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Geography as a network: Linking minds, disciplines and generations

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Abstract: *In today's globalizing world, building "networks" in various directions is a modern and adequate way to collaborate and achieve noticeable results. "Community" is the space (geographical, virtual, thematic, hierarchical) that unites interests and problems, brings people together, and consolidates solutions. The main relationships in such networks involve communication, sharing experiences, problem identification, problem-solving, and implementation. In this sense, the current material explores the essence of "networks," their positive and current opportunities for problem-solving and unifying thoughts. It examines some exemplary geographical communities, as well as those with an interdisciplinary character. It provides examples in solving specific problems, as well as alternatives for similar associations. It considers them on different levels - physical, social, virtual, and with the establishment of networks and connections with social, scientific, and educational functions. The most popular networks based on social platforms are considered, as well as those built by corporate associations and based on specific goals and tasks (e.g., promoting a particular product or quality) - such as the ArcGIS Society and others. Corporate training academies serve as winning examples of specific knowledge and goal scopes aimed at product realization or solving practical-applied problems. The consistency in conducting seminars and scientific events also builds a stable community over time (including in geographic science). The author proposes an alternative for a new, contemporary interdisciplinary network, uniting members and achievements in innovations, artificial intelligence, and education: The IDEA Community. To achieve a visible end result, expressed in:* ***Connecting Minds, Creating Community****.*

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"Every man is an island, but all islands are connected in one continent."

John Donne[1]

Introduction

Communities or Networks: Why Build a "Network" Instead of a "Community"?

If we aim to resolve a potential problem, its successful outcome will require involvement from various hierarchical participants. There is a significant difference between a "community" and a "network." Networks include not only individuals but also organizations, institutions, and other stakeholders working together to solve a problem or achieve a common goal. Thus, networks have a broader scope and greater potential for interaction and impact. Here are the main differences:

Communities usually focus on bringing together people with common interests, values, or ideas, providing a place for sharing experiences, mutual support, and relationship building. Communities often have a more permanent and personal nature, with members connected for relatively long periods and sharing similar goals and values.

Networks consist of connections between people, organizations, or resources and generally focus on the exchange of information, knowledge, or resources. Networks can be more functional and flexible, with participants often engaging in various projects or initiatives and connected by temporary or permanent links.

Nature of Networks

Networks are described as systems of interconnected elements linked through various connections or ties. The objectives of networks are typically more functional and oriented toward achieving specific goals, such as sharing information, collaborating, or accessing resources. They are flexible and do not always have clearly defined rules or organizational structures. In networks, the connections can be more formal and functional, often based on specific goals or projects that bring participants together. Networks have a high tendency for external interaction and engagement with other networks or communities, seeking new opportunities for collaboration or resource exchange. They possess the ability to transfer information, energy, or resources between different points within the

[1] The English poet and preacher John Donne, who lived from 1572 to 1631, is renowned for his metaphysical poetic works and compositions that often delve into complex themes such as religion, love, death, and human nature.

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system. Networks can be analyzed and modeled in various ways, using methods from diverse scientific disciplines such as mathematics, information technology, sociology, economics, and others.

Data and Analysis

Important studies on networks and their roles are provided by researchers such as Goodchild et al. [1], Putnam [2], Watts [3], Haythornthwaite [4], Barabasi [5], Castells [6], Daly et al. [7], and many others. Below, we attempt to summarize their theses.

From the perspective of social sciences, networks are often used to study the connections between people and groups by analyzing social networks, communication networks, professional networks, and others. These analyses can provide insights into how information and influence spread within society, how relationships are formed, and how collaboration occurs.

People create "networks" or mutual connections for numerous reasons. According to the aforementioned authors, the more important ones include:

- **Social Support and Connections**: People connect in social networks to gain support, assistance, and interaction with others. These networks can include friends, family, colleagues, and other social contacts.
- **Collaboration and Information Exchange**: People create professional and informational networks to exchange knowledge, skills, and experience, as well as to collaborate on projects and tasks.
- **Interests and Hobbies**: People connect in networks related to common interests and hobbies, such as sports, arts, music, literature, and more.
- **Professional Opportunities**: Professional networks are created to expand the professional circle of contacts and career development opportunities by sharing information about job openings, training, projects, and more.
- **Security and Protection**: In networks like family, community, or professional organizations, people seek security and protection by supporting each other and exchanging resources.
- **Societal Reasons**: People connect in networks for societal reasons, organizing for political or social movements to achieve common goals and ideals.

A fundamental element of "networks" should be their stability. Stability means being resilient over time and resistant to external influences. This implies that every element of the network (people, connections, infrastructure, data) must function flawlessly. Stability is considered to have the following elements:

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DIVERSITY. When a network has diverse and robust connections between its parts, it is generally more stable. This means that if one part of the network is disrupted or not functioning, the other parts can continue to operate, contributing to the overall stability of the network.

FLEXIBILITY. The flexibility of a network to adapt to changes in the environment is an important factor for its stability. If the network can quickly change its structure or redirect its connections, it is more capable of handling changes and challenges.

RENEWABILITY. This refers to the network's ability to recover after disruptions or attacks. If the network is resilient and can quickly recover after a crash or attack, it contributes to its stability. Maintaining web-based solutions and databases is essential for this purpose.

MANAGEMENT AND COORDINATION. Effective management and coordination of activities within the network can sustain its stability. When there is clear communication and coordination among participants, the network is more likely to function smoothly and handle problems over an extended period.

As Boyd and Ellison [8] assert, working in a "network" emphasizes the initiation of connections, often between strangers. These initially unknown individuals/users manage to formulate and make their social networks visible based on a unifying stimulus/idea/principle. This can lead to connections between individuals that would otherwise not have been made, and Haythornthwaite [4] describes these as "latent ties". It is likely that this is how the establishment of geographic networks begins as well.

FUNCTION, ROLE, AND VARIETIES OF GEOGRAPHIC NETWORKS

Geographic networks adhere to all the principles and logical connections previously described in a general sense. They are specified by their particular themes, goals, participants, and expected outcomes. Shannon et al. [9] define community geography as “a praxis rooted in collaborations between academic and public scholars resulting in mutually beneficial and co-produced knowledge.” The manifestations and communication within geographic networks are essential for the collaboration and development of various aspects of geographic science and practice. Important specificities of these networks include:

Communication: Geographic communities communicate in various ways, including through meetings, seminars, conferences, online forums, social networks, and other communication means. They exchange ideas, news, scientific results, methods, and experiences, which help to improve understanding of different geographic issues and challenges.

Knowledge and Experience Sharing: In geographic communities, knowledge and experience are shared from various sources - scholars, academic institutions, professionals, non-governmental organizations, and others.

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This exchange of information and experience contributes to the development of geography as a science and its application in the real world. It is a way of transmitting knowledge - knowledge for all and from all.

Collaboration for Problem Solving: Geographic communities often work together to solve geographic problems and challenges. They have a common theme and goal, combining efforts to analyze data, develop strategies, identify significant regional or local aspects, and, when possible, provide solutions to the researched problem.

Studies specifically focusing on geographic networks and the importance of geography in building successful communities are provided by authors such as Goodchild et al. [1], Shannon et al. [9], Bettencourt [10], Robinson et al. [11], Koopman [12], and others.

The contemporary development of geographic science and the strengthening of interdisciplinary connections also increase the variability in building geographic networks. Besides the generally accepted division into global and regional networks, we can now divide them into specialized geographic, general geographic, and interdisciplinary networks.

From the typical comprehensive (global and continental) organizations that we accept as well-organized and functioning geographic networks are:

1. **Association of American Geographers (AAG)**

AAG is the largest professional organization for geographers worldwide. It unites thousands of geographers and organizes annual conferences, seminars, and publishing activities that facilitate the exchange of knowledge and ideas in the field of geography. As a global organization and one of the largest geographic networks, it provides exceptional online content with free access to geographic resources for all users. AAG operates various specialty groups focusing on different issues within geographic science (over 75!), offering outstanding opportunities for accessing grants for individual or team research.

2. **European Association of Geographers (EUROGEO)**

EUROGEO is a network of students, young professionals, and educators in the field of geography and teaching across Europe. Originally established in 1979 under the name European Standing Conference of Geography Teachers Association (ESCGTA), EUROGEO promotes collaboration and knowledge exchange among its members.

3. **International Geographical Union (IGU)**

IGU is a global organization that brings together scientific geographical associations from various countries worldwide. It is one of the oldest geographic networks, continuously operating since 1922, with its first geographical congress held in Antwerp in 1871. Over 95 countries are members of this extensive geographic network.

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4. Balkan Geographical Union (BGS)

BGS is a regional organization uniting geographers from the Balkan region. It fosters knowledge exchange and scientific activities among geographers from different countries in the region.

Specialized and Niche Geographic Networks:

- **GIS Stack Exchange**: An online platform where users communicate, share knowledge, and discuss issues related to Geographic Information Systems (GIS) and geospatial technologies.
- **GeoNet Community Hub**: This hub provides opportunities for knowledge exchange and scientific information about geographic sciences and technologies within Australia's Geographic Information Systems agency.
- **Remote Sensing Community (RSC)**: An online community that brings together specialists in remote sensing and the use of satellite data for geographic analysis and applications.
- **The Map Room**: A blog focusing on news, analysis, and discussions about geography and cartography. Users have access to the latest trends and innovations in the field of geography and cartography.

DIVERSE GEOGRAPHIC NETWORKS AND INITIATIVES

1. OpenStreetMap (OSM)

OpenStreetMap is a remarkable geographic network involving thousands of members who may not know each other personally. It started in 2004 as a project to create a free and open map of the world, editable and improvable by users worldwide. The primary idea behind OpenStreetMap is to gather geographic information such as streets, roads, rivers, geographical features, and more, and provide it freely for use. Users can add, edit, and update geographic data using web-based editors or specialized software tools.

2. Mapillary

Similar to OpenStreetMap, Mapillary is a network where participants voluntarily collect images from users worldwide to create a map with 360-degree images. It currently contains over 2 million images, contributing to a detailed and immersive geographic representation.

3. Specific Geographic and Spatial Problem-Solving Networks:

- **Climate Networks**

Networks such as the Intergovernmental Panel on Climate Change (IPCC) and the World Meteorological Organization (WMO) focus on collecting and analyzing climate data, forecasting climate changes, and providing guidance on addressing them.

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- **Urban Networks**

Examples include the Urban Sustainability Directors Network (USDN), which brings together city officials working to improve urban sustainability, and the United Cities and Local Governments (UCLG), which supports the exchange of practices and policies for sustainable urban development.

- **Agricultural Networks**

Networks like the Consultative Group on International Agricultural Research (CGIAR) and the Global Alliance for Climate-Smart Agriculture concentrate on scientific research and solutions to address climate change and its impacts on agriculture and food security.

These networks highlight the diverse and impactful roles of geographic and spatially focused initiatives in addressing global challenges and advancing knowledge and solutions across various domains.

ENHANCING GEOGRAPHIC NETWORKS WITH YOUTH AND STUDENT PARTICIPATION

In the development of geographic networks and initiatives, an essential element that often seems to be missing is the involvement of global or regional youth and student-focused geographic networks. This is a crucial observation because integrating young people into geographic networks holds significant importance for the future of science and addressing geographic challenges. Here are some key reasons why:

1. **Innovation and Creativity:**

Young people often bring fresh ideas and perspectives that can contribute to innovations in geographic science and practice. Their enthusiasm and creativity can inspire new projects and solutions.

2. **Future Leaders:**

Youth are the future of the geographic community, and providing them with opportunities to participate in networks can prepare them for roles as future leaders and scientific experts.

3. **Education and Training:**

Participation in geographic networks can offer valuable educational opportunities for youth, including practical projects, scientific research, training programs, and internships.

4. **Global Perspective:**

Young people can bring fresh viewpoints and a global perspective to geographic networks, which is crucial in a world characterized by globalization and increasing challenges.

5. **Motivation and Engagement:**

Involvement in geographic networks can motivate young people to engage with science and pursue careers in geography, providing opportunities for skill development and gaining experience.

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Despite these points, notable efforts such as various geographic youth festivals or competitions exist globally. These events encourage young people to explore their interest in geographic science and consider it as a potential career path. The International Geography Olympiad is a prominent example, held annually in different countries, including recent events in Bandung (Indonesia) in 2023 and Dublin (Ireland) scheduled for August 2024.

Other similar youth competitions include the National Geographic GeoBee and the European Geography Olympiad, which provide platforms for young participants to showcase their geographic knowledge and skills. However, comprehensive data on how many participants pursue geography as a professional career afterward remains unavailable.

Integrating youth into geographic networks not only enriches the field with new perspectives and talents but also ensures a robust future for addressing global challenges through geographic education and science.

GEOGRAPHIC NETWORKS IN BULGARIA – EXPECTATIONS AND PERSPECTIVES

HERE Technologies and Map Creator:

HERE Technologies is known for its innovations in mapping and geographic technologies. Map Creator is a new method for building and maintaining HERE maps, involving volunteers who input updates and corrections based on their local knowledge and personal experience. The main difference between Map Creator and other similar programs is that it operates as a supplementary method rather than a primary one. Importantly, there is rigorous quality control over the changes made, ensuring the accuracy and reliability of the geographic data [13].

In Bulgaria, the HERE network includes a significant number of volunteers, often geography students from leading universities in the country. They engage through a user-level voting system where they can approve or reject changes made by other users. Users with higher privileges, such as mentors, have specific responsibilities and rights, such as validating changes and mentoring new users. The second expert level is represented by local HERE experts who are available for training and consultations with users.

Social Groups with Geographic Focus in Bulgaria:

In Bulgaria, there are various social groups with a geographic focus administered by different individuals and organizations. The largest of these, administered by the author of this material, has over 5300 members as of the end of May 2024 (Fig. 1). In these groups, members freely share geographic information from various regions around the world.

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PERSPECTIVES AND SIGNIFICANCE

These initiatives play a critical role in maintaining current and accurate geographic data, which is crucial for the development of navigation and other GIS applications. The support of participants in these networks, especially young geography students, not only enriches mapping data but also prepares the next generation of specialists and leaders in the field of geography.

Integrating these networks with other geographic initiatives and educational programs can significantly enhance the potential for scientific research and innovation in geography in Bulgaria and globally.

Figure 1. Cover page of the largest geography-related Facebook group in Bulgaria

In 2025, with the support of the international board, the author launched a new idea to publish a scientific journal aimed at promoting authors' scientific achievements through a web-based platform. Simultaneously, they initiated the establishment of an international community with an interdisciplinary character.

We created IDEA journal (Fig. 2) as a web-based platform for publishing scientific materials stemming from your scientific endeavors. IDEA is an acronym for I (innovation), D (development), E (education), and A (artificial intelligence). We hope that these four thematic “pillars” of our magazine will engage interdisciplinary teams and research, resulting in subsequent publications in IDEA.

Creating a Unique Community: We introduce a unique community model where scholars from different fields come together. We share and develop our knowledge and experience, fostering productive interactions between disciplines. The IDEA Journal: We bring together minds constantly seeking knowledge and striving for

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innovative approaches. Every author, reader, or contributor participates in creating the unique community within our journal: This is the IDEA Society (https://journalidea.eu) [14].

Figure 2. Logo of the scientific journal *IDEA*

THE GEOGRAPHICAL COMMUNITY OF "GRANDES PROBLEMÁTICAS DO ESPAÇO EUROPEU" (Porto, Portugal):

The author believes that after 18 editions, the forum Grandes Problemáticas do Espaço Europeu in Porto has established itself as a robust international geographical network. The most important marker of its success over these years has been "sustainability". In this regard, it is crucial to assess how many participants have consistently attended (for example, more than 3-4 times). These individuals, in our view, form the core of a stable geographical network.

Another important question is how many young scholars and students are attracted to this network. Additionally, evaluating how many significant thematic issues have been discussed at the forums and assessing the positive impact on society are equally important considerations (Table 1).

Table 1. Sample Markers for Forming the Geographic Community of Grandes Problemáticas do Espaço Europeu

Number of participants	Number of foreign participants	Number of young scientists and postdoctoral fellows	Number of participants with over … number of entries	More important thematic research issues

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Conclusions and Recommendations

The main conclusions drawn from the discussion so far are that geographic networks exist in various forms, ranging from purely geographic to highly specialized and often interdisciplinary. All adhere to the fundamental principles and factors important for scientific communities.

Their primary function is to unite individuals with similar pursuits, views, and interests. Geographic networks can be viewed as a subtype of geographic communities.

Geographic networks require new minds, particularly those of younger generations, to establish new, thematic, and current geographic networks that will strengthen the future of geographic science.

Let's conclude this material with the slogan of our new IDEA journal network, encapsulating our practical aim: **CONNECTING MINDS, CREATING COMMUNITY.**

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