

Demarcation of Territorial Boundaries in International Law and Procedure: Technical Factors Role

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Abstract

Technological advances in any domain affect other domains as well. International law and especially international boundaries take advantage of technical progress, considering the factors which existed before but they have been neglected and put these factors in the service of its demands. Maybe if we consider each of the technical factors separately, we cannot understand their role properly in boundary domains, but we study their setting in the form of boundaries demarcation and consider the package generally and investigate the relationship of internal factors. It is clear that technical factors have developed a great evolution in demarcation of territorial boundaries. Eventually, when the technical parameters are employed for demarcation of territorial boundaries, in fact they serve to its purpose; the purpose is nothing than maintaining international peace, order and security, the fact that is the existential philosophy of the United Nations organization. Thus, non-human factors have been served for human factors and maintain its values. Definitely next advances in technical factors will be along with other developments in boundaries domain.

Keywords: territorial boundaries, demarcation, delimitation, boundary protection and maintenance, technology, border consolidation

1. Introduction

One of the most important issues for countries is demarcation of their boundaries with each other. The importance of territory and boundary and their direct relationship with countries governance causes the countries to consider this issue with great sensitivity and demarcate their boundaries with special obsession. If in the past, inadequate delimitations were done and if after delimitation, demarcation was not done, led to territorial and boundary disputes between the countries now, countries with much attention to the importance of the delimitation and demarcation, consider their effective, adequate and efficient implementation.

In this regard, the role of arbitration and international judicial authorities, especially the International Court of Justice is a unique role. The rules of territorial boundary demarcation have changed in the courts to meet the needs of today's international community and above all, maintain stability in line with consolidation of international peace, order and security.

Studying judicial developments is a separate issue that requires its specific detailed analysis that out of discusses in this study. But outside the judicial and arbitration process, demarcation of international boundaries have faced with developments. Some of the changes refer to technical factors, including their progress and employment of such factors in demarcation of territorial boundaries that this study investigates the role of these factors in the field of territorial boundary demarcation. Non-judicial developments which occurred in demarcation of international territorial boundaries can be seen in the following cases:

a. More attention of countries to boundary demarcation

Regarding the importance of borders demarcation, Cukwurah statement is considerable:

“Demarcation is difficult issue of boundary”.

Boundary demarcation on the ground is very important for some reasons. First, with the establishment of boundary on the ground, the possibility of any territorial disputes between neighboring countries will be less in

the future. Second, the physical presence of the boundary line makes border management activities easier more effective. For example, regarding security management, border guards in both sides of the border can design and carry out their duties easier along the border. Third, a well-marked boundary, allows people on both sides of the boundary, especially in densely populated areas, or areas where nomads cross the boundary daily, to be aware of their position, while they are moving.

In past centuries, territorial disputes were often the result of boundary lines that were not determined clearly. In recent times demarcation of national boundaries, have substantially reduced the recurrence of such disputes.

Some of the boundaries which have been delimited until the first half of the twentieth century never were demarcated until major advances occurred in mapping techniques and rapid transportation.

If we want to investigate the lack of attention to demarcation by countries in the past, we observe that because of the cost, calculation issues and time constraints, no attention was given to demarcation that it deserve. For example, in Africa, the reasons for this can include lack of sources and manpower, poor equipments and lack of political will.

b. Management of demarcated boundaries and their consolidation:

The process developed by two neighboring countries to repair or reconstruction defective column boundaries, condensing the column boundaries and removing foliage and bushes between column boundaries to establish a certain seeable line with visible landscape from miles away, is called maintenance regime of boundary. Such a regime usually has two forms:

1. Partial maintenance - whereby each neighbor country takes the responsibility of a special boundary.
2. Joint maintenance – occurs where that two countries manage maintenance operations unanimously.

Border experts acknowledge that boundary maintenance and protection is of key importance and must be undertaken appropriately and shared with neighboring country through specific structures and arrangements. Usually, a permanent joint commission is responsible for management and maintenance of boundary line from both sides. These commissions have to hold regular meetings in order to discuss about the need for any repair, maintenance or columns displacement and usually send their reports to the highest authorities of the two countries to approve or amend. Regarding protection and maintenance of the boundary, boundary archives are also held with the aim of transition from demarcation and final registration of boundary position toward peaceful management and coexistence of both sides of border line. This is the climax of international political process and beginning of cooperation in protection, preservation and management of developed boundary with an emphasis on its durability and stability. Thus, developing a bilateral reference for the purpose of permanent evaluation of issues related to necessary measurements to achieve smooth management of a boundary will be very appropriate. This cannot be realized without collecting all relevant data that boundary information can be easily regained, if it is necessary. In this context, the concept of database is acceptable prominently.

c. The important role of technology in boundary issues

In recent decades, continuous access to new technology, was a great help in different stages of the boundary for countries. Accuracy and saving in time, costs and labor forces are the advantages of new technologies, that has made it even easier compared to the time before the arrival and using systems. Examples and tools used in new technologies are widespread and great and we cannot investigate all of them in this study. Only some of them are mentioned briefly and as much as possible. New technology has contributed greatly to the surveys involved in determining the international boundaries. Advances in remote sensors and satellite position finder systems as well as 3D imaging and Gps in geodesy, survey and mapping field have extensive capabilities and have developed changes in this area. For example, satellite images have provided great opportunities for a preliminary source, which can quickly complete the mapping coverage and this allows delimitation and demarcation design and provide conditions for the provision of suitable preparations for the purpose of mapping and geographical information. Another technology which is widely used in borders is GPS. GPS is a global positioning system, which was made at first by Department of United States defense, but today have different civilian applications that mapping and geodesy is just one of them. This system receives observations from 24 satellite signals that round the earth in a geostationary orbit and measures exact moments of receiving signals.

d. The important role of maps in boundary issues

At first, it must be noted that studying the maps in this section does not mean to apply them in international arbitration and judicial decisions, as it should be investigated within the framework of judicial developments of demarcation rules of international territorial boundaries. In this part, application of maps is considered in some

cases other than votes and in the delimitation of the territorial boundaries is concerned out of court. In other words, in this study maps are not addressed considering their judicial aspect, but their technical aspect is concerned. The study, adaptation, description and realization of economic, social, natural and political phenomenon are comprehensive and rapid when it is raised in the form of map. Map has been used as a tool for ecology and representation of the human dominance over his environment and always was used as a tool by Political power and sovereignty. Maps are very useful tools that we use them to collect and display information and determine our position among other humans and societies and give identity to ourselves and our society. Maps, especially maps related to human geographical studies are a suitable tool for borderline and territorial claims. Eom (head of cartography, field support department of the United Nations organization in New York) states that a basis map is necessary for all stages of boundary construction and countries should benefit from available space technologies to avoid boundary conflicts and resolve them. In demarcation of territorial boundaries, the role of maps is undoubtedly very important. In addition to need for national boundaries, after Westphalia, the exact boundaries could be created only when the construction of maps and geographical techniques improved considerably to facilitate the delimitation and demarcation and help it.

e. The role of archival documents on boundary issues

Objective empirical facts about human activity are stored in institutions archives in administrative, legal or political departments that their volume will increase over time. The endless pages of documents effect on the quality of political and administrative decisions. When available scientific information is not enough to clarify differences or resolve them, this can lead to arbitrary or legally inaccurate decisions that is incapable to meet the interests of people. Here the role of archives is important in boundary disputes, since, they are a main source of information. Archives not only play role in the process of delimitation and demarcation of boundary, but they are the first step in implementation of reaffirmation, since they allow reaffirmation of boundary specially for hostile areas and areas with few physical marks with a higher likelihood of conflicts by collecting essential documents. In most cases, the main source of information on the evolution of international boundaries of a country, are governmental archives of country. In some cases, archives of neighboring countries can also be useful sources of information and in the case of having colonialism history, archives of former colonial powers are also incredibly important.

f. Playing a more important role by efficient experts

Capable experts, whose role cannot be neglected today in boundary issues, are survey engineers of ground. These groups of professionals are capable to utilize and manage new technologies and tools that are used by using satellites and digital technology together in geographical information systems (GIS). The field of geodesy skills caused some of them described as geodesy engineers.

Boundary Negotiators have the right to benefit from boundary experts and the experts provide interpretations about characteristics information in border region and future of border region to them by maps and satellite images.

Geodesy engineers are also important technical consultants in boundary demarcation. They can conduct assigned administrative responsibilities through boundary Commission services and design and implement technical and practical geodesy and do mapping responsibilities. Trained and experienced geodesy engineers by taking the responsibility of required technical role, provide a strong basis for entrance of geodesy to international boundaries determination. Although their role is prominent in all stages of boundary construction, but in particular their role is more important and essential in delimitation and demarcation process.

After demarcation, geodesy engineers, except their essential role in triggering, design, implementation and controlling cross-border development projects, also provide important matters of boundary line maintenance and their reaffirmation services.

2. Conclusion

After the establishment of countries' international boundaries, boundaries have been changed. In past, power factor was determiner of international boundaries, which over time changed to a factor called agreement. But the changes also have taken place in this regard that some of these developments are in jurisdiction field and influenced on the rules of international boundaries delimitation and some of these factors are non-judicial and outside the framework of international judicial decisions have led to evolution of international boundaries delimitation, that here technical factors and their developments have an effective and efficient role in international boundaries delimitation:

1. Today, countries have recognized the importance of demarcation of delimited boundaries. In the past, many

boundaries have been delimited but did not enter to the next stage, namely demarcation. Thus, a complete boundary has not been formed and this led to cross-boundary disputes. Today, countries with understanding to maintain stability, peace and order have started demarcation or reaffirmation of unmarked borders or borders that needs to be demarcated.

2. In completing the demarcation of the boundaries, countries give more importance to management, protection and maintenance of boundaries. The advantages of demarcated boundary will be durable with its management, maintenance and protection. In fact, boundary maintenance and protection is a complementary to demarcate the boundaries to achieve the goal of peace, order, security and stability.
3. Today, with the advancement of technology, there has been progress in demarcation of international boundaries. New technologies having factors such as accuracy and economic-efficiency have created an evolution in boundaries delimitation. Of course, this progress does not stop and technologies are also being updated and progressing and we can observe more improvements in boundary issues with their development in the future.
4. Modern technology needs modern professionals. When it comes to technical issues, technical specialists also play role. Boundaries are one of the areas that technology and necessarily efficient professionals are involved in it. However, in some cases, modern technologies reduced the need for human factors, but still the role of human creativity cannot be ignored and of course modern technology needs highly qualified and experienced people to be able to take advantage of it in the best way.
5. The maps have been used in the past but advances in technology and the use of complementary such as aerial photography and satellite image and computer use caused modern maps to be not comparable in terms of accuracy with their predecessors, although old maps are still used despite their shortcomings, but their shortcomings must be seen with caution.
6. Boundary information underlies durable boundaries. Much of these information are in different internal and external archives and today, countries spend considerable time and money to access them and complete their information. If in the past negotiation and delimitation have taken place with incomplete information and even in some cases without knowledge, today, countries with the understanding that any ambiguity could affect the future, fill their information gaps by searching different archives.

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