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Where Do Mountain Geographers Publish?

Disciplinary Trends and Career Development Choices

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Geographers face choices in publishing research in outlets that affiliate them with a discipline that gauges the overall development of their academic standing by the approval of the peer-review process. It is not only actual publication that counts but also when and where an article is published. Well-published geographers often find themselves at the fuzzy boundaries of traditional disciplinary work, because often the nature of the profession tends to develop holistically, which favors new hybrid approaches, fusing techniques, sharing methodologies, and above all, creating new coupled constructions for the appropriation of concepts associated with place and space. We argue that nowhere is this more important than in mountain geography, where different sciences not only converge to analyze mountain ecosystems but also apply the subspecialties of human and physical geography for better understanding of mountain landscapes. By separating physical geography journals from human geography outlets, geographers pigeonhole professional development and favor reductionistic views of mountain functions, forms, and changes.

We also argue that the multiplicity of choices for publication of research on mountain themes has diluted the required concentration of disciplinary trends and has hindered the establishment of mountain science (ie montology) as a discipline. We use a bibliometric critique based on impact factors to determine the likelihood that junior mountain geographers will continue the trend of targeting either process-driven (traditional disciplinary), or region-driven (traditional spatial) journals, in lieu of promoting selfidentification of montology through

contemporary journals (postmodern, transdisciplinary) that catalyze research productivity and construct their professional self-identity as montologists, as senior mountain geographers often do.

Keywords: Mountain geography; impact factor; montology; mountain journals; publishing and academic careers.

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Introduction

The fascination of mountains for scientific minds is not new. Indeed, Chinese writings, Japanese paintings, Hebrew traditions, Egyptian hieroglyphs, and even South African petroglyphs and Greek tragedies associate mountains with the selective realm of the initiated, learned priests, academics, and scholars (Debarbieux and Rudaz 2010). In Western culture, it is agreed that mountains became the driver of natural history explorations among many Renaissance scientists who traversed the world and undertook expeditions and traveled on study tours that helped to debunk old myths not only about volcanism, magnetism, altitude, and biological oddities but also about mountain communities, civilizations, and empires (Helferich 2005). None was better fitted for this task than Baron Alexander Von Humboldt, who formalized methodologies for understanding mountain forms and

processes (Zimmerer 2006). Based on his pioneering work, one of the authors (Sarmiento 1995, 1997) has argued in favor of recognizing Tropandean mountains as the birthplace of ecology.

Despite the establishment of the Humboldtian paradigm of biogeographical study of mountains, little effort toward developing an integrative science was shown in traditional academic circles. Researchers studied geology, botany, zoology, or anthropology in places that just happened to be in mountain areas. Pioneering efforts to frame mountain research from a holistic perspective, bringing the mountain theme to the fore of scientific research, were at best sporadic and punctuated by individual efforts. An early publication devoted to mountaineering and exploration, the Alpine Journal, appeared in 1857. The Alpine Arc and other European mountains were the target of the Revue de Géographie Alpine, published by the Institut de Géographie Alpine in Grenoble, France, as of 1913. Mountain ecology was the target of integrative biological studies from 1942, when the Instituto de Estudios Pirenaicos was formed in Zaragoza, Spain. Its periodical, Pirineos, the Journal of Mountain Ecology in a trilingual version, reached volume 165 in 2010.

In 1969, an initiative of the Institute for Arctic and Alpine Research launched its journal AAR (now AAAR to integrate Antarctic themes), sponsored by the University of Colorado, Boulder, and now up to volume 42 in 2010. However, it was not until the creation of The International Mountain Society,

from 1973 to 1980, and the establishment of its professional journal edited by Jack D. Ives, that efforts to encompass science and mountain community-relevant development began: *Mountain Research and Development (MRD)* was launched in 1981 and has continued as a quarterly to this day, with volume 30 in 2010.

Further efforts to produce specialized publications were a direct response either of individual country initiatives to support mountain research or of private foundations and professional associations. Examples vary: Naupa Pacha, the Journal of Andean Studies, published in Berkeley, California, on a yearly basis since 1960; Kailash, the Journal of Himalayan Studies, printed on traditional rice paper in Kathmandu, Nepal, starting in 1973; the Journal of Mountain Ecology begun in 1993, sponsored by Italy's Gran Paradiso National Park; the Journal of Mountain Science launched in 2004 and sponsored by the Chinese Academy of Sciences; Eco-Mont, the Journal of Protected Mountain Areas Research and Management, produced by the Austrian Academy of Science and Innsbruck University Press starting in 2009; the international scientific journal of Sustainable Development of Mountain Territories launched in 2009 by the Institute of Mining and Metallurgy of the State Technological University in Russia; and the upcoming Journal of Mountain Environment and Development, to be launched by the Chinese Academy of Sciences in 2011.

Bibliometrics and mountains

Analysis of bibliographic productivity has become a guiding practice as a reference for scientific output at country, institutional, or even individual scholar levels (Körner 2009). New institutes for scientometrics are appearing in most countries, with an eye to assessing national productivity in science, as shown in published research outputs.

A favored index for determining scholarly productivity, the journal impact factor (JIF) for scientific journals, is now used as a key indicator of the professional stature of academics, whose achievement of promotion and tenure is often linked to the reputation that high impact factor journals confer (Garfield 1994). The Journal Citations Report[©] published by Thomson Reuters, formerly known as the Web of Knowledge[©] of the Institute for Scientific Information (ISI), provides the JIF metrics. This index helps to quantify the old adage of "publish or perish" that characterizes American and European academic circles, often considered as "ivory towers" of prestige and specialized knowledge marked by "silo thinking" (Locke 2009; Rosen 2010). Furthermore, it appears that, by adhering to publication only in Web of Science[©] (WoS) journals, junior scholars are fostering a "problematic" disciplinary trend that promotes Anglo-American views, furthering the dependency of foreign languages (ie other than English as the de facto lingua franca in science; see Schuermans et al 2010) and the hegemony of Western positivistic thinking (Derudder 2010). This has not helped to promote holistic mountain science relevant to all regions worldwide.

Moreover, in mountain geography queries, terminology has hindered searches and complicated queries for 3 main reasons:

- Use of ISI-WoS analysis by using English-only articles, by limiting descriptors to wide concepts instead of localized epistemologies;
- 2. Nonconventional appropriation of keyword descriptors by WoS journals, which allows only a handful of terms to describe the article; and
- 3. Vague interpretation of title, abstract, or keywords in relation to the failure of WoS journals to index mountain studies as a discipline.

This milieu of indexing protocols leads to generalized terms such as "Andean," "Himalayan," or "afroalpine" being considered equivalent to "alpine" in the grouping of research output on "elevation," "altitude," "mountain," or "highland." Körner (2009), for example, found top rankings for total publications on mountain or alpine themes with authors from the United States (20%), Switzerland (15%), France (11%), Germany and Italy (10%), and Austria (9%). Although contributions to "mountain scientific literature" were clearly led by the United States and Switzerland, the fact that Körner amalgamated the terms raises concerns that reductionist, process-driven research continues to guide bibliometrics in the global north.

Where do mountain geographers publish? A survey

We surveyed specialists with the purpose of finding out where mountain geographers most prefer to publish in the United States and Europe as well as in Latin America. The survey question was sent via email to 17 professional geographers associated with the Mountain Geography Specialty Group of the Association of American Geographers (AAG) and to 35 colleagues and practitioners in the Americas, queried via the Americas Cordillera Transect network. The expert interviews consisted of followup emails that dealt with preferences and practices of scientific publishing, where the term "mountain" was either a physical geography theme or a human geography subject. We received 52 responses from acclaimed geographers, editors of journals, and renowned scholars as well as young assistant professors and conservation practitioners who deal with mountain community development.

Young geographers are still divided in targeting specific WoS journals with high JIFs pursuant to

FIGURE 1 In search of the most appropriate journals in which a montologist should publish. Subalpine fir (*Abies lasiocarpa*) krummholz patch on the west side of Bison Peak, Glacier National Park, Montana, USA. (Photo by David Butler, July 1992)



publication for professional advancement, although seasoned scholars tend to send manuscripts to traditional journals without regard to IIFs but rather to societal affiliations. In addition, junior mountain geographers often find that geographic journals overall have low JIFs compared with topranked journals such as Science or Nature (Figure 1). As Daniel Gade, answering the survey suggests, "Precisely who is a mountain geographer is another question. To a large extent, it is one of selfascription." A fluvial geomorphologist could still be considered a geologist or a hydrologist, if it so happens that she or he studies mountain landscapes. A zoologist who specializes in the avifauna of the mountaintops might be considered an ornithologist rather than a montologist.

Yet work of this sort helps to build montology, the science of mountain studies (Ives et al 1997, Rhoades 2007). We argue that junior mountain geographers should become montologists, by targeting uniquely suited WoS journals with a high JIF and publish their work according to 3 different criteria:

- a. Guilds or professional societies;
- b. Trade or compulsory activities in research; and
- c. Regions or area of expertise or emphasis.

Examples of target journals are listed in the conclusion, and a sample given by the survey is shown in Table 1. However, publishing in high JIF and WoS journals remains a compulsory requirement for obtaining recognition from peers and superiors in ascending the academic ladder in American and European university settings. Gade remains optimistic, affirming that "mountain geography is still not strongly inscribed in the way geographers think about their discipline, but it certainly can become so." Furthermore, Bishop (2009) underlines the urgency of multidisciplinary research and education with a "mountain geographical perspective."

Because no journal of montology exists, current efforts in the scientific output of mountain research remain diluted, compartmentalized in traditional disciplinary geographical blocks. Editors (such as Debarbieux, Malanson, Marston, Harden, Friend, and Welford) of prestigious journals

(such as Revue de Géographie Alpine, AAAR, Geomorphology, Physical Geography, Mountain Science, and GeoAtlas) point to this deficiency, which emphasizes that there is no such a thing as a *must-publish-in* outlet for mountain geographers and suggest that researchers target those appropriate to either physical geography or human geography. Some colleagues who answered a simple survey question noted that it is quite difficult to come up with a list of journals for mountain geographers. We compiled the most favorably referenced in Table 1, noting that there were regional or even parochial preferences to specific journals and also indicate that, because of the bias of professional medical and pharmaceutical literature, readership preferences in science are highly skewed; hence, JIFs alone should not be considered in assessing a likely target for a research publication in geography.

Impact factors in mountain research

An imperative guide for assessing research performance is the use of

TABLE 1 Selection of suggested outlets based on recommendations made by renowned montologists. Although no prioritization was requested in the survey, inclusion of the journal itself denotes a respondent's preference.

Journal title	JIF SCI ^{a)}	JIF SSCI ^{a)}	Process driven ^{b)}	Region driven ^{c)}	Opt area ^{d)}
Ambio	2.486	-	No	Int	T
Annals of the Association of American Geographers	-	2.568	Yes	Nat	G
Arctic, Antarctic and Alpine Research	1.439	-	Yes	Int	T
Asia-Pacific Mountain Courier	-	-	No	Nat	R
Biotropica	2.270	-	Yes	Int	G
Bulletin of Latin American Research	-	-	No	Int	R
Catena	1.933	-	Yes	Int	G
Ecological Applications	3.672	-	Yes	Nat	T
Ecology Letters	10.318	-	Yes	Nat	T
Eco-Mont	-	-	No	Nat	R
Ecotrópicos	-	-	Yes	Nat	G
Environmental Conservation	1.541	-	Yes	Int	T
Erdkunde	0.622	-	Yes	Nat	T
Geografiska Annaler Series A	1.041	-	Yes	Reg	G
Geomorphology	2.119	-	Yes	Int	G
Global Environmental Change	3.340	-	Yes	Int	T
Holocene	2.481	-	Yes	Int	R
Journal of Biogeography	4.087	-	Yes	Int	G
Journal of Ecology	4.690	-	Yes	Nat	G
Journal of Geographical Sciences	0.518	-	No	Int	T
Journal of Latin American Geography ^{e)}	-	-	Yes	Int	R
Journal of Mountain Science	0.400	-	No	Int	R
Landscape and Urban Planning	2.170	-	Yes	Int	G
Landscape Ecology	3.293	-	Yes	Nat	T
Landscape Research	-	0.714	No	Nat	G
Mountain Research and Development	0.575	-	No	Int	T
Photogrammetric Engineering and Remote Sensing	1.110	-	Yes	Int	G
Pirineos, Journal of Mountain Ecology ^{e)}	-	-	Yes	Int	R
Progress in Human Geography	-	3.590	No	Int	Т
Quaternary Science Reviews	4.245	-	Yes	Int	Т
Regional Studies	-	1.462	Yes	Int	Т
Revista Geográfica ^{e)}	-	-	No	Nat	G
Revue de Géographie Alpine	-	0.000 ^{f)}	No	Int	R

TABLE 1 Continued.

Journal title	JIF SCI ^{a)}	JIF SSCI ^{a)}	Process driven ^{b)}	Region driven ^{c)}	Opt area ^{d)}
Scottish Geographical Journal	0.261	-	Yes	Loc	R
Studia Geomorphologica Carpatho- Balcanica	-	-	Yes	Loc	R
Sustainable Development of Mountain Territories ^{e)}	-	-	No	Nat	R
The Geographical Review	-	0.455	No	Nat	T
The Professional Geographer	-	1.712	Yes	Nat	G
The Southeastern Geographer	-	-	No	Reg	R
Unasylva	-	-	No	Int	G

JIF, journal impact factor; SCI, Science Citation Index; SSCI, Social Science Citation Index.

the JIF. According to Thomson Reuters (2010), a "journal's impact factor is calculated by dividing the number of current year citations to the source items published in that journal during the previous two years." Thompson Reuters' Web of Science and Web of Knowledge produce the impact factor report for scientific journals as a leading tool for bibliometrics. Figures for the year 2009 are available at the ISI Web of Science homepage. There are alternative ways to tally scientific journals, such as the SCImago Journal and Country Rank (SJR index), developed by Scimago Research Group and powered by ScopusTM (Leydesdorff et al 2010), the CCI: Contextual Citation Index, Meta-analysis of published data, Data Mining, etc. (Stringer et al 2010, Moed 2010, Björk et al 2010). Other indexes are also used, such as the eigenfactor metrics for article influence score, the immediacy index, Articles Cited Half-life, etc. We emphasize IIF here because of its ubiquitous use in American academia to define career promotion thresholds and the overall professional achievement of faculty

and researchers who publish in top WoS journals.

The premise for JIF is that "if a journal is full of cutting-edge research, then many people will cite it and the impact factor will be high. If no one reads it, or if the research it contains is not important, it will have a low impact factor" (Wordpress 2009). However, the statistic is misleading because it emphasizes the popularity of readership preference of well-distributed online journals (eg JAMA, Science) with extremely high JIF, versus "subspecialty" journals with a much smaller audience and often of recent inclusion as open source or Internet-based searchable journals. These journals might contain excellent research; however, a smaller audience will likely cite them only in a few other subspecialty journals (eg Clinical Biomechanics, Brenesia). Hence, very high impact factor journals tend to be the general medical and scientific journals that attract a large number of submissions (so they can be selective) and a large number of readers. Near the top are the New England Journal of Medicine (2009 impact factor: 47), *Nature* (34), and Science (29). Nevertheless,

complete reliance on JIF to evaluate the quality of scientific work raises difficulties. The use of furtive JIFs assigned by administrators at Thompson Reuters, a profit-oriented "monolithic news and information empire," is dangerous at best. However, "it is likely that individuals will continue to 'game the system' in an attempt to protect their careers" (Brumback 2009), and, in fact, we see junior mountain geographers doing just that.

As mentioned above, alternative methods exist for measuring the value of a journal, such as the pagerank method or membership indexes. However, scientific editors have agreed that JIF is a marker that sets the bar for scientific productivity. In the UK, for instance, JIF is often used to determine one's esteem as a scientist. In the United States, JIF is increasingly used for evaluation of tangible academic output and thus as a base for salary increase, extra compensation, promotion, and tenure consideration. In Europe, increasing attention is being paid to the "h-index" as a measure of the productivity of the author and citations received in other

^{a)} Source: Journal Citation Report 2009, Thomson Reuters, accessed on 7 January 2011.

b) Disciplinary ascription as "No" (nontraditional) or "Yes" (traditional).

c) Sphere of influence as "Loc" (local), "Reg" (regional), "Nat" (national), or "Int" (international).

d) Suggested affiliation as "G" (guild), "T" (trade), or "R" (region).

e) The journal publisher provided a ranking according to Scopus or another index, but the journal is not listed in the Journal Citation Report.

^{f)}The Revue de Géographie Alpine (RGA)'s Impact Factor will only be active as of 2010, because the journal has just been added to the SSCI list.

TABLE 2 Ranking of the 6 geography journals with the highest journal impact factors in the Social Science Citation Index (Sci-Bytes 2010).

Journal	JIF A ^{a)}	Journal	JIF B ^{b)}	Journal	JIF C ^{b)}
JEG	3.94	GEC	7.35	IJGIS	18.33
PHG	3.59	PHG	6.89	AAAR	18.28
EG	3.45	TIBG	6.88	AAG	17.56
TIBG	3.41	JEG	5.99	TIBG	14.93
GEC	3.34	AAG	5.20	EG	14.85
AAG	2.57	PG	4.39	PHG	14.17

JIF, journal impact factor; JEG, Journal of Economic Geography, GEC, Global Environmental Change; IJGIS, International Journal of Geographical Information Systems; PHG, Progress in Human Geography; AAAR, Arctic, Antarctic and Alpine Research; EG, Economic Geography; TIBG, Transactions of the Institute of British Geographers; AAG, Annals of the Association of American Geographers; PG, Political Geography.

publications. Moreover, by using the h-index, the productivity and the impact of whole departments, universities, or countries can be assessed

When gauging mountain geography within the context of academic productivity, we face an identity crisis owing to the lack of self-ascription by mountain geographers to their own disciplinary field of montology. Selecting the most representative WoS journals in which to publish reflects hybrid, transdisciplinary, and holistic approaches that are still rare in academia but are emerging as a strong form of knowledge production (Hadorn et al 2008) that includes developing target knowledge, systems knowledge, and transformation knowledge as proposed by the editors of Mountain Research and Development (www.mrd-journal.org, Section Policies). As argued by Rasmussen and Arler (2010), interdisciplinarity at the humanenvironment interface provides a framework for geographical studies. With regard to mountain geography, this requires the construction of a metageography that integrates fuzzy disciplinary boundaries into a general category of "montology" in which physical and human themes typical of mountain studies are linked. One of the authors (Butler et al 2003) has

already emphasized the need for such integration for earth system science. A further step is needed to integrate understanding of the physical geography of mountain ecosystems with the human geography of mountain landscapes. For example, Table 2 shows the ranked WoS journals in human geography according to 3 parameters: (A) JIF for 2009, (B) mean JIF for the period 2005–2009, and (C) mean cumulative IIF since the establishment of the ranking in 1981. This makes it clear that the dynamics of change should also be considered when young geographers choose to target one of these outlets for publication of their research.

As mentioned above, querying databases to find mountain-relevant journals is difficult because montology does not appear and disparate search options exist. For instance, there are 181 ranked journals in environmental sciences, 36 journals are ranked in physical geography, 49 journals in geology, and 155 journals in geosciences, multidisciplinary; all of them are possible targets for mountain geography articles. This composite list can help young mountain scientists to locate the traditional academic categories of scientific inquiry in which mountain research might be found.

Coda: JIFs and montology

Queries in the ISI Web of Science for the annual Journal Citation Report rendered unusable results for montology, mainly because mountain geography is not yet listed as a major branch or subdisciplinary field. Hence, traditional selection criteria were used to construct the table that offers junior mountain geographers a "list" of journals to target for publication of their research, if the "publish or perish" dogma is to guide professional performance. As a strategy for professional development, junior mountain geographers should target at least 3 areas of emphasis, for which we cite 3 examples each:

- 1. High JIF journals of the guild, mainly for professional subscription and membership participation, such as the *Annals of the AAG*, *Transactions of the Institute of British Geographers*, or *Revista Geográfica del IPGH*.
- 2. High JIF journals of the trade, mainly for activity-oriented and topical emphasis, such as *Erdkunde*, *Mountain Research and Development*, or *Arctic, Antarctic and Alpine Research*.
- 3. High JIF journals of the region, mainly for spatial reference and regional engagement, such as *Revue de Géographie Alpine, Journal of Latin American Geography*, or *Pirineos*.

a) The 2009 Impact Factor.

b) The "total citations to a journal's published articles are divided by the total number of papers that the journal published, producing a citations-per-paper impact score over a five-year period (middle column) and a 29-year period (right-hand column)."

These examples are intended to encourage debate on the establishment of "montology" as a transdisciplinary field and to create consensus on where mountain geographers should publish. In addition, mountain professional networks, such as the MRI based in Bern, Switzerland, spearheaded by senior mountain geographers, should promote this research policy agenda by lobbying for professional development and institution building in favor of "montology" at the national, regional, and international levels.

In our compilation of respondents' favorite choices, we noticed that, when stating one's preference for journals, it appears to matter on which side of the Atlantic or the Pacific one is located. Regardless of regional location or university or research institute affiliation, scholarly activities on mountain science must continue to be supported by other activities, including organizational, disseminational, even humanistic and artistic ventures that favor mountains. Moreover, we agree with Gade in arguing that "research and scholarship is not everything, especially in a realm of knowledge that transcends individual cultures." Mountain geography is still not strongly inscribed in the way geographers think about their discipline, but it certainly can become so.

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