

# Thinking geographically in Iran

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## Abstract

Understanding geographical thinking in different countries of the world provides scientists with profound insights and useful experiences. The geographical thoughts in Iran have been evolved along with the evolution of scientific ideologies in other nations. Since the ancient times, the geography in Iran has been developed in the ways to meet political, economic, and social requirements of each given period. The Persian geographers played an essential role in development of the science in the world. In the modern centuries, thinking geographically was configured in the form of geographical institutes, organizations, and congresses. Recently, most of the researches in the discipline are carried out using advanced technologies in the fields of RS-GIS, urban and rural planning, geomorphology, climatology, climate change, natural hazards, tourism, environment, land degradation, geopolitics, and landuse planning. Today, almost all the place-based researches and businesses are directed toward the application of geographic information technologies.

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## 1 Introduction

Today the communities on the planet earth are interconnected by the most advanced technologies that help them find out thinking diversification in the world. Understanding regional differences of geographical thinking among various nations can provide insights into new opportunities and solutions for a wide variety of social, economic, cultural, and political problems. Gaining the insight help geographers take advantage of the findings and experiences of other countries on the earth. In addition, spatial differences and temporal variations in thinking geographically can represent the strengths and successes of the thoughts in solving the problems (Nezammahalleh et al. 2013).

To know the thinking trends of geographers of a given nation can shed light on the changes in the needs of that community. Spatial differences and historical variations of geographical thinking in different nations in different periods may indicate that which thinking school can better solve the problems in a certain nation at a given time. As geographical studies shift from an exploring paradigm to a quantitative one, it can be inferred that the further school of thinking is no longer able to solve as much problems as the later.

It can be argued that geographical thinking trends in Iran can be representative of the needs amongst the community. In ancient times when monarchic

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families and merchants had the political and economic demands to know about other cities, most of the books in Iran were exploring and describing other cities and tribes. Then, the empires like Sasanids had to know about other regions of the world to expand their territory. As a result, we can see the geographical books introducing natural and human conditions of other regions and climates. In Abbasids period in Iran and Middle East with increased administrative requirements, geographers of Balkhi School made lots of studies merged with mathematical techniques for mapping in order to meet the political needs for vast territory. In 17th century most of Iranian geographers conducted researches and translations to familiarize the communities with geographical advances and findings of the world. This was contemporary with great explorations and demands of merchants, rulers, and students to have the news of the world. In 19th century, establishment of Iranian Polytechnics made most of the Persian geographers familiar with new theories of modern geography. Then, the geographers used modern technologies in cartography and research methodologies. Now, geographical thinking in Iran is to address urban, rural and tourism planning and sustainable development issues in human geography and natural hazards and climate variations problems in physical geography. Today, newly developed methods using Geographical Information System (GIS) and Remote Sensing (RS) techniques are

highly applied in geographical studies and administrative purposes in Iran (Alavipanah 2010).

## 2 Institutional evolution of geography in Iran

### 2.1. Academic centers

Establishment of modern institutions in Iran began about 200 years ago under Ghajar dynasty. Geographical education and studies in academic areas can be categorized in three stages including geography learning in Iranian Polytechnics (Dar ul-Funun), geography teaching and studies from the beginning of New Sciences Campaign until establishment of Teacher's College in schools, geographical in Community College and universities in different geographical subjects (Ganji 1988). In the following, we express the three main institutes contributed in evolution of modern academic geography.

Polytechnic institution:

The polytechnics (also called Dar-ol-Fonoon or Dar ul-Funun) as the first modern university of higher education in Iran (called Persia at that time) was founded in 1851 by Amir Kabir known as a benevolent prime minister. The first dean of the center was the foreign minister of the time, Mirza Mohammad Ali Khan. The mission of the institute was to upper class Persian students in different fields of modern sciences. Some Iranian and foreign professors were the first teachers of many sciences including geography, military marching, gunnery, medicine, design, engineering, physics, chemistry, mining, and foreign language. The first primary large scale and small scale maps of Iran and Tehran as well as the first globe were produced in the center. The first education book of scientific geography was also written and published in the institute. After final exam, the students used to be graduated and employed in governmental bureaus. (Bahmani 2012, Lorentz 2007)

Following Persian Constitutional Revolution (1905-1911) and then establishment of a parliament in Persia (Iran) with new social and political legislations, the polytechnic was rehabilitated with new regulations and a repaired buildings. The academic center merged into the newly establishing University of Tehran and the old building changed into a high school. (Ganji 1988)

The avid interest in geography and measuring streets and areas led to invaluable achievements for geography in the school. Some of the achievements are including:

1: publishing the first modern book of geography in Persian by Najm Al-Dowleh

2: drawing the map of Tehran, Capital city

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3: creating the first globe of earth with political borders by Abdol Razagh Baghayeri

4: conducting the first systematic census (enumeration)

5: publishing the book entitled "Kefayeh Al-Joghrafi" by Mirza Abdol Ghafar about physical, human and political geography issues by picture illustrations.

The main scientists of the polytechnic are including Mirza Abdol Ghafar (Najm Al-Dowleh), Abdol Razagh Baghayeri, and Nazar Agha. The academic center had 387 students in 1928. (Bahmani 2012)

Teacher's College:

Following the establishment of Iranian Polytechnic and development of high schools, there was a need for training the educators as high school teachers. For that, the college was established in 1928 under the name of "Dar Al-Moalemin" for training teachers and then it changed into Teacher's College (also called Teachers Training College) according to the Teacher Training Act (1933). There were two groups of courses of sciences and literature (including geography) in the college.

University of Tehran:

The University of Tehran was established by the efforts of Ali Asghar Hekmat as the Ministry of Education in 1934 by the ratified plan by the king, Reza shah. After the establishment of the university, department of geography was founded for Bachelor, Master of Science and PhD. Primarily, there was a single course of Geography and History in the University of Tehran. Then, the course of geography was separated from the history as an independent scientific field. The laboratory of geography and cartography equipment in this university helped the geographers to conduct useful inquiries in different subfields of geography. (Ganji 1988)

### 2.2. Geography institutes

Following the University of Tehran, many departments of geography were founded in other community colleges and universities established in major cities of Iran. This led to publication of a plenty of books, maps, and useful papers by prominent Iranian geographers. The main geography researches were conducted in geography subfields including physical geography (geomorphology, climatology), human geography (urban planning and rural planning), Geographical Information Systems (GIS) and Remote Sensing, tourism, and natural hazards. We will discuss about that later on in this chapter. The first department of Remote Sensing and GIS was established by Seyed Kazem Alavipanah in University of Tehran. Many RS-GIS specialists are graduated from the

department for the first in Iran. In 2018, the Faculty of Geography of the University of Tehran was ranked 150th in the world which was a notable achievement for Iranian geography, indicating that geography is of the leading scientific disciplines in Iran. (Figure 1)

Faculty of Earth Sciences was founded in 1975 by Professor Iranpour Jazani in Iranian National University (now named as Shahid Beheshti University) that was established in 1959 with the aim to combine the tradition of a classical university with the dynamic character of a modern and interdisciplinary scientific enterprise. The Faculty of Earth Sciences has four departments of physical geography, mineralogy, human geography, geology, and GIS and RS in BS, MSc, and PhD. The faculty focuses mainly on the interdisciplinary researches of geography.

The Ferdowsi University of Mashhad was established in 1949 with the aim to educate the citizens and citizen-leaders. Department of Geography is in School of Letters and Humanities. The department has the fields of climatology, geography and rural planning, geography and urban planning, and subfields in BS, MSc, and PhD. Faculty of Geographical Sciences and Planning started its activities as the Department of Geography by in 1966. It has three departments of Geography and Rural Planning, Geography and Urban Planning and Physical Geography as well as five sub-disciplines of Urban Planning, Rural Planning, Climatology, Geomorphology and Geography and Tourism Planning in BA, MA, and PhD.

The Islamic Azad University as a semi-private university system in Iran is considered one of the largest comprehensive network of universities, colleges, and community colleges in the world. It was approved and ratified by Supreme Council of the Cultural Revolution in 1982 and founded by Akbar Hashemi Rafsanjani, the former president of Iran. It has two independent and 31 state university branches with 400 campuses and research centers in Iran, and four branches abroad. The university system has hospitals, laboratories, workshops, sports facilities, recreational areas and ITC facilities. A huge volume of the researches in the university is carried out in geography and related geographical sciences. The university allocated considerable resources to geographical and environmental studies.

A review of the education of geography in universities of Iran have showed that there are now geography department relatively in all the 30 main governmental universities of Iran, much of the branches of Islamic Azad University throughout the country, Payam Noor Universities, and non-profit universities. As an example to explore the trend of researches in different fields of Geography in the universities of Iran, we have selected seven universities including University of Tehran, Shahid

Beheshti University, Ferdowsi University of Mashhad, University of Isfahan, University of Shiraz, University of Mazandaran, and Islamic Azad University. According to Scopus database, we can see the number of geographical researches published in the seven academic centers of Iran. Most of the studies are conducted in urban geography and RS-GIS. Among the universities, most of the geographical studies (56%) are published by University of Tehran. (Table 1)

### 2.3. Geographical organizations

Iranian National Geographical Organization of Armed Forces (NGO), founded in 1951, was the first in the Middle East that produced analogue aerial photography of all the country at 1:50000 scale in 1955. The aerial photos were then used to create about 2550 sheets of 1:50000 topography maps of Iran through photogrammetry techniques. It conducted survey projects covering entire the area of Iran. The organization has recently used ULTRA CAM D to produce digital aerial photos of the country. Some principal missions of the NGO is to operate in delineation of political boundaries, satellite geodesy operation, satellite image processing and interpretation, correction of old maps, production of geographical information, publication of books, remote sensing projects, educational efforts in geography and surveying.

National Cartographic Center of Iran (NCC) was established in 1953 as a state center. The NCC is now the main authority for production of maps and spatial information under the I.R. President's Deputy for Planning and Strategic Supervision. The NCC as part of planning and budgeting organization of the government is administrative institute for producing and having geographical and spatial information of the country. Based on the ISO 9001-2000 Quality Management system, NCC undertakes supervision and technical control of mapping and spatial information projects. These projects are carried out by NCC itself, other governmental organizations and private mapping companies. Some products of the center are including Production of base map of the country of Iran at 1:25000 scale, marine charts at 1:25000 and 1:100000 scales, design and establishment of National Geodetic Control as well as Geodynamical networks, establishment of national, regional, and urban spatial topographic databases, production of small scale base maps at 1:50000, 1:100000, and 1:250000 scales and national atlases. A lot of projects in the fields of photogrammetry, remote sensing, GIS and digital mapping are carried out by the center. The center is also responsible for naming geographical locations and places of Iran.

Sahab Geographic and Drafting Institute is a private geographical and cartographical institute in Iran. It was founded in 1935 by Abolghasem Sahab with

the aim to produce maps, globes, atlases and other educational geography materials.

Gitashenasi Geographical & Cartographic Institute is a private publication founded in 1972 by Bakhtyari to produce maps and globes of Iran. The institute can be considered as a main source of geographical references.

#### 2.4. Geographical congresses and associations

There are many associations and scientific societies in Iran. The some of the associations are including the first geographical association of Iran, center of arid area research, institute of geography in University of Tehran, association of geography, history, and social knowledge teachers, geographical association of Khorasan, association of Iranian geographers, Iran desert region researches, and geography in Persian language academy. The main congresses are including congress of Iranian geographers (1st – 6th) and congress of regional geographic issues. There are recently a lot of associations in subfields of geography and a plenty of annual national and international conferences in various subjects relevant to climatology, geomorphology, natural hazards, environmental problems, environmental planning, urban planning, rural planning, tourism planning, geopolitics, geomatics, GIS, RS, and landuse planning (Alavipanah 2009).

The associations have been very helpful in introducing the Iranian geographical problems, opportunities, research findings, and explorations to the world. Some of the associations and societies have collaborated with international associations and geographical societies of other countries. Mutual relations between the leading Iranian associations and other geography international, regional and national associations shared a great volume of research findings among them. The efforts have also led to membership in some geographical societies and international conferences in a wide variety of global geographical and environmental problems such as climate change, global warming, land degradation, and sustainable development goals. According to Scopus database, we can see the participations of Iranian geographers in international conferences on different fields of geography (Table 2).

A huge volume of national conference events about geographic subjects are held each year in Iran. This great number of conference events can show the contribution of Iranian geographers, most of them MSc and PhD students, in geographic researches. According to conferencealert.ir website, for instance, we can find about 179 events concerning geography in Iran just for the year 2019. It is noteworthy that nearly all the conferences have an English abstract of the published papers. Most of them are also held by the important geography associations. Therefore, this can be argued that the [www.foriamooz.ir](http://www.foriamooz.ir)

Iranian young geographers are remarkably contributing to development of the knowledge of geography.

### 3 History of geography in Iran

The geography, as the knowledge of relationship between human and nature, is as old as human creation on the earth. Ancient people had shaped their relations with the environment to meet their daily needs. There are lots of geographical texts in Avesta as the primary collection of religious texts of Zoroastrianism in Avestan language in Sasanid Empire (224 AD). They had to measure many paths to neighboring communities and record the special places. In this time, the dynastic systems attempted to deprive the typical residents of the maps and mapping tectonics. The mapping and geographical information were just confined by the kingdom families. There might be many ancient geographical records destroyed by natural and human catastrophes over time (Frye 1962, Axworthy 2008). In Iran, geographical knowledge was merged with astronomy and math before Islamic period. It seems that efflorescence of knowledges particularly geography happened in 8th century AD in Islamic administration under Abbasid Caliphate contemporary with medieval period in Europe and with Tang dynasty in China. The knowledge of geography considerably developed to provide the rulers with required information for expanding their territory. Abbasid period was marked by reliance on Persian bureaucrats (notably the Barmakid family) for governing the territories; because the Persians were remarkable familiar with neighboring places and spatial knowledge. As the Islamic rule extended to other areas of the world, Iranian (Persian) geographic knowledge also disseminated among the Arabian and European states. The Persian scholars had to write their books and essays in Arabic as a foreign language because of Islamic beliefs and domination of Arabic empire. Thus, relatively all the books of Iranian scholars particularly geographers are written in Arabic language. (Young et al. 1990, Alijani 2012, Janparvar & Sepehr 2018)

The primary geography fostered in Persia, today's Iran. Early caliphs (rulers) did not follow orthodoxy and used scholarship. Under the rule Islamic rule, native non-Arabs served as mawali or dhimmi, and most of the geographers in this era were Persian or Syrian, i.e. of Zoroastrian background. Most of the geography essays were mingled with astronomy, mathematics, travel diaries, and cartography.

Persians geographers (Conrad 1982, Leo 1985, King 1994, Moshiri and Rahmani 2009, Janparvar & Sepehr, 2018) are including:

Jābir ibn Hayyān (Jaber ebn Hayyan) (721–815 AD): he wrote on many geography subjects and did

inquiries in natural science using experimentation. It is unclear whether he was Persian or Syrian.

Al-Khwārizmī (Kharazmi) (780–850): he was a prominent geographer and astronomer that wrote the book of the Image of the Earth (Kitab surat al-ard or Surat Al-Arth), in which he used the Geography of Ptolemy and improved upon his values for the Mediterranean Sea, Asia, and Africa. He drew the lengths and widths of all known cities of that time. He also produced an atlas of the earth (arth in Arabic) and sky.

Ibn Khurdadhbīh (820–912): he wrote the Book of the Routes and Provinces (Kitab al-masalik wa'l-mamalik), as the earliest surviving work of its kind in Islamic rule. He also produced the first quadratic scheme map of four sectors.

Sohrab (died 930): he authored the Marvels of the Seven Climes in which he described and illustrated a rectangular grid of latitude and longitude to produce a world map.

Al-Balkhī (850–934): the scholar founded the "Balkhī School" of terrestrial mapping in Baghdad. He also wrote the book of "Surat al-Aghalim" (faces of climates) in Arabic as a foreign language. The book was later cited in the works of Al-Istakhri and Ibn Hūghal.

Al-Istakhri (died 957) authored the book of Aghalim (climates) in which each chapter is allocated to one region with description of natural conditions and special map of that area. He also compiled the Book of the Routes of States, (Kitab Masalik al-Mamalik) using personal observations, diaries, and literary sources.

Al-Biruni (973–1052): the scholar is an eminent astronomer, math specialist, and geographer who wrote the book of "Tahdīd Nahayat al-Amaken" (limits of places) to explain new methods in measuring length, width, and diameter of the cities as well as to introduce a zonation of the regions based on ethnicities and employment of tribes. Another attempt of the erudite was to describe polar equi-azimuthal equidistant projection of the celestial sphere.

Avicenna (Ibn Sina) (980–1037) is the most prominent Persian scientist of that time and an erudite scholar who have books and inquires in many fields of sciences. He also wrote about earth sciences in his Book of Healing, a medicine book in Arabic as a foreign language.

Abu Nasr Mansur (960–1036) is known for his work with the spherical sine law. He authored the Book of Azimuths.

Ibn al-Faqih (10th century) wrote Concise Book of Lands (Mukhtasar Kitab al-Buldan). This 1000-pages book described geographical conditions of

Iran, Arabia, Iraq, Egypt, Rome, and some other regions.

Ibn Rustah (10th century) authored the Book of Precious Records in which he provided the readers with the valuable information on his hometown, Isfahan. The book was carried out based on observations and explorations and described the twenty urban districts of Isfahan, in details.

Abu Yahya Zakariya al-Qazwini (13th century) was a Persian physician, astronomer, geographer who well known for his geographical dictionary "Monument of Places and History of God's Bondsmen". The book was frequently studied by Iranian, Arabian, Turkish, and European scholars and explorers.

Hamdallāh Mustawfī Qazvīnī (1281–1349) was a Persian historian and geographer who authored the book Nuzhat Al Qulub explaining human and natural geographic issues merged with history.

Amin Razi (16th to 17th century) was the author of a geographical and biographical encyclopedia entitled "haft eclim" (in English "seven climes") in Persian language. This is known as the first Persian encyclopedia and provides extensive historical, biographical and topographical information based on latitudes.

Masoud Keyhan (1893) is known as the first teacher of geography in higher education. He was the head of armed forces in Fars State and then as the minister wrote the book of natural, economic, and political geography of Iran.

Abbas Eqbal Ashtiani (1896-1956) was educated in Dar Al-Fonun and University of Paris. He wrote some history and geography books for high school students and many papers in Persian geography magazines.

Ahmad Mostofi (1912) finished his education in Iran and sent out to University of Paris for university degree. He received his PhD in physical geography from the university and employed as associate professor in University of Tehran. He was the first professor of geomorphology in Iran and conducted extensive researches about arid areas of Iran, particularly Lut desert.

Mohammad Hassan Ganji (1912-2012), known as the father of modern geography in Iran, was a meteorologist and established the Iran Meteorological Organization in 1955. As a professor in the University of Tehran, Mohammad Hassan Ganji was the first who began to teach modern geography at universities and published over 130 articles in Persian and English and trained many scholars. He was also selected winner of International Meteorological Organization (IMO) Prize.

In recent years, three generations of Iranian geographers, in general, can be identified. The first group was the founders of urban geography. After graduating from the universities of western countries such as Germany and France, the first generation of geographers have attempted to research and develop geography in Iranian universities since the 1950s. They were highly influenced by German geographers and thinkers such as Walter Christaller, von Thünen, and Weber. The second generation consists of the geographers who have been employed in the departments of geography since the 1979 revolution. Due to many problems in the country after war, the second generation highly influenced by English and American geographers mainly concentrated on the practical and planning aspects of geography. They also established many academic centers and Persian journals of geography. Now, the third generation of geographers is emerging. They participated in highly competitive National University Entrance Exam and managed to be admitted in universities (They were usually top 5000 among 0.5 million participants). Many scientific ISI papers are, now, published by this third generation.

## 4 Thinking geographically in Iran

The primary geographic notes of Persians (Iranians) remained from ancient time show that geographical thinking was about exploring neighboring settlements and recording their natural and human features for the monarchs. Then, in Sasanids dynasty geographic thinking was mainly knowledge about the natural and human features of different regions and mapping the places. Alavipanah (2010) also found many implications of areal mapping and geographic principles among the poems of old scholars. (Leo 1985, Moshiri & Rahmani 2009)

After the Arabian Muslims entered to Iran, many sciences including geography became extinct for about two centuries. Then, the geographers mainly in Abbasid period encouraged the scholars and geographers. As a result, thinking geographically in this era was related to describing mountains, rivers, routes, and countries as well as measuring the lengths of routes and the areas of regions using mathematical techniques. In the early 10th century the "Balkhī School" founded by Abū Zayd al-Balkhī, a Persian originally from Balkh. The geographers in this thinking school made terrestrial mapping and introduced peoples, products, and customs of areas in the Muslim world. Geography of this period was mainly focused on mapping. For example, Sohrab endeavored to write a book of geographical coordinates with instructions for making a rectangular world map, with equi-rectangular projection or cylindrical equidistant projection. Avicenna hypothesized on the geological causes of mountains in *The Book of Healing* (1027). There were some environmental determinism thoughts among the geographers explaining how physical

characteristics determine the inhabitants of different regions. (Moshiri & Rahmani 2009)

Some Persian poets like Mawlānā (1207) and Omar Khayyam Neyshabouri (1048) implicitly explained many geographical principles in a poetry format to account for many mutual relations between the nature and human societies. (Alavipanah 2010)

Persian Abū Rayhān al-Bīrūnī, nearly 1025, was the first scholar that devised a polar equi-azimuthal equidistant projection of the celestial sphere. He was ranked as the most skilled in nearly exact mapping of the cities mainly in the Middle East and western Indian subcontinent. He combined astronomical knowledge and mathematical equations to record degrees of latitude and longitude and to measure the heights of mountains and depths of valleys. The Biruni solved a complex geodesic equation in order to accurately compute the Earth's circumference and his estimate of 6,339.9 km for the Earth radius was only 16.8 km less than the modern value of 6,356.7 km. ([https://en.wikipedia.org/wiki/Geography\\_and\\_cartography\\_in\\_medieval\\_Islam](https://en.wikipedia.org/wiki/Geography_and_cartography_in_medieval_Islam), Moshiri and Rahmani 2009)

Al-Idrisi, as one of few Arabs who had ever been to France, England and Spain, was sent out to other areas by King Roger II. The books of the Persian geographers were important resources for his studies. Utilizing the information inherited from the classical Persian geographers, he created accurate maps of the world, the *Tabula Rogeriana* (1154) in Arabic. (Moshiri & Rahmani 2009)

It can be concluded that before the modern advances of sciences in the recent centuries, the geography in Iran similar to other countries of the world had a synthetic and integrative nature. It means that geography recognize and examine everything about a certain place. With changes in modern sciences in other nations, the discipline is using advanced technologies to address spatial issues.

## 5 Recent geographical thoughts in Iran

Following the scientific attempts of Alexander von Humboldt (1769-1859), the geography was identified as a modern science in the world with the mission to observe and analyze natural and human phenomena on the earth. Similar to other countries of the world, Iranian geographers based their researches on scientific observations and analysis of the earth features (Ganji 1988). Following the works of Humboldt in natural geography and the works of Carl Ritter (1779-1859) focused on human geography, geographic studies in Iran were conducting in two separate fields of human and physical geography (Shakouei 2013). In some works of Iranian, we could infer environmental

determinism philosophy. Between the two world wars, geography in Iran was introduced as a regional science with integrative nature. Until the end of World War II, in half 20th century, there were both the determinism and positivism thinking among the geographical researches of Iran. After the end of World War II, geography, like other disciplines, has experienced huge achievements thanks to advancement of modern technology and new tools including the computer, aerial photography, remote sensing, and Geographical Information Science. Import of the technology into Iran by the Pahlavi dynasty helped the geographers acquire accurate data and conduct more precise scientific analyses. As a result, geographical studies found a shift from theoretical arguments and content analysis to quantitative methods and cause-effect analyses of spatial problems. Since the 1950s, quantitative methodologies have strongly gained a ground among the geographical researches in Iran. (Bahmani 2012, Ganji 1988, Alavipanah 2009, Alijani 2012, Shakouei 2013)

Recently, geographical researches from 1970 to 2000 were carried out using content analysis in cases studies. Quantitative methodologies were employed just in few geographical studies. Geographers in this period used to assert their own judgements about the hypotheses and conclusions. In this period, physical geography mainly translated the works of other researches into Persian. The works were mainly the researches and theories from Germany, France and United States. Paper works were also qualitative descriptions of theories and analyses of geographical literature. Generally, there was a multi-disciplinary approach to geographical problems before 1990s among the Iranian geographers.

From 2000 to 2019, Iranian geographers conducted their researches mainly using GIS and RS techniques in case studies. Some studies in this period also employed statistical inferences to approve the hypotheses. Many phenomena in human and physical geographic researches were interpreted through system approach. In geomorphology, Davisian approaches to the youth and oldness of mountains transformed into cause-effect studies and trend analysis using RS-GIS. In climatology, most of the subjects were about synoptic analysis and climate change studies. Despite the pure examination of natural features in physical geography in the period before 2000, many physical geography problems were analyzed with special attention to human problems in a system approach and spatial analysis. In urban geography, examination of urban social issues and urban physical structures in previous period shifted to analysis of urban management problems and urban planning. In rural geography, we could also see a shift in research subject areas from rural problems to rural planning and sustainable development case studies (Figure 2). In this map, distribution of

geographical case studies can be seen in 31 provinces of Iran. (Shakouei 2013, Nezammahalleh et al. 2013)

However, geographical researches show overwhelmingly increasing trend in all subfields of the science. Indeed, contribution of Iranian geographers to development of initiated methodologies and new findings is considerable in recent years. For example, based on the Scopus database, we can see the papers of Iranian researchers in different sub-disciplines of geography. (Table 3)

According to Table. 3, we can see an increasing trend in geographical scientific researches among Iranian geographers. This can also indicate that human geographical thinking is developed more than physical geography thinking among the geography community of Iran. It is also noteworthy that RS-GIS is mainly employed as an analytical instrument in other fields and the relevant publications discussed about its processing and modeling capabilities, instead of arguing merely about the software. (Figure 3)

Today, the geographical thoughts are focused on natural hazards, land degradation, desertification, environmental problems, rural and urban planning, urban management, geopolitics, tourism, and sustainable development. (Alavipanah and Nezammahalleh 2013)

We can see malleable interest in recent geography studies as going on. It seems that they are steered by two factors; one is the attempts of geographers to meet the economic, social, and environmental needs using the newest technologies and the other is reproduction of valid researches published in the world. Many of the studies are also carried out in the form of student projects, PhD theses, and dissertations in universities of Iran about the wide variety of geography related subjects.

It is also noteworthy that conduction of many earth-based studies in Iran involves application of RS-GIS and place-related thinking. The future geographical thoughts would be linked to technologies of Web GIS, mobile GIS, on-time spatial analysis, satellite image processing, and location-based programs in business, social, cultural, education, administration, hazard, and environmental aspects (Nezammahalleh et al. 2013).

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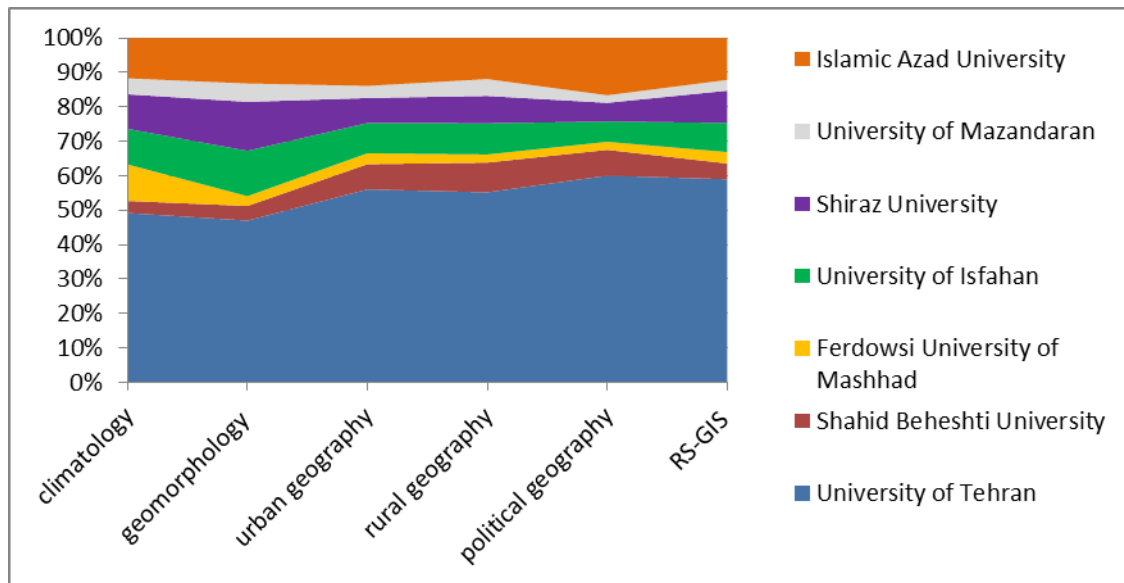
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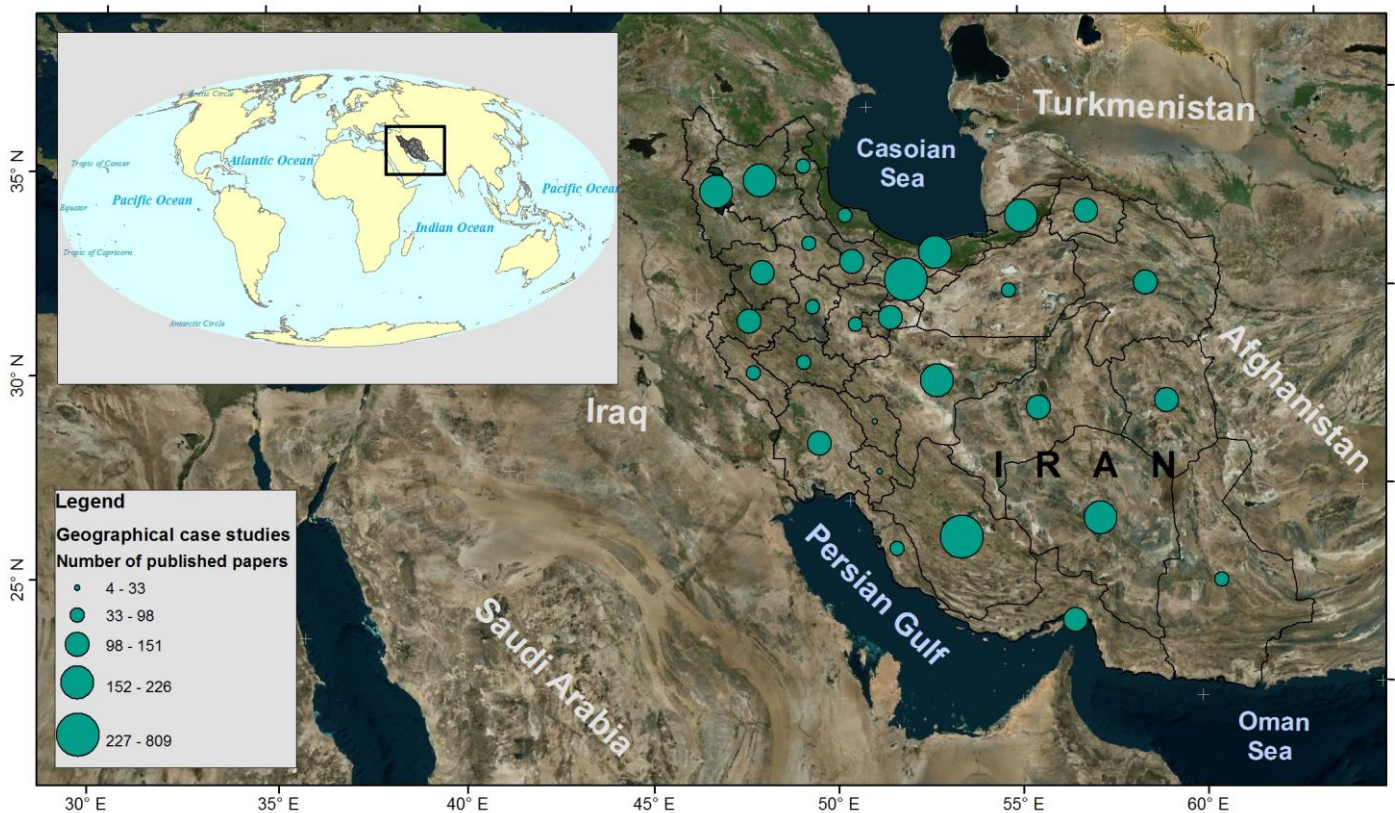
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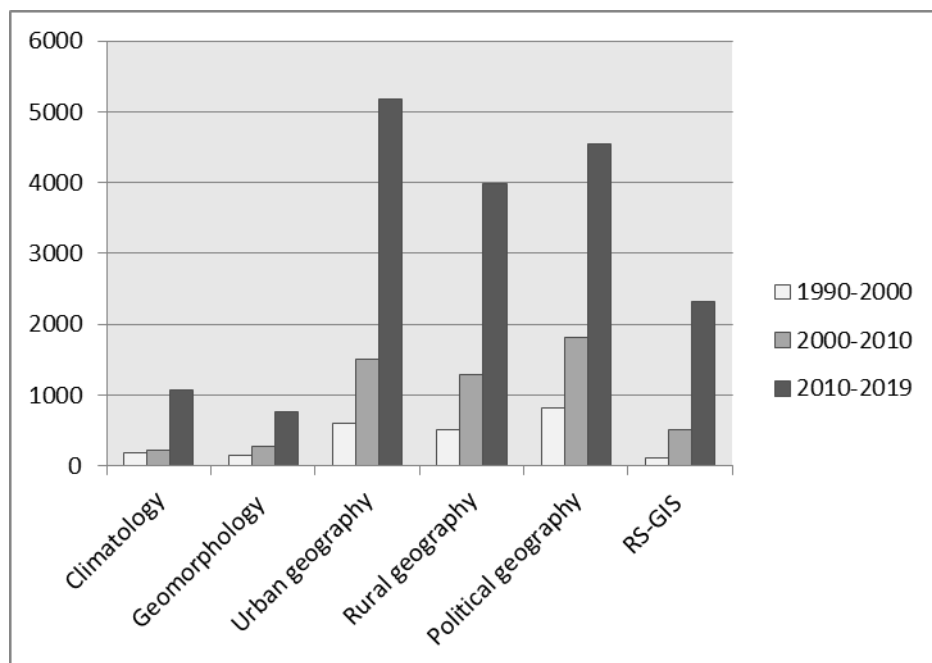
**Figures:**



**Fig. 1:** proportion of the universities in geographic fields.



**Fig. 2:** distribution of geographical case studies in 31 provinces of Iran; the rectangle on the upper left map shows the position of Iran in the world map.



**Fig. 3:** Geographical researches of Iranian geographers in different fields.

**Table:**

**Tab. 1:** geographical researches published in the seven sample universities of Iran (Based on Scopus Database).

	Climatology	Geomorphology	Urban geography	Rural geography	Political geography	GIS and RS	Sum
University of Tehran	181	132	848	562	409	642	2774
Shahid Beheshti University	13	12	111	88	51	50	325
Ferdowsi University of Mashhad	39	8	48	24	16	36	171
University of Isfahan	38	37	133	92	40	92	432
University of Shiraz	37	40	110	81	37	102	407
University of Mazandaran	17	15	53	50	15	34	184
Islamic Azad University	43	37	210	121	113	132	656
Sum	368	281	1513	1018	681	1088	

**Tab. 2:** contribution of Iranian geographers in international conferences (number of conference abstracts in Scopus database).

Climatology	Geomorphology	Urban geography	Rural geography	Political geography	RS-GIS
92	54	266	253	152	134

**Tab. 3:** geography papers of Iranian researchers in different fields of geography (based on Scopus database).

	Climatology	Geomorphology	Urban geography	Rural geography	Political geography	GIS
1990-2000	178	143	597	508	816	120
2000-2010	228	275	1504	1289	1813	509
2010-2019	1074	761	5172	3982	4543	2322