Interactive comment on “Hazard impact on settlements: the role of urban and structural morphology” by M. Bostenaru Dan and I. Armas

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We thank the reviewer for his/her overall analytical observations that have helped the authors to further clarify some of the arguments presented and rewrite some of the statements in order to produce a more cohesive article.

In this paper, the authors attempted to present an alternative mapping methodology in order to analyze and visualize the impacts of hazards in general, not only of earthquakes. However, because the site considered is mainly affected by earthquakes the focus of the paper moved from hazards in general to earthquakes and we appreciate the reviewer’s observation and will amend the title of the article to Earthquake impact on settlements: the role of urban and structural morphology.

After carefully reviewing the entire article it has become clear that certain statements were overlooked.

Also, the authors agree that they tend to use long sentences which might seem unclear at times.

Therefore the following statements were reconsidered:

- We have removed “highly” original. In fact, the paper puts together into a common methodology (workflow as in Fig. 1) concepts developed in parallel with the well-known disaster methodology.
- Page 3291, line 6. This may be the case, but we quoted the text found in the Salewski's article. Dr. Strangelove, I Presume – On the relation between scenarios and paranoia, in: Tickle your Catastrophe!, edited by: Le Roy, F., Wynants, N., Hoens, D., and Vanderbeeken, R., Academia Press, Gent, 187–196, 2011
- Page 3292, lines 16-17. Organic cities are fractal derived, not planned. This statement was reformulated accordingly.
- Section 1. The paper is about developing ways of possible hazard impacts (here exemplified with data and results from an earthquake area). The focus is on how earthquake damage is visualized on maps and not on the vulnerability assessment. In the new version of the paper we simplified and better structured the text. We appreciate the reviewer’s input as English is not our native language.
- Pages 3292, lines 13-14. The description comes from how building elements are classified in the World Housing Encyclopedia. Thank you for pointing out to us this issue. We will simplify the text accordingly to your observation.
- Page 3310, line 10. Your suggestion is greatly appreciated and has helped us to include a clearer explanation on tension lines.

Tension lines are lines which order landscape elements in visual perception. They may
be roads, or the boundary of a forest, or a mountain line. In a city they may be the flow of cornices, or tree alignments. "node, landmark, zone, boundary and path", which are the names given by Lynch to the elements of the image of the city. Therefore, they are more important for the scope of this paper, which relates to mapping. A number of images from the Canadian Centre for Architecture depicting ruins after disasters are available. Maybe it would have been useful to include an example. These images are photographs, mostly from 19th century disasters, including also earthquakes such as San Francisco 1906. Kevin Lynch's elements can be recognized on these images for example using tension lines to recognize a node or a boundary. Again, more tension lines delineate a zone. At the intersection of tension lines are nodes.

We thank the reviewer for his/her comments, certainly the Deleuze's approach was not appropriately introduced in the initial article. We have included a more detailed explanation. Deleuze differentiates between smooth and striated space. Deleuze uses several metaphors to exemplify it: the nomad and the sedentary, the textile metaphor (felt and woven) etc. Sometimes in reconstruction is used a different pattern. A well known example is Lisbon 1755 when instead of the Middle Ages street pattern the Baixa was created, with rectangular streets. A counter-example is London post 1666 fire, where the old street pattern had been kept. Also other reconstructions considered smoothing and striation, such as Le Corbusier's plan for Paris. In case of Bucharest, restructuration after major earthquakes was done by creating more green spaces (articles in the journal Architectura from the 1940s, e.g., A. Cerkez: După cutremur. Arhitectura VI; 3-4, p. 15-16, 1940).

We have analyzed several references and can quote them:


Charles Travis (2013) From the ruins of time and space, City: analysis of urban trends,
187–217, 2014., page 3310, lines 3-6). In that paper was considered the same study site and how it can be explored by walking. Walking plays a role also in Rapid Visual Screening for earthquake vulnerability, also in digital representation (subject of this paper) as the referred mobile apps show, and it has been recently connected by the DESURBS project again to disaster security research through some developed mobile apps (the DESURBS research being investigated in the paper). Lynch was never linked to Debord to our knowledge, but the above named papers connect the method of derive (drift) to boundaries (an element at Lynch) and their identification, as well as to identity creation, which is a key concept in the heritage habitat we aim to discover in this Lynch analysis of a central protected zone.

In this paper we focused on the necessity to zoom at the building level by not considering it only statistics item as in usually GIS-based methods, but visualizing it in both the structural assessment (the macro-elements method) and in the images of disasters (through perception). This is possible using the other tools mentioned in the paper.

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