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Spatial impacts

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Abstract

The study of spatial impacts promotes systemic thinking, provided that space is considered as a structured and functioning unit with certain morphological characteristics. Spatial information is not merely about geographic or topographic location: causal mapping offers deeper understanding, related to 'why' and 'how'.

1 Introduction

Strategic impact assessment (SEA), among other *impact assessment* specialities, is concerned with the side-effects of proposals such as regional development plans and sectoral policies — for instance, on transport, energy, or tourism. Such proposals are typically scrutinised for environmental impacts, such as unintended changes to Nature. Seen in a systemic perspective, the affected space — for instance, cities, regions, or national territories — is likely to undergo structural, functional, and/or morphological changes. This systemic view advances impact assessment through what may be considered as 'spatial impacts' — a special kind of *consequences* or *changes* that relate to 'space'.

2 Space

Space can be as simple as 'land use' — for instance, as in 'the use of each parcel of land'. We can enrich this image by adding people: who uses the land, to do what, and under which motives? We can then add physical processes, such as the water cycle, wind, etc. And we can add more information in perspective, such as infrastructures and activities of special interest. In a reasonably complete view, we may come to consider that space is structured, and somehow 'functions' because its parts or elements relate — for instance, complement or depend on each other (Perdicoúlis, 2011, pp.1–3). This makes a system.

Describing a system may create an overwhelming desire to include everything. However, 'complete' is not necessarily complicated: adding more elements than we can understand — for instance, their function in space — is risky in the sense that it may lead to confusion or losing focus. *Scoping* is a good exercise in these cases, and helps to keep track of information by deciding what is relevant and what is not — and this is where *inductive* skills and experience usually help a great deal.

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3 Mapping information

Depending on what we want to know — for instance, about spatial distributions, processes, or causes and effects — we may need appropriate kinds of maps to represent and visualise information. This may require a combination of different types of *mapping* — that is, associations of one set, such as reality, with another such as the paper or a screen (Perdicoúlis, 2011, p.69) — for instance, spatial maps, causal maps, or process maps. An example of such a combination is illustrated in Figure 1, showing one way to incorporate spatial information in causal diagrams, where areas Q and W can be marked on a spatial map (Perdicoúlis, 2010, p.74).

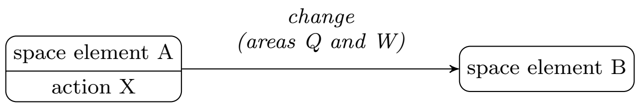

FIGURE 1 ‘Action X in space element A causes a change to space element B in areas Q and W’

It can be argued that most information can be represented on spatial maps, if categorised appropriately. States and changes of space elements, and even causal relationship (types) between space elements can be easily represented on geographic maps. But how meaningful can this be? For instance, we may represent land use and its changes over time on a geographic map (or a series of maps), and also the categories of people responsible for each type of land use; we may even be able to represent types of motives related to certain land use patterns. However, we may not be able to understand *why* or *how* the particular land use patterns evolved in the described way, regarding the motives for each type.

A practical check of understanding can be the following: when we understand the structure and function of something like a particular ‘space’, we should be able to ‘tell stories’ about it: for instance, regarding its development or special issues of interest. Narrative is a classic and accessible (i.e. ‘low-tech’) technique to tell these stories (Perdicoúlis, 2011, pp.36–37, p.44, pp.89–90, and pp.119–120). Narrative can then be transcribed onto the various kinds of maps.

4 Causality versus computation

The change represented on the arrow of Figure 1 may be *intentional* or *unintentional*. In the latter case, we call these changes ‘side effects’ or ‘impacts’. Intentional changes, on the other hand, are related to the ‘objectives’ of the action: they represent the change that will bring about an intended state, or ‘objective’ — although it is necessary to distinguish these changes from the objectives (Perdicoúlis, 2011, pp.85–86 and pp.142–145). In fact, these objectives and changes can be related as in Figure 2, in the form of an equation — for instance, regarding ‘space element B’.

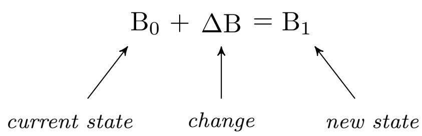

FIGURE 2 ‘Space element B is advanced by change ΔB from state B_0 to state B_1’

The 'new state' B_1 of Figure 2 could be an 'objective' of the action — that is, the action is conceived to achieve this state — in which case the impact or change ΔB is intentional. Alternatively, the 'new state' B_1 could be an 'accident' — that is, nobody every intended it, and thus no specific action has been conceived for this purpose. In the latter case, the change ΔB is a 'side effect'.

Figure 2 shows clearly what happens to space element B in a *computational* perspective, but loses sight of where this change comes from — that is, from an action on space element A, which was clear in the causal diagrams of Figure 1: $\Delta B = f(\text{Action}_A)$. Thus, computational approaches (such as numerical simulation) may seem desirable in impact assessment from the point of view of receiving quasi-factual forecasts such as tables or graphics with forecast figures, but they distract from the causality — that is, what really is happening in the system of interest: what does what, to whom, where, and so on.

5 Discussion

Practitioners may easily turn towards more 'fun' or 'standard' aspects of spatial impacts, such as thematic cartography or numerical models and simulation — the infamous 'number crunching'. On the other hand, 'clients' of spatial impact studies may ask for the same, having seen no other information aspects being as popular. This may be a type of 'safety in numbers' behaviour, where practice cannot go wrong because 'everybody is doing it this way'.

It is good to know what we are looking for: a superficial or 'formal' spatial [impact] description or forecast, or deeper knowledge such as 'how things work', 'why this is happening', or 'how to reach this particular state'. It takes not only courage and opportunity (such as spatial impacts) to proceed to the next level — a *systemic* level —, but also some special preparation and effort: relevant scientific and technical competences, but mostly curiosity and an inquisitive attitude.

6 Conclusion

Spatial impacts give a good opportunity to advance thinking and planning practice to a systemic level. Relevant information need not be limited to spatial maps, and can be complemented by causal or process maps that provide deeper understanding of a working system such as 'space' and related issues of concern. Systems understanding can be further facilitated by breaking free from old paths — for instance, daring to perform a causality analysis of the spatial impacts instead of [or in addition to] the popular standard computational analysis.

References

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