

BOUNDARY AND FRONTIERS

International boundary making starts with the intention of two or more countries of boundary delimitation and/or demarcation. These terms are ruled by their function like separating, developing or connecting the different countries. The initial intention is usually identified by a treaty or agreement.

Frontier:

In the past, during the political evolutions of a state, states were separated by areas, not lines. The function of the intervening area was to prevent direct contact between the neighboring states and it was referred to as a frontier.

- A frontier is the political and geographical area near or beyond a boundary. The term came from French in the 15th century, with the meaning “borderland”—the region of a country that fronts on another country (see also marches).
- A frontier can also be referred to as a “front”. A difference has also been established in academic scholarship between Frontier and Border, the latter denoting a fixed, rigid and clear-cut form of state boundary.
- A frontier, can, thus, be defined as a politico-geographical area, lying beyond defined borders of a political unit into which expansion could take place (for instance, European penetration into the Zulu-Natal area and, in modern times, Antarctica). It is a physical and moral concept which implied looking outwards and moving outwards.

It is not an abstract concept but a ‘fact of life’—a manifestation of the tendency for spontaneous growth of ecumene.

Accordingly there are three stages in the evolution of a frontier,

- designated zone of influence of different physical phenomena;
- anthropological-geographical concept;
- political frontier.

Boundary: It implies the physical limit of sovereignty and jurisdiction of a state; it is a manifestation of integration and is oriented inwards.

Its characteristics are as follows:

- It is still possible to recognize frontier characteristics in boundaries, especially in sparsely populated regions, such as deserts. This leads to minimum friction. An example is the boundary between Spain and Portugal.

- It is an appropriate concept for the modern state where all that is within the boundary is bound together by common law, economy, physical features, idea or creed with a government or central authority in effective control of the territory and activities within the boundaries.
- It may be reached by expanding into frontiers when the natural limits are reached. For instance, the westward expansions of the USA into desert frontiers till the coastlines were reached.
- It is an outer line of effective control of the central government keeping the enemy out and the resources in.
- It is a legal-political phenomenon which is not created but fixed by the political decision makers.
- It signifies differences in goals, ideology, structure, interests etc. from those of the neighboring states.

Boundary and Frontier:

- A boundary is oriented inwards. It is a manifestation of integration, and is a centripetal force; a frontier is oriented outwards and is a manifestation of the spontaneous tendency to grow, of ecumene, and is a centrifugal force.
- A boundary is created and maintained by the will of the government. It has no life of its own, not even a material existence; a frontier is a 'fact of life' and exists physically on ground as a dynamic entity.
- A boundary is well-defined and regulated by law. It possesses uniform characteristics. A frontier is a phenomenon of history and, like history, it is unique.
- A boundary is a separating factor whereas a frontier provides scope for mutual interaction and exchange. Existence of boundaries shows that a political community has reached a relative degree of maturity, orderliness and being law abiding. Frontiers and boundaries are products of socio-political forces and are, thus, subjective and not objective.

In order to have a stable internal political structure, distinction is required between domestic and foreign policy. Boundary facilitates this distinction. Super-national, non-national and other factors undermine the significance of boundary to some extent.

The precise **delineation of boundaries** is relatively new in human history. Before the availability of surveying and cartographic technologies, impediments to travel such as mountain ranges, water bodies or even features such as broad as forests and deserts were used to separate the territories of political entities - **Antecedent boundaries.**

In Europe, the 1648 Peace of Westphalia gave rise to a more territorially-based notion of the sovereign state, creating an imperative for the delineation and demarcation of boundaries and the establishment of border facilities - **Subsequent boundaries.**

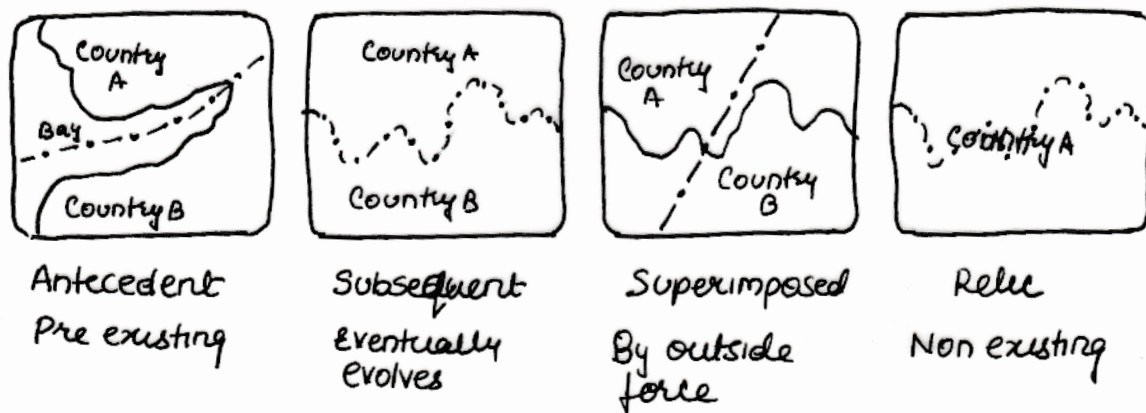
The colonial expansion of European states in the 17th, 18th and 19th centuries led to the creation of many international boundaries that endure to this day, despite the fact that they were often drawn arbitrarily - **Superimposed boundaries.**

As recently as the late 19th century, European powers delineated boundaries on the map of Africa without surveys on the ground and without regard to the economy or culture of African people. Until the second

half of the twentieth century, international boundaries were subject to change arising from diplomatic agreements and military conflict.

In the years following World War II, an international consensus arose around the territorial integrity norm, a principle that in order to prevent armed conflict, existing boundaries should be treated as unchangeable. While this has led to the preservation of colonial era boundaries that have negatively impacted economic and cultural development in Africa, the frequency of wars over territory has declined. This does not mean that the political map has remained unchanged.

The disintegration of states including the Soviet Union and Yugoslavia into multiple smaller states has created new international boundaries within pre-existing boundaries, while the German reunification in 1991 involved the dissolution of a boundary that has divided Europe for decades.



Relic boundaries.

Obviously, stable and mutually agreed boundaries are a major pre-requisite for a peaceful cooperation between countries. Surveying and mapping in general and aerial and satellite imagery in particular, play a major role in establishing the borders physically which is an important fact in the recognition of borders. Before discussing boundary making, several terms which are commonly in this area are reviewed such as treaty, delimitation, demarcation, and delineation. They appear in many stages of establishing international boundaries

The meaning of treaty and international agreement under Article 102 of the charter of the United Nations is defined as: “Treaty is a generic term embracing all instruments binding under international law, regardless of their formal designation, concluded between two or more international juridical persons”. The Vienna Convention (1969) defines a treaty as “an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation”

Treaties between two or more countries are political juridical instruments enforcing delimitation and demarcation by an executor, taking into consideration the customary international law represented by the United Nations (UN) for accepting, binding and maintaining sovereignty rights over the territory of the concerned countries.

Boundary delimitation requires to have external specifications which define the scope of work, technical specifications for each part of work in terms of description, physical properties, time covering the cycle of boundary making (surveying, construction, mapping), allowing the internal specifications to define the true needs of boundary administration for operation.

Delimitation is the legal process by which two sovereign nations establish and describe in writing the location of their common boundary, mainly as the output of the decision making on the negotiation table.

Demarcation is a field operation. Its purpose is to mark the position of the boundary on the ground so it is visible to all, and this normally starts by surveying which is the initial stage of demarcation. The objective of demarcation is to place or adopt physical marks that accurately represent the location of a delimited boundary. Wherever possible, demarcation by artificial boundary marks should consist of monuments placed directly on the boundary line. A joint commission, composed of an equal number of members from each country, normally undertakes the physical demarcation.

Boundary demarcation is based on requirements with either static documentation (paper mapping and reports) as an output, which for securing knowledge or information about their boundaries, are to be attached to the treaties archived in the UN; or they are based on dynamic output (like data for Geographic Information Systems, GIS) to be used by future boundary administrations.

Delineation is the graphical or mathematical representation of the boundary. Frequently, a joint commission undertakes both demarcation and delineation. The commission's published results consist of reports, photographs and other illustrations, maps, and tables showing geographic positions of boundary monuments and survey control stations used for the entire period of field work. In this way delineation is the comprehensive description of the entire demarcation and mapping activities that is able to document the boundary for future reference.

There are two types of boundaries: natural and geometric or artificial boundaries.

Natural boundaries are the hydrological boundaries, or watercourses, dry boundaries (wadis), mountain ranges and other natural landmarks. Artificial boundaries are boundaries marked by monuments.

Boundaries that are based upon natural characteristics quickly come to mind, e. g. the border between Spain and France or the one between France and Germany. But it is obvious that many boundaries in today's world do not depend on natural characteristics. Generally, flat areas are appropriate for border crossings and it is not easy to see such a boundary unless they are clearly defined. There are several border definitions generally referring to physical and/or ethnic characteristics. However, there are also boundaries that depend neither on physical nor ethnic characteristics. These types of boundaries can be classified as artificial boundaries. Unfortunately, this type of boundaries causes many disputes.

Boundary making can be accomplished in two ways.

- The countries of concern set requirements, specifications and implementation rules and share the output and its future use by the boundary administration between them.

- Countries call upon the UN Secretary General to make arrangements to demarcate their common boundary. In this case the requirements and specifications are often different, because the cost of boundary making plays a major role and may affect the output. This type sometimes tends not to be fully state-of-the-art.

Boundary making can be influenced also by a wide range of historical, geographical, political, economic and cultural factors. As a consequence, “there is no single model of good practice in boundary demarcation and maintenance, but sharing experience from around the world can help generate new ideas”

Boundary making process steps

The process of boundary making (delimitation, demarcation and delineation) normally starts by establishing a joint committee which includes technical experts mainly in surveying, documentation, and mapping, responsible for executing the treaty in its framework and for setting up the technical specifications. These steps should be seen in light of the ISO standards the 9000 family

There are three stages of the international boundary making process

- The preparation of boundary delimitation starts with drafting of border treaties or agreements. The boundary engineer serves as technical adviser to the negotiator by providing the input information for decision making
- The demarcation work includes all field activities, where delineation covers the mapping process
- Stage (3) illustrates the output of the boundary making process: static documentation or dynamic purposes for future use.

The use of quality standards for the boundary documentation process

The process of boundary documentation should be implemented based on the requirements of boundary taking into consideration the qualification of the producer who should be ISO certified for quality, showing that its quality management system meets the requirements of the ISO 9000 family (organizational), and providing confidence to the client in that particular organization.

The ISO family of standards (technical specifications) was set up to define, describe and manage geographic information. The focus of this family of standards is to define the basic semantics and the structure of geographic information for data management and data interchange purposes, and to define geographic information service components and their behavior for data processing purposes. Standardization efforts also facilitate interoperability of geographic information systems including interoperability in distributed computing environments. Interoperability is the ability of a system or system component to provide information sharing and inter-application co-operative process control.