Hermeneutics and Geomorphological Hazards; with Emphasis on Assessment and Zoning of Landslide Hazards in Rudbar Region

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1. Introduction

The phenomenon of geomorphological hazards is due to the functional instability of the surface systems of the earth, which turn into hazardous events due to human intervention and human infrastructure. Meanwhile, cities, which are the densest human centers, may face some geomorphological hazards during their physical development. In mountainous areas, for example, the dangers posed by sloping processes cause the expansion of cities to face numerous bottlenecks. In general, urban geomorphological hazards in mountainous areas are studied in two main categories: first, hazards that are created in relation to the location of the city (i.e., being mountainous), and second, hazards that are due to the intensification of resource use and changes. Urban environments are created. In general, wherever the construction of a city on unstable land is planned, it is necessary to carefully study the conditions of the land and assess their relative risks. In this regard, identifying and zoning the risk of landslides, especially in settlements, is an important step in assessing the risk of this phenomenon. Landslide risk zoning includes the division of the land surface into separate areas and the ranking of these areas based on the actual degree or potential of landslides due to the occurrence of landslides on the slope. In this paper, the risks of urban landslides affecting urban development in Rudbar have been evaluated and zoned. In general, the purpose of such a study is the zoning of stable and unstable areas of Rudbar city, which can have favorable effects in its planning. However, what is necessary in completing the findings of this study is a deep understanding and hermeneutic interpretation like interaction of positive and post-positive methods which are used in this study in order to provide suitable conditions for further understanding of the models. Therefore, this paper tries to analyze the effective elements in the occurrence of domain hazards using network analysis process to quantitative analysis of stable and unstable areas, and then to qualitatively interpret the designated areas in order to apply the field and pay attention to geomorphological hazards in this city.

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2. Study Area

Rudbar city, which is the central part of Rudbar city, is one of the foothill cities of Gilan province and is located on the banks of Sefidrood river in a mountainous area. The city is located in the geographical coordinates of 36 degrees and 32 minutes to 37 degrees and 7 minutes from the equator and 49 degrees and 11 minutes to 50 degrees 5 minutes east longitude. This city has an average height of 250 meters and is located mainly on the slopes overlooking the Sefidrood River.

3. Material and Methods

Methodologically, this paper has two parts: positive and post-positive; In the positive method, it is emphasized that the expected results can be achieved by pure statistical analysis. While in transcendental methods, understanding and its relation to other subjects, especially interdisciplinary studies, are given priority. In the positive part, in order to evaluate and zone the landslide hazards of Rudbar city, firstly, an attempt has been made to study the factors affecting the occurrence and intensification of landslides with emphasis on urban areas, especially in urban development issues of Rudbar. For this purpose, first, using the form and process method, the shape and process of the urban environmental control area of Rudbar was determined. In the next step, to prepare information layers, from the effective risk criteria obtained by field visits and library studies such as slope, altitude, land use, etc. from topographic maps 1: 25000 and 1: 50000 1: 100000 geological maps were used. In the next step, the effective information layers that were obtained with the opinion of experts and field and library studies were examined in the form of network analysis model. In this regard, to use the decision-making method of network analysis process in landslide assessment and zoning of Rudbar city, the following different steps were performed: 1- Determining criteria and indicators in identifying clusters and elements. 2- Determining the relationships and dependencies between the elements. 3- Applying the above connections in clusters and elements. 4- Weighting and pairwise comparisons of elements. 5- Classification and rating of information layers; Then, with the help of the meta-positive part, the obtained data and map were reviewed and interpreted based on the hermeneutic view. This means that these findings can be used for more in-depth analysis, better understanding and finally interdisciplinary findings of geomorphological hazards of Rudbar urban landslide to be more practical.

4. Results and Discussion

According to the final map obtained from the perspective of the positive method, it can be said that the control area of urban areas in this area is in one of the most dangerous areas in terms of landslide risk so the current settlements and communication routes are mainly located in medium to high risk areas. On the other hand, the distances and privacy of urban centers, regardless of the processes and hazardous elements, are located and are on the path of physical development. In the future, the process of urban development of Rudbar will also expand in these areas. Therefore, paying attention to this issue and the environmental threats of urban areas is very important in planning the

urban development model of Rudbar. From the point of view of meta-positive method and hermeneutic analysis, landslide phenomena can be studied and interpreted as a text from two points of view; One is in the form of written texts taken from statistical analyzes, and the second is in the form of map interpretation as an understanding of events governing low to high risk levels. Landslide phenomena as a text cover a wide range of numerical and statistical concepts that, with new references, new meanings of geomorphic reactions can be deduced because criteria such as slope, vegetation, average annual rainfall, land use, etc. in numerical language include general concepts that the author can discover and retell its meanings. This is also the case with landscaping maps. Altogether there are three distinct hermeneutic conceptual levels that include active (interpreted) or inactive (non-interpreted) text as well as active (non-landslide) or inactive (non-landslide risk expertise) minds to retrieve concepts and theories related to different trends. Geographical sciences were used in order to better understand the assessment and zoning of landslide hazards and their impact on the urban development of Rudbar.

5. Conclusion

In general, applied topics in geomorphological knowledge, especially geomorphological hazards, have strongly influenced researchers due to their mere entanglement in zoning models, statistics, the spirit of innovation, imagination and ideation. Therefore, relying solely on statistical methods and techniques and modeling causes the repetition of the position of this knowledge on issues such as zoning and landslide analysis, flood, wind erosion, etc.using network models, fuzzy. Which only emphasizes the relationship between precipitation, slope, vegetation, land use, etc., and it is necessary to provide more practical results with the facts of geomorphological hazards after quantitative studies and calculations, with the help of interpretation and hermeneutic studies.

For this reason, it is less common for a researcher and expert in geomorphological hazards to provide systematic ideas in the field of management and environmental sustainability to reduce and adapt to hazards, etc., instead of resorting to statistics and software and analyzing the obtained outputs. In this study, an attempt was made to provide a more organized process for geomorphological risk management studies by providing case studies of different types of interpretations and by implementing hermeneutic levels and approaches in order to achieve more principled results. Because in the study of different levels of hermeneutics, the art of a geomorphologist is to convert passive texts into active text for the use and practical understanding of geomorphic phenomena in other fields and trends of geographical sciences such as urban and rural.

Also, a geomorphologist in the framework of hermeneutic knowledge must have specialized perceptions of maps and diagrams that a non-expert cannot have a similar perception of. In this regard, with the aim of making the active text more practical, the interpretation of the landslide hazard zoning map of Rudbar region was used and the findings of this knowledge were linked to the findings of other geographical sciences from the perspective of experts.

Keywords: Geomorphological Hazards, Positive Methodology, Hermeneutic Interpretation, Urban Landslide, Environmental Management.

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