GEOMORPHOLOGICAL SIMILARITY AND UNIQUENESS

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The understanding of our planet and the dynamics operating at its surface has undergone a revolution in the past quarter of a century. Thanks to the development of new tectnologies, particularly in remote sensing of the environment, we are able to view the earth from a variety of perspectives and at a variety of scales. We can observe and directly study large regions of land by means of aerial photography and satellite imagery. We are rapidly gaining detailed knowledge of the over 70 percent of the planetary surface lying beneath the oceans which, until recently, had been terra incognita. The ability to study our planet or any specific region on its surface at multiple scales from large local scales to small regional scales has reordered our geomorphological perspectives and has given us the possibility of a fuller understanding of the dynamic complexity of the earth's surface.

At large local scales, the formation and development of the land surface tends to be dominated by a single process or several closely related geomorphic processes. Local landscapes can reasonably be labeled as landscapes of one or another geomorphic types such as volcanic, tectonic, coastal, deltaic or fluvial. The geomorphological investigation of local landscapes focuses on an in-depth study of the dominent process, as it operates in that location, comparing and contrasting its operation there with the same process operating at other locations. As study is expanded to larger regions dominant local processes come increasingly into competition with each other.

At smaller regional scales, geomorphological similarity gives way to difference and the unique character of each region becomes dominant, based on a regional geomorphic diversity. There appear to be thresholds of scale at which individual or closely related groups of geomorphic processes lose their dominance and diversity takes over. Identification of such thresholds is exceedingly difficult as they appear to vary from region to region. They probably also vary over time with changes in the mix of significant geomorphological processes operating on the regional landscape.

At smaller scales covering larger areas landscapes become regional geomorphological systems with a variety of processes interacting with one another to form the landscape. These regional systems are, in turn, sub-systems nested into one or more still larger regional systems of differing geomorphological character. For example, the Colorado River Delta Region in southwestern United States and northwestern Mexico is a highly complex geomorphological region located at the intersection of two larger geomorphological systems each controlled by different

complex of geomorphic processes. It is a sub-region of the Colorado River Drainage Basin, a fluvial geomorphic system in a predominently mountainous setting, and, at the same time, a sub-region of the Gulf of California - Salton Trough, an active tectonic system in a largely marine environment. The delta region is a part of both and from the combination has inherited its unique geomorphic character.

Remote sensing technology, particularly the development of satellite imagery, has given geomorphology a valuable tool for the study of large area, regional landscapes. The small scale large area format of Landsat and other satellite imagery reduces the amount of detailed information provided for a given region. This can be an advantage for regional study as much of the local information that is filtered out tends to be detail which, while significant in small area studies, could mask regional patterns.

As resolution is improved and as new techniques, such as stereoscopic viewing become available, space imagery will provide more detailed information about particular locations. However, the primary value of space imagery for regional geomorphology lies not in the amount of detail it reveals but in the direct broad perspective of regions of the Earth's surface it provides. A regional geomorphology based on a broad perspective of the Earth is needed to compliment the detailed geomorphology focused on particular landforms and landform types, dominated by particular processes within relatively limited areas. Regional geomorphology should not be focused on detail but on the multiplicity of processes which, acting together over time, have given each landform region its character and uniqueness.