health Organization (WHO) revealed such changes occurring on two different levels. The revised International Health Regulations (IHR) that came into force on 15 June 2007 were part of a major transformation in the notion of risk, and risk to health in particular. The transformation process took a total of ten years. New criteria were adopted by the WHO member states for the statutory notification of certain diseases constituting global public health risks. Firstly, in addition to four communicable diseases (smallpox, poliomyelitis due to wild-type poliovirus, human influenza caused by a new subtype, and severe acute respiratory system—SARS) the concept of risk now includes chemical, radioactive, environmental, and animal-related events. Statutory notification applies where two of the following five criteria have been met: (1) the event has a serious public health impact; (2) the event is unusual or unexpected; (3) there is a significant risk of international spread; (4) there is a significant risk of international travel restrictions; (5) there is a significant risk of international trade restrictions. The new criteria reflect the ability of pandemics to transcend national borders, which has made focusing on a single type of disease or nation-state unsuitable.⁽²⁾ Risk has gradually come to describe new situations and subjects (such as travellers, trade, and unusual events), and the definition of risk has been adapted accordingly in the new IHR. One particular “focusing event”, to use Birkland’s (2007) phrase, made a substantial contribution to changing WHO risk categories and therefore to the revision of the IHR: the SARS epidemic in 2003. According to our interviewees, the SARS epidemic was a turning point, in that it revealed both the vulnerability of health structures and the extent to which networks, both human and technical, were inextricably linked. The spatial dynamics of the pandemic were radically different to anything experts had seen before, which led international health services to make a thorough review of their risk identification methods and, at the same time, to speed up implementation of emergency measures. Two main lessons can be learned from this study regarding the relationship between risk and territory. First, the new spatial dimension of the risk, as well as the disease itself, became a key agent of change and, secondly, an interstate organization was forced to deviate from its own spatial logic in order to adapt to the spatiality defined by the risk itself.

⁽¹⁾Risk is often defined as “the likelihood of a range of possible outcomes resulting from a decision or course of action. Strictly speaking, risk exists when known probabilities can be assigned to these outcomes. Risk is thus distinguished from uncertainty, under which probabilities cannot be established. Businesses tend to prefer working with risk rather than uncertainty, because of the calculable nature of risk” (Johnston et al, 2000) or, as Wisner et al (2004) and Renn (1998) put it, according to the definition most commonly used, risk is a probability multiplied by a consequence. In this example we see that the probability (linked to the density of uses and users) is significant but that, as the situation changes and develops, it must be linked to other factors in order to remain relevant.

⁽²⁾King (2004) reveals the processes through which new modes of viral transmission have gradually been accepted since 1990 and how the relevant actors now acknowledge their transnational character.

The close relationship between risk and territory is also evident in the example concerning flood risk, in this case as linked to a disaster on a local scale. The flood described in the study took place in November 2002 (in Lully, Geneva, Switzerland), in one of the most recent extensions to the village, where in 2000/01 new housing developments had been built close to a river. However, the river was not in fact the source of the flooding. The affected area of the village forms a small basin, where run-off water collects with no natural drainage into the river. The planning in the area helped to make it even more vulnerable than it already was.

Our study (November et al, 2007) revealed that the affected area was subject to recurrent flooding. However, although this information was available it was not taken into consideration in relation to the change of land use. From 2000 the available hazard map (which remained largely unknown and unused by the local authorities) showed only flood risks linked to rises in the level of the river Aire. It failed to reveal any of the risks arising from run-off water. The 2002 flood—a traumatic experience for the local people—had several consequences. Firstly, civil and criminal cases were brought to determine liability. Secondly, by revealing a new category of risk never previously been identified, the flooding forced the authorities to revise their analysis of the space in which risks had been identified. Thus, the need to monitor the drainage of run-off water, as well as water-level rises in the river adjacent to the new housing estate, was placed firmly on the agenda.

Thirdly, the risks revealed by this episode forced the authorities to place the new housing estate in a wider context and to revise their whole perception of the spaces making up the local environment. Thus, the flooding also led to substantial changes in the design of a project for revitalizing the banks of the river Aire. The issue of protecting local residents was incorporated into the project, alongside the protection of water and plant life. This example shows that the initial risk analysis had failed to take all dimensions of risk into account, focusing solely on the risk of rising water levels. And yet, this ‘new’ category of risk should already have been apparent, since it had led to flooding in the foundations of the unfinished buildings only eight months earlier. What one might term a blinkered focus on a single category of risk led to the disaster of November 2002.

We have seen in these three examples, concerning flood, fire, and pandemic risks, how categories of risk are not fixed, but rather move in relation to events. During this process, risks transform affected areas, help to raise awareness of new dangers and lead to new meetings between stakeholders. Perhaps the most important lessons we can learn from these examples are that, on the one hand, no territory should be studied without considering all the risks it faces and that, on the other hand, no risk should be assessed without taking all its spatial dimensions into account. This spatial perspective is essential to appreciate the full complexity of links to other categories of risk.

All three examples describe situations where a shift occurred in the contours, definition, and very nature of risk. In other words, a new configuration (or “*assemblage*”, as Latour would say) emerged, helping to focus public attention on other activities and areas at risk. A reconfiguration of the human–nonhuman relationship resulted from the impulse generated by changes in the nature of the risks. On each occasion, there were major implications in terms of the way in which society responded, stepping up its vigilance of new areas and activities. In this sense, risk helps to promote a fresh preventive approach, encompassing different spaces and taking the needs of other users and indeed uses into account. It is time to rethink our understanding of the role of risks: they should be seen as *actant* (Akrich 1992; Callon and Law, 1997), like so many other subjects analysed by sociologists of science and technology [Akrich’s discussion of the electricity market, or Callon and Law (1995) on TRS2]. One of the key questions

is about the collective:⁽³⁾ what are the *assemblages* that are most relevant for the purpose of each risk analysis? The most immediate answer must come from the stakeholders themselves, those most directly affected by the situation of risk (such as planners, firemen, insurance companies, victims, meteorologists, police officers, managers, engineers, and doctors), who should be listened to and closely monitored in their everyday work and in the spaces they help to create.

Can risks continue to be studied in isolation? Similar replies from our interviewees in various fields and close observation of their methods suggest that there are cross-cutting issues affecting different categories of risk and that their interrelationships must be studied together rather than in isolation. Risks associated with technology, health, or natural phenomena tend to be identified and addressed by a whole range of actors, each with their own (formal and/or informal, collective and/or individual) procedures for taking the necessary steps required to prevent serious events or disasters. As a result, each risk situation generates its own process of arguments, strategies, calculations, alliances, and procedures, which may lead to the subsequent adoption of preventive measures, with their respective spatial effects. Thus, risk assessments must incorporate an analysis of their spatial dimensions, allowing for the fact that space is never neutral: space influences the implications of risk just as risks affect and alter spaces themselves. The spatiality of risk is always multifaceted. Unlike disasters, risks are virtual threats, even though manifestations of risks have very real consequences. Consequently, the main challenge is to understand the concept of risk as it is defined and used by practitioners, and then to recognize the role risks play in transforming the collective [*“transformations du collectif”* (Latour, 2005)]. Only then will it become possible to grasp all the complexities of the relationship between risk and territory, and only then will the spatiality of risk help to improve our understanding of how to manage the risks that are so characteristic of contemporary societies.

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⁽³⁾ Collective designates “the project of assembling new entities not yet gathered together and which, for this reason, clearly appear as being not made of social stuff” (Latour, 2005, page 75).

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