

## The Legal Concept of International Boundary

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ABSTRACT. This paper considers the subject of international boundaries which by a process involving many forces has come to have a very important position in international law. The mathematical precision of boundaries is a special characteristic of higher civilization, the progress of geodesy and cartography have permitted the making in Europe of political boundaries as well as geographical abstraction.

Since the end of the Second World War several new independent states have emerged, particularly in Asia and Africa. as a result of which many for many internal boundaries have become international boundaries. This phenomenon, therefore, has enlarged the area in which boundary controversies may possible occur and such conflicts at present constitute one of the major threats to international peace and security.

There has been considerable progress in the methods of boundary making. A whole range of new scientific equipment has been devised. Aerial surveys nowadays supplements Conventional field-triangulations with the result that most of the familiar errors and inaccuracies which characterized earlier boundary works have become increasingly rare. But these advances are not alone sufficient to eliminate all the possible causes of boundary disputes. However, international boundaries affect the lives of people and should be more adapted to human convenience. In conformity with the UN Charter and in order to achieve the kind of stability and finality in international boundary disputes must be settled peacefully. Apart from the legitimate exercise of the right of self-defence, the use of force which unfortunately occurs very frequently in boundary disputes, is no longer compatible with modern international law.

### Introduction

The subject of international boundaries which, by a process involving many forces, has come to have a very important position in International Law. The mathematical precision of boundaries is a special characteristic of higher civilization, the progress of geodesy and cartography has permitted the making in Europe of political boundaries as well as geographical abstraction<sup>(1)</sup>.

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(1) **Ralzel, F.**, *Anthropogeographic*. Oxford Univ. Press, London. 1927, p.267.

The term boundary is employed rather than the term frontier for frontier is used in two senses, one that of the boundary, the other that of the zone, narrower or wider, where one state ends and another begins, in which sometimes the exact limit of that frontier has never been exactly fixed<sup>(2)</sup>. In Europe, ordinarily, the modern concept of frontier comprises both of these ideas. The boundary line, and a zone of some sort immediately adjacent to it, has its own peculiar combinations of responsibilities and of rights<sup>(3)</sup>.

The description of Greece of the second century A. D. said about the fixation on the spot of an international boundary line. The Romans used monuments for the purpose of making boundaries and there are many remains of the inscriptions upon such monuments. But the Roman boundaries were not greatly concerned with international boundaries. The Roman boundaries were mostly the division of the Roman provinces or of smaller governmental or administrative units of the Empire. Whereas, the Greek monument, however, marked an international boundary within the world of Greek States. The Romans, taking the idea from private property and the exact knowledge necessary of the confines of a private holding of land, carried the idea further with reference to longer units. Thus, the Roman Empire had no problem of the international boundary but the many Roman provinces, had boundaries definitely understood if not marked<sup>(4)</sup>.

In the Middle Ages, we have an altogether different situation. This was the product of that series of personal relationships, together with land holding as a basis for personal service which was called the feudal system. There a great natural feature, usually a river was accepted as a boundary line, as the river Tweed between Scotland and England, but in general the boundary of the continental European Kingdom was that made by the limits of the units of local government, the city, the commune, or of the land of fiefs, rising in hierarchy to the king<sup>(5)</sup>.

Referring generally to the establishment of the modern state system in 1648 by the Peace of Westphalia, then during the whole period of the development of Western Europe, were boundaries determined. They were determined to some extent, on the basis of lands held, directly or indirectly, in part patrimonial and in part feudal<sup>(6)</sup>.

It is well known that as soon as a centralized royal authority had developed the confines of the Kingdom's frontier were protected. The frontier was not always necessarily coterminous with the frontier of another nation. Here there was some

(2) In America the term frontier is used as referring rather to that fringe of settlement beyond which was the wilderness, or the unsettled Indian country. And in that sense. the frontier passed westward from the Alleghenies onward to the pacific. There is now no longer any frontier. Therefore, the frontier is rather a social than political phenomenon and as such. has given rise to an important school of American historians.

(3) **Adami, Vittorio**, *National Frontier in Relation to International Law*, **Mortin Domke. Rome.** 1919, Translated by Col. TT. Behrens, Butterworths, London, 1927, And *Political Frontiers and Boundary Making* Geographical journal, vol. **47**, 1916.

(4) **Wehberg Response De. M.**, *Nature Juridique ou Politique De Conflicts*, *Annuaire De Institut De Droit International*, 1992. The *Fasti Triste*, *Pontic Epistle IBIS* and *Harliution of ovid*. Translated by Henry T., Rilry, Collins. London. 1951.

(5) *First Capitulary of Charlemagne 806 A. D.*, Translated from De Lapradel , Re Hebert Wage. Paris, 1956. p.29.

(6) The land comprised within a commune or city was well known. The bishop know what were the parishes of his dioceses. Turning to many of the treaties which mentioned that instead of running the boundary line by metes and bounds from one landmark to another, the provision frequently stated that communes A,B,C, and D were to be part of state X whereas commune H,I,J,K, and L were to be part of state Y. Nothing was better known than the exact limits of each of the communes. In England the parish was well defined. You may not be able to find a treaty between England and Scotland that will give you an exact dividing line between these two kingdoms.

resemblance to the social frontiers of America. That zone was the margin or the mark, and hence, the markgraf and the mangrave who looked after the frontier were employed<sup>(7)</sup>.

Not until 1795, the Treaty of the Pyrenees worked out in modern fashion which stated that the Pyrenees mountains which anciently divided the Gauls from the Spains should make henceforth the division of the two kingdoms of France and Spain. And in order to agree upon the said division there should be appointed commissioners of both parties who, acting together in good faith, would declare what were the Pyrenees mountains which properly should divide in the future the two kingdoms and they should specify the boundaries which they ought to have. It was also agreed that the crest of the mountains forming the watersheds between France and Spain should be the boundaries line between the two countries. Thus, it had been seen that the treaty overpassed from the Pyrenees Mountains as a mass to a line of the watershed<sup>(8)</sup>.

To summarize, therefore, in the early history of boundaries in Europe emphasis should be made to the prescriptive limits of various units and these units were unified into national states with known boundaries or transferred by treaty as units from state to state. It is a later development that the juristic concept is adopted of a boundary definitely set forth as an article of a treaty. Along with this development went the prosecution of national policies so as to obtain boundaries which were defensive or strategic. For these some natural feature of separation was sought such certain mountains or a river as for instance, in the treaties between Austria and the Ottoman Empire in 1695 and 1719 wherein certain rivers were adopted as the boundary lines between the two countries<sup>(9)</sup>. Therefore, the development of the nation-state in Europe in territories where geographical information was accurate, the so-called natural frontier has had greatest significance. A term which in its narrow sense has reference to the great features of the surface of the earth and is primarily strategic, for offence as a salient, or for defence as a barrier comes to be broadened out so as to include various factors<sup>(10)</sup> making for National Unity.

But whatever the European boundary may be, boundary outside Europe and the Mediterranean area presented an altogether different picture. The area of discovery beginning with Henry the Navigator introduced a new basis for the title to territory<sup>(11)</sup>, not belonging to any Christian prince, authorized by the Pope. In 1456 a series of bulls granted rights of possession or sovereignty to Portugal over the lands which the Portuguese had been discovering down the west Coast of Africa, around the Cape of Good Hope, and beyond that Southern Ocean, even to the Indies. In 1493 the bull of Alexander VI designated a line running from North to the South lands found and to be

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(7) **Reeves, Jese, De Maulde-Da-Claire**, The United States Mexican Settlement, Cited by NYS., R., In *AJIL*, vol. 36, 1942, p. 420.

(8) **Vesnitch, M. L.**, *International Law*, Stevens & Sons, London, 1969, p.420.

(9) On the other hand the policy of a state might seek the strengthening of its national unity and to this end the factors of territory or race, or of language or of culture, or of economic self-sufficiency were one or all of great consequence. Such factors were carefully considered during the Peace Conference of Paris, when the experts sought to find the dividing lines between nationalities by reading and classifying the inscriptions upon the gravestones of village cemeteries.

(10) Sociological, economic, linguistic or cultural factors come to make for National Unity.

(11) Popes had made investitures of lands inside of Europe and investitures of lands outside of Europe. The probabilities are that the legal theory of the right of the Pope to make investitures of lands came from the so-called Donation of Constantine which was come to very great dispute.

found to the west of which were to be under the sovereignty of Spain. The bull also set up the dividing line between the dominions of Portugal and of Spain and an investiture of these two Kingdoms.

Possibly the bull is to be regarded not so much an investiture of Portugal its it was a limitation upon Portugal and a grant of rights to Spain. The line which was set up was not in all respects a line dividing territory according to our modern thought so much as it was a line setting forth what in our modern parlance would be called a sphere of influence, or a sphere of interest. The next year after the issuance of the bull Spain and Portugal got together in the first treaty that has to do with the New World, the Treaty of Tordesillas of 1494<sup>(12)</sup> In that treaty the line of one hundred leagues west of the Azores which set up the dividing line between the dominions of Portugal and Spain, was moved 270 leagues further to the west and by so moving the line to the West we have Brazil the interesting historical result that the people of the largest single political unit in South America speaking Portuguese. This Treaty simply moved the line and created two spheres of hemispheres of influence rather than vested titles to lands discovered or to be discovered<sup>(13)</sup>.

With reference to any so-called artificial boundary line, meaning by that a boundary line of latitude or longitude and here is where American boundaries and their development in Europe. Wherever, or any map, you find a boundary line along a line of latitude or longitude, you may be sure that the boundary line was devised and agreed upon in the absence of accurate geographical information with reference to the territory through which that boundary line passes. It has been fixed in advance of the movement of colonizing population, and that is the reason why North America and the United States have so many boundaries, international, state, county and township<sup>(14)</sup>.

The first boundary agreement based upon a line of longitude passed around the globe and complicated questions of territorial sovereignty in North America. The United States and the Netherlands arbitrated the question of sovereignty over Palmas Island, south of the Philippines. The chains of title go back ultimately to those of Spain and Portugal under the Treaty of Tordesillas of 1494. Because the line was adopted in advance of that certain knowledge which was in theory necessarily associated with plenitude of power interminable disputes arose and were settled<sup>(15)</sup>.

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(12) In order that the said line may be made straight and as near as possible 370 leagues west of the Azores, the representatives of both the parties, within ten months immediately following the date of the treaty were to meet upon the spot and mark the point 370 leagues West of the Azores. That determined, the joint commission should then draw the North and South line from the Arctic pole to the Antarctic pole. This in 1494 the Arctic pole was not reached nor the Antarctic pole, until the beginning of the 20th century. Nonetheless, by 1514 there was an artificial boundary circling the globe, and with reference to any so-called artificial boundary line. meaning by that a boundary line of latitude or of longitude has been developed.

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(14) The boundary line of Colorado encloses for the most part a mixture of territory ceded by Spain in 1819 once claimed by Texas from Mexico, part of it recognized as being a part of Texas, the rest a part of the Louisiana purchased with watersheds running in various directions. It is a state with perfectly artificial limits.

(15) **Reeves, Jesse**, Lecture delivered before the summer session on International Law. University of Michigan, July 25, 1938.

The first line of latitude used to delimit a sphere of influence seems to have emerged in the verbal agreement of Chateau Cambresis of 1559 in which a line of amity is set up, the Tropic of cancer and the prime meridian line, all territory of North and East of which was to be within the Law. This line was extended to the equator by the Treaty of Madrid of 1630 between Britain and Spain. The first attempt to set up an artificial boundary line on the continent of North America appeared in a grant made by Henry IV of France to Du Monto in Acadia in 1603. There a line of latitude was to be the limits of the grant. "...The countries, territories, coasts, and confines of Acadia, commencing with the fortieth degree unto the forty-sixth and within the said limits or any of them as far as to such distance as may be possible..."<sup>(16)</sup>.

In 1825 Great Britain and Russia had concluded a treaty with reference to the limits between Alaska and British America. In that treaty the line of the 141st. parallel was adopted from the summit of Mount St. Elias North into the Frozen Ocean. In 1827 Russia transferred Alaska to the United States within the same boundary and that line of the 141st. parallel is the longest longitude boundary in the world. When coming to longitude, there were still greater difficulties, during the period of discovery the maps become fairly accurate as to latitude and very erroneous as to longitude because the accurate determination of longitude requires accuracy in the measurement of time. Not until the development of wireless telegraphy has it been possible to measure with the necessary exactness a line of longitude<sup>(17)</sup>.

It should be noted that in North America there has been the greatest use of the artificial boundary line. It was also adopted in Australia, to a less extent it has been used since 1876 in Africa, such lines do not appear upon the map of Asia, and you rarely find them in South America in which most part of the boundary lines are based upon the so-called *uti possidetis* of 1810<sup>(18)</sup>.

### **Boundary or Frontier**

It is essential to distinguish a boundary line from a frontier which is merely a zone or the territory about the line. Although quite a few writers have noted this distinction, nevertheless, the words "boundary" and "frontier" are still employed interchangeably as if they are synonymous<sup>(19)</sup>. This practice is confusing and such an indiscriminate use of these geographical terms will not help matters especially when legal technicalities dominate a boundary question. It is therefore, reasonable that we consider briefly the universally accepted meanings of boundary and frontier.

A boundary denotes a line whereas a frontier is more properly a region or zone having width as well as length and, therefore, merely indicates, without fixing the exact limit, where one state ends and another begins.

A frontier is a vague and indefinite term until the boundary sets a hedge between it and the frontier of a neighbouring state. Furthermore, no limit is set to a frontier until an

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(16) **Lescarbot, F. O.**, *Histoire dela Nouvelle France* Rolins, Paris. 1909. English Translation by **W. A. Grant**, Fordham, Toronto, 1907, pp.212-470.

(17) The line has no width but length only. And now having a resurvey of the boundary line from the St. Croix River in Maine to Puget Sound in the West and for the part on land a series of intervisible monuments. On the top of each of those monuments there is a bench mark in which the latitude is corrected to the very small fraction of an inch.

(18) **De Laparadelle**, *op. cit.*, p. 40.

(19) **Fawcett, R. C.**, *Frontier, A Study in Political Geography*, Collins, London, 1961, pp. 5-6.

actual line or boundary is defined by treaty; even then it is generally open to dispute until that boundary is actually demarcated<sup>(20)</sup>.

The zonal character of the word frontier can also be illustrated by analogous context, though not of essence of political geography, to which that term is equally applied. In connection with the early European settlements in North America, frontier was used not in terms of any political boundary but socially, as referring rather to that fringe of settlement beyond which was the wilderness or unsettled Indian country<sup>(21)</sup>

On the other hand, some jurists, described the international frontier as the zone in which the great powers expanding along their main lines of communication to the limits of their political and economic influence and defence needs, impinge upon each other in conflict or compromise<sup>(22)</sup>.

### ***Nature Boundaries***

Many primitive societies were essentially nomadic. There were frequent tribal migrations, usually in small groups to regions where hunting, fishing, pasture, and simple tillage in their earliest form were favoured. Life was very insecure, traveling and communication were considerably hampered by natural obstacles and wild beasts. The routes followed by these tribal hunter-nomads were not merely nor principally, those best calculated to avoid physical hazards like mountains, deserts, thick forests, marshes and the open sea. They were also of necessity the routes along which they could best obtain food for themselves and pasture for their animals. In their continuous drive for new fertile grounds, clashes occasionally occurred between opposing groups who must have been separated or hidden from each other by natural obstacles<sup>(23)</sup>.

In the early days, therefore, there were no mutually predetermined international boundaries but rather separated zones which usually occurred without plan or consciousness on the part of the tribal, ethnic or national groups that were separated. In a way, these separated zones can be described as the extreme limit of the areas from which the people living within them obtained their necessary supplies of food at any given time. On the other hand, they prevented or perhaps, helped each tribal group to forestall intrusion from outside. In addition, they focused concentration on the full use of the resources within them, thus activating a considerable amount of in-breeding and group consciousness<sup>(24)</sup>.

Absolute and complete nomadism hindered the growth of property organised and well-disciplined societies. However, as soon as these wandering tribesmen learnt to settle down on fixed territories, at first in small scattered groups and later, in larger communities, there emerged from it a rational system of government and the nucleus of statehood. The need to accommodate their growing population and the increasing pressure on natural resources often accelerated the speed at which new frontier were assimilated with districts already brought under central control. Since various communities were simultaneously operating along similar lines, in the absence of any international code of behaviour, as would be expected, territorial acquisitions in these

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(20) **Holdich, Sir Thomas**, Political Boundaries, in *Scot. Geo. Mag.* vol. **32**, 1916, p. 497.

(21) **Holdich, Sir Thomas**, Political Frontier and Boundary in *A.J.I.L.* vol. **38**.1944, p. 532.

(22) **Hall, A.H.**, The International Frontier, *A.J.I.L.*, vol. **42**.1948, p. 42.

(23) **Reeves**, International Boundaries, *A.J.I.L.* vol. **38**, 1944, p. 532.

(24) **Lye, M. O.**, Types of Political Frontiers in Europe. in *Geo. Journal*, vol. **45**, 1915. p. 12.

early stages of civilization were no more than a question of survival of the fittest, weaker races being overwhelmed and ejected from their holdings by more powerful assailants.

The lordly enjoyment of wide pastoral domains to the relatively humble pursuit of agriculture and the tillage of the soil<sup>(25)</sup>. In most cases, if not always, these lines of partition which separated the embryo nations, were zonal in form, natural barriers being most commonly adopted, because they were conspicuous easily identifiable and physically unmistakable by any potential trespasser. With the development of international boundaries in this primal form, some kind of value became attached to the idea of ownership in so far as it applied to the properties of the different communities. Although these zones of partition were fundamental to a maturing civilization it must also be recognised that as human inventions, they were not necessarily supported by nature's disposition. For nature, it is submitted, abhors all boundaries<sup>(26)</sup>.

On the whole, human factors were primarily responsible both for the establishment of international boundaries and for their variance in different places and from one civilization to another. In ancient Greece and Imperial Rome and subsequently, during the middle ages, with its feudal system and landlordism, there was no fixed boundary lines between political communities. The limits of a state's jurisdiction were vague, there were border zones, that is to say frontiers but no fixed lines. In those days, a frontier was merely a place where a state had put a halt to its authority, it had no recognition in International Law<sup>(27)</sup>.

The Roman boundaries were mostly the divisions of the Roman provinces or of smaller governmental or administrative units of the empire. Monuments were used for the purpose of making such boundaries. Having taken the idea from private property and the exact knowledge necessary of the confines of a private holding of land, they carried the idea further with reference to wider units. But as was explained above, the Romans were not greatly concerned with international boundaries as such.

During these early stages of boundary development, a great natural feature, the limits of the units of local government, the city, the commune, or of the lands of fiefs were pressed into the service of boundary making, mainly because their exact limits were well known and not easily forgotten. Before a person could trespass from his village community into the forest in which he might be outlawed, there was the mark, that is a marginal area which served as the border to keep him in check. Besides, there was the markgraf or the markgrave or the court of the marches, whose duty it was to protect the frontier from hostile incursion<sup>(28)</sup>. Knowledge of the exact limits of these quasi-boundaries was in some cases maintained by means of transmitted tradition.

The need for fixed boundaries was aggravated when the modern states of Western Europe began to develop on the ruins of the Holy Roman Empire. The year 1648 is generally referred to as the critical date of the establishment of the modern state system

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(25) **Holdich, Sir Thomas**, Political Frontiers and Boundary Making, *Geographical Journal*, vol.47, 1916, p.56.

(26) *Ibid.* p. 6.

(27) *Encyclopedia Britannica*, vol. 3, 1959, p. 964.

(28) In England for instance, during the Eastern week or at some other time, it was the custom of the versty man of the parish to see to it that someone beat the bounds of the parish.

by the Peace of Westphalia, which continued to govern European politics until the French Revolution supervened. This development more than before placed the populations of neighbouring states in closer proximity to each other. Consequently, it became imperative to know the limits of their respective jurisdictions, a situation that was never called for while the administrative units which became the new states remained integral parts of the great empire. Exact boundaries, however, could not be determined until the sciences of geography, geodesy and cartography had reached the point they could furnish the data needed for delimitation and demarcation. The renaissance, it will be recalled, encouraged, among other things, the study of mathematics, topography and descriptive geography, thus making the needed information increasingly available.

To some extent, the demand for fixed boundaries was not during the seventeenth and eighteenth centuries by the doctrine of natural frontiers which maintained that a nation's territory should extend to a designated river; mountain, lake or some other natural impediment to population movements and relations <sup>(29)</sup>. The French Revolution produced another important landmark in the history of boundary making. With its emphasis upon simplification, fixed and definite boundaries were preferred to move zonal boundaries, precision rather than generality being the guiding rule. Since then great progress has been made in boundary making and continuously sustained by more technological advances. The difficulties of transporting survey equipment are considerably reduced today and the combination of both land and aerial methods of survey helps to produce more accurate results.

#### ***Various Kinds of International Boundaries***

The oldest classification of international boundaries and one most commonly adopted by writers until fairly recent times is that of natural and artificial boundaries <sup>(30)</sup>. It has already been pointed out above how the demand for fixed boundaries was met during the seventeenth and eighteenth centuries by the doctrine of natural frontiers, which maintained that a nation's territory should extend to a designed river, mountain, lake, desert or some other natural barrier to population movement. These tangible features eventually became categorized as natural boundaries, all the rest falling outside this circle being designated as artificial or conventional boundaries. As the descriptive name shows, this second group includes conventional lines upon the earth's surface, parallels of latitude, meridians of longitude, straight lines between fixed points and boundaries defined by reference to existing conditions, such as those following existing provincial, tribal or local government boundaries, or roads, and those defined passing within a certain distance of a town or a village. If in addition stones and claws, monuments, posts, bars, walls, trenches, canals, bougs and beacons are used to mark these boundaries either on land or in the water, as may be necessary sometimes, they are likewise classified as artificial. It must be noted, however, that the distinction between natural and artificial boundaries is not a very sharp one in so far as some topographical features, for example, forests and deserts, can be artificially created.

The term natural seems to pose some difficulties. All boundaries whether natural or artificial are the results of human thought but nature itself rarely admits of sharp

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(29) *Encyclopedia Britannica*, vol. 3, *op. cit.*, p. 964.

(30) **Boggs, R. W.**, *International Boundaries*, Fordham, New York, 1940, p. 22.

dividing lines. Therefore the term natural is descriptive rather than substantive<sup>(31)</sup>, owing to that a line is marked by nature does not necessarily imply that it is a natural thing to utilize it for boundary purposes or that it may constitute a natural line of separation between neighbouring peoples<sup>(32)</sup>. However, the closest approach will be to say that these natural features do not from their very inception constitute boundaries between states but retain their physical identities until endowed with boundary status by human agency.

As to the merits and demerits of natural and artificial boundaries, it may be stated in favour of natural boundaries that they are more conspicuous and therefore less mistakable than artificial ones. The physical character of objects on which natural boundaries are based facilitates their delimitation and may contribute to their more lasting resistance to the ravages of climate. Natural boundaries are often less expensive to demarcate than artificial boundaries, and in very distinct cases demarcation may even appear superfluous<sup>(33)</sup>.

### **Natural Boundaries**

International judicature defines boundary mountains or hills as such natural elevations from the common level of the ground as separate the territories of two or more states from each other, in contradistinction to the situation where the entire mountainous belt falls under the control of a single power<sup>(34)</sup>. Therefore, a given mountain system may vary in its political function at different periods<sup>(35)</sup>, they were the earliest of the barriers accepted by nomadic man. This barrier character of mountains<sup>(36)</sup>, however, is not absolute, as it may be qualified by a number of considerations. Some arise from the physical structure of mountains and others from the fact that modern science, in the form of railroads and tunnels, radio and telegraphic communication and aerial navigation, has considerably modified the barrier aspect of mountain boundaries<sup>(37)</sup>.

### **Boundaries in Deserts**

Deserts have also been pressed into the service of boundary making<sup>(38)</sup>. Although they may afford effective barriers between states, yet unlike mountains, they do not

(31) *Ibid.* p. 23.

(32) **Oppenheim, E. I.** *International Law*. Stevens & Sons Ltd, London, 1945, vol. 1. p. 531.

(33) *Ibid.*, p. 534.

(34) For instance, the Pyrenees were an internal boundary of the Roman Empire. In the shattering of the Dark and Middle Ages, they were the home of small mountain states. And with the integration of the surrounding plateau and lowlands into France and Spain, the Pyrenees became an international boundary.

(35) The chief factors which account for the barrier character of mountains include: (1) rugged relief which renders travel more laborious. (2) the comparative rarity of air at great altitudes which reduces the working power of man and animals and. (3) the colder climate of the high region which limits travel to a few months of the year.

(36) The Himalayan Mountains separate China and India, and maintain several passes emerging from the mountains, a use of several passes in the opposite direction would lead to a scattering passes on the further side of the barrier. China and India in their border fightings had shown, while the Chinese troops displayed greater mobility on a less precipitous terrain. the Indians already outnumbered by the Chinese, had to contend with very steep ancient along treacherous snow-paths. The series of military reverses suffered by the Indian troops reaffirmed the belief that boundary mountains characterized by innumerable passes and steep slopes as on the Indian side of the Himalayas. lend an immense advantage to the holders of the mountains against the occupants of the plains.

(37) **Curzon, Sir, A.**, *Frontiers, B.Y.I.L.*, vol. 41, 1965. p. 17.

(38) **Fawcett, R. C.**, *The North-West Frontier of Egypt. Geo. Journal*, vol. 47, 1916, p. 130.

possess naturally marked sites for boundary lines. In some cases, however, flexibly defined lines have been accomplished by means of major turning points as an alternative to ordinary zonal boundaries. The Nubian desert between Sudan and Egypt, The Libyan desert between Egypt and Libya, and Persian deserts in Western Asia, the Kalahari desert which scans part of the eastern boundary of South West Africa, and the Than or Great Indian desert which fringes the boundary between India and West of Pakistan are among many others which may be mentioned.

The inhabitants of most deserts are either nomads or oasis-dwellers. However, following the discovery of oil, gas, iron, ore or other rich mineral resources beneath its surface, a desert region may acquire a new political importance. A good desert boundary should not separate the desert populations from their essential water supplies<sup>(39)</sup> and only through substantial investigation and reconnaissance before defining the boundaries, can this possible danger be avoided. It must also be noted that mountains and rivers in a desert are usually centres of settlement or nodes of travel especially for desert caravans and may not, therefore, provide suitable boundary lines.

### ***Boundary Waters***

Some international boundaries pass through rivers and canals, lakes, bays and straits, or land-locked seas, and through territorial waters, to the high sea<sup>(40)</sup>. These are usually known as water boundaries and, the rules which have been accepted for delimiting them are not normally the same as those used in the case of land boundaries. Our discussion of these rules will also cover most of the essential characteristics of each of the features comprising this group. In general, it may be stated, water boundaries can be delineated without extensive survey operations. And having been correctly located, their positions are as easily and readily recognized as those of mountains. It must also be pointed out that by boundary rivers, it is meant such rivers that separate two different states. This case should be distinguished from that in which a river runs through the lands of two or more different states. Although such a river does acquire international status by reason of its course through different states, in this latter case, however, the boundary line, if any, will merely run across it. We are, on the other hand, only concerned with the situation where the whole or part of a river course forms the separating line.

### ***Boundaries in Swamps and Marshes***

Swamps and marshes like deserts or even forests, may be effective barriers but they do not offer naturally marked sites for boundary delimitation. They are at best zonal boundaries. The possibility of channels existing in some areas does not seem to alter the picture very considerably, since such channels are usually tortuous and discontinuous<sup>(41)</sup>.

As boundary features, swamps and marshes are essentially of a transient character. An extensive drainage and reclamation project, coupled with embankments which bear roads and railways can easily change the relative value of an area of swamps to the people, making it more populous than the higher grounds which it previously formed an

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(39) For example see, Article (1) of the treaty of July 15, 1924, between Italy and U.K. regulating certain questions concerning the boundaries of their respective territories in East Africa, *L.N.T.S.*, vol. 36, p.379.

(40) *Fawcett, op. cit.*, pp. 50-61.

(41) *Fawcett, Frontier*, CF, Rann of Kutch, Indo-Pakistan border, *B.Y.I.L.*, vol. 41, 1965, pp. 47-49.

area of separation. However, once artificial adjustments are introduced, the effect will be to substitute a partly<sup>(42)</sup> artificial boundary for one that is wholly natural<sup>(43)</sup>.

### ***Geometrical Boundaries***

Geometrical boundaries cover such international boundaries as are defined in terms of straight lines, meridians of longitude, parallels of latitude, arcs of a circle or lines parallel to or equidistant from a coast or a river, they are without exception, artificial boundaries and as geometrical lines, they may prove difficult to describe precisely<sup>(44)</sup> For geometrical lines on flat maps may have very different properties from lines through corresponding points on the earth's surface. These differences arise from the fact that a curved surface is being projected on a plane. After all the earth is neither flat like a map nor perfectly spherical like a globe. The services of a geodesist will definitely be required in order to determine the accurate position of such lines on the earth's surface<sup>(45)</sup>.

In the past, many parallels, meridians and straight lines were adopted as international boundaries not necessarily because they were logically the best boundaries but because of the fatal facility with which lines were ruled upon a map and embodied in a treaty, often without considering the relative accuracy with which their positions are fixed. Thus, whenever, on a map, there is a boundary line along a line of latitude or longitude, it is most likely that the boundary line was advised or agreed upon in the absence of accurate geographical information on the territory through which that boundary line passes. Such a boundary never follows but always precedes geographical knowledge. This observation is particularly true of boundaries of North America and of Africa<sup>(46)</sup>, but not so with European boundaries most of which were based on more precise knowledge<sup>(47)</sup>.

Modern improvements in boundary making have helped a great deal in reducing the number of errors in boundaries following parallels of latitude. The demarcation of the 49th parallel separating Canada and the United States of America is a good example. Whereas parallels of latitude could be affected by variation of local deflection if they are laid out by astronomical observations, this particular source of error can now be eliminated by means of triangulation, a method which is equally efficient for a meridian line boundary.

The main objection to straight line boundaries is in connection with the difficulties of delimitation. If the positions of the points through which the line passes are not accurately known, an ill-defined boundary will certainly result from such lack of knowledge. Because, it will be most undesirable to adopt long lengths of such

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(42) **Laws, I. M.**, A Minor Adjustment in the Boundary between Tanganyika and Ruanda, in *Geo. Journal*. Vol. **80**, 1932, pp. 62-67.

(43) In the case of Papyrus Swamps of the Kagera river in Africa, it was decided to adopt a series of straight lines between intervisible stone pillars built on islands or promontories in the swamp and inked by short stretches of the natural boundary formed by the margin of the swamp.

(44) **Lord Curzon**, *Frontier, op. cit.*, p. 343.

(45) **Jones, Stephen**, The Description of International Boundaries, in *Annual Association of American Geography*. vol. **33**, 1943, pp. 99-113.

(46) For instance, the thirtieth meridian of east longitude, in the neighbourhood of lake Albert Edward and the Ruwenzon mountains was given a position on the map about thirty miles in error at the time when a boundary agreement was drawn between Great Britain and the Congo State (*Geographical Journal*. vol. **28**, 1906. p. 150.

(47) **Reeves, Op cit.** A.J.I.L. vol. **38**, 1944, pp. 541-542.

boundaries in a new or rugged country. This is observed that this type of boundary though a useful and sometimes an indispensable expedient<sup>(48)</sup> does not possess any elasticity and is apt to produce absurd and irrational results<sup>(49)</sup>.

In the case of boundaries described as lines equidistant from, or parallel to a river, shore, railway or other reference line or as skirting an existing town or village, the trouble lie in the practicability of producing boundaries corresponding to the reference features in all their ramifications. This could mean that the reference line is to be transposed in all its sinuosity but the ambiguity of such definitions is made apparent in practice<sup>(50)</sup>.

#### ***Distinction between Delimitation and Demarcation***

Firstly, let us consider the two main processes in boundary making. Formerly, there were no precise terms distinguishing the one from the other until Sir Henry McMahon gave different meanings to the words delimitation and demarcation after discovering that the dictionary treated them as synonymous. And in this respect, he said:

"...delimitation, I have taken to comprise the actual laying down of a boundary line by treaty or otherwise, and its definition in written, verbal terms; demarcation to comprise the actual laying down of a boundary line on the ground, and its definition by boundary pillars or other similar physical means"<sup>(51)</sup>.

This distinction between delimitation and demarcation is now generally accepted. Therefore, the delimitation of a boundary refers to all the proceedings connected with the determination of a boundary line in a treaty, an arbitral award or a boundary commission's report as the case may be. Thus, a boundary line may be delimited as following either the watershed or the crest line of a particular mountain range or as the median of a named river or its mid-channel. A parallel of latitude, a meridian of longitude and similar conventional lines as we have seen, may be adopted to the same purpose. But delimitation alone, will not in every case give a boundary line that element of stability and finality which should be the underlying object of all international boundaries<sup>(52)</sup>. That being the case, it will be necessary to fix its position more definitely on the ground, as it were, supplemental to the verbal definition on paper. In this sense, a boundary line is said to be demarcated.

The demarcation of a boundary line, therefore, amounts to laying it down, as mutually defined, by means of boundary pillars, monuments and buoys, and permanent erections of other kinds, along the topographic conformations of the territories to be separated by it.

Thus, the Britannica defines it as the process of applying the documentary definition of the boundary to the earth's surface<sup>(53)</sup>. This field of work, as a rule, always conforms with, and in fact, is guided by the terms of the documentary definition<sup>(54)</sup>.

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(48) **Lord Curzon**, *op. cit.* Frontier, p. 35.

(49) Holdich in like manner. regards straight line boundaries as the worst of all possible expedients, partly because they do not conform to his barrier-theory of boundaries and partly because such lines as he explains are not only either outward or visible without demarcation, but may be very difficult and very expensive to determine since in such case lengthy series of geodestic triangulation would be necessary.

(50) **Boggs**, *Op. cit.*, International Boundaries, pp. 27-28.

(51) **McMahon, Sir, H.**, International Boundaries, in *Journal of the Royal Society of Arts*, vol. **84**, p. 4.

(52) The Temple of Preach Vihear case, Cambodia-Thailand, *ICJ Report* 1962, p. 34.

(53) *Encyclopedia Britannica*, vol. **3**, 1959, p. 964.

Therefore, a descriptive report of all the work done is usually produced by the demarcators, which must be distinguished from the actual delimitation of the boundary line itself. It contains a detailed account of the boundary after it has been demarcated as will be shown, covers a wide range of items including any deviations from the treaty line. In order to be binding, it must be confirmed or approved by both State parties.

If we accept that international boundaries mark the limits of inter-state jurisdiction, we must also recognize the situation arising from the very act of boundary delimitation as one larger than a mere fact of geography. Then, political, economic, social, and ethnic interests are all called into question, and a good international boundary, it will be suggested, must take cognizance of these factors.

### ***Delimitation***

The delimitation of international boundaries is normally a diplomatic procedure, the business of treaty-makers, who should decide on trustworthy evidence the line which will be acceptable to both high contracting parties<sup>(55)</sup>. Where, however, boundary dispute is submitted to international tribunal specifically for this purpose, delimitation may be done by arbitral or judicial bodies<sup>(56)</sup>. But this possibility does not alter its fundamental character since the authority of the tribunal may be traced back to a diplomatic agreement in the form of a treaty or compromise. It should be noted that we must not confuse the delimitation case with the more frequent occasions where the tribunal is mutually requested to decide on particular provisions of a boundary treaty in which the disputed boundary has already been delimited. For instance, in the case concerning the sovereignty over the Temple of Preach Vihear, the international boundary between Cambodia and Thailand was shown to have been delimited in a Treaty of March 23, 1907. The functions of the respective Mixed Boundary Commissions, appointed under the two treaties were not to delimit but to demarcate the boundary line, although delimitation commonly appears in the official report of the judgement<sup>(57)</sup>.

Sometimes, the arbitral or judicial body is simply requested to make an award but to reserve the actual delimitation of the boundary to a Mixed Commission. Thus, it could be seen in Article (3) of the Arbitration Agreement of November 3, 1916, between Columbia and Venezuela which provides that "...the High Contracting Powers agree to entrust the arbitration with the task of laying down the delimitation of the frontier while the task of demarcation will be performed through experts, immediately after the award has been given..."<sup>(58)</sup>.

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(54) The Temple of Preach Vihear, case between Cambodia and Thailand Judge Percy Spender argued that whatever, the delimitation made, however, it was not a delimitation at large but demarcation have the discretionary powers to do so. Therefore, a descriptive report of all the work done is usually produced by the demarcation which must be distinguished from the actual delimitation of the boundary line itself. It contains a detailed account of the boundary after it has been demarcated and as will be shown, covers a wide range of items, including any deviations from the treaty line. In order to be binding, it must be confirmed or approved by both states parties.

(55) **Holdich, Sir Thomas H.**, *op. cit.*, p. 179.

(56) The delimitation of boundaries formed the subject-matter of two advisory opinions of the PCIJ, Publications of the Court, sea B, No. 8.

(57) *ICJ Report*, 1962. pp. 16-17.

(58) Annual Digest, 1919. case No.262 for the award itself, see *ICJ Report* 1962, pp.16-17.

In this case, the arbitrator was the Swiss Federal Council. And when a question arose as to the powers of the said commission of experts, Columbia maintained that the arbitrator had no power to decide details of the delimitation, on the ground that the matter was conclusively reserved for the experts. On the other hand, Venezuela argued that the experts were merely agents entrusted with the execution of the award. Consequently, the Federal Council was entitled to give instructions to the experts and to reserve its decisions until after receiving their report. It was held that the correct interpretation of the arbitration agreement was that the task of deciding question of boundary and their delimitation did not fall upon the Swiss Federal Council, it was rather to be fulfilled by the experts nominated by the former.

In boundary questions, international practice, as a rule, regards the findings of Mixed Commissions as subject to approval by the adjoining state delimitating their common boundary. They do not bind the parties until they are constituted formal agreements, for instance, by exchange of notes. But, as we have seen, in the Columbia-Venezuela case under consideration, it was clear from the evidence that a long series of precedents in the relations between the parties attributed to members of technical boundary commissions the character of arbitral tribunals, thus making their findings conclusive and not subject to revision.

Moreover, it was held in the boundary dispute between the State of North Carolina and the State of Tennessee, by the USA Federal Court that "...where State enter into an agreement giving commissioners the power to exercise judgement as to the exact location of the boundary between them, they must suppose that such judgement will be exercised as to disputed locations and that when exercised it shall be binding upon them both..."<sup>(59)</sup>.

The diplomatic delimitation of an international boundary may be on a bilateral or multilateral basis. There are many instances of either procedure in various collections of the Treaty Series. An illustration of bilateral diplomatic delimitation can be seen in the negotiations between Mexico and the USA, resulting in the Treaty of Guadalupe Hidalgo of 1848, which defined their mutual boundary in the Rio Grande, a very unstable river carrying great quantities of silt and being subject to violent flood<sup>(60)</sup>.

Again, most the present international boundaries in Africa were fixed through bilateral agreements between rival colonial powers dating back to the very beginning of the historic scramble for Africa<sup>(61)</sup>. Some of the boundary arrangements were finalized at a time when the administering powers had but very limited knowledge of the conditions in the heart of this vast continent, straight-line boundaries are for this reason dominant<sup>(62)</sup>. Today, a number of independent African States apart from internal disorder are faced with pending boundary disputes<sup>(63)</sup>. There is a danger that in future as

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(59) Official Publications, British and Foreign State Papers, vol. 37,1963, p. 567, see also **B.F.S.P.**, vol. 75, pp. 994-995, concerning their boundary lines along the bed of the Rio Grande, and the Rio Colorado, TIMM: International Boundary Commission United States and Mexico 1941.

(60) **B.F.S.P.**, vol. 75, pp. 994-995

(61) See **Hartslet, M. O.**, *Map of Africa by Treaty*, Vol. 1-3, 1896.

(62) **Reeves**, *op. cit.*, vol. 38, 1944, at p. 542..

(63) See The Map of Africa, the already well-known disputes including the controversy between the Somali Republic and Ethiopia on the one hand, and Kenya, on the other hand, Tunisian claim in Algerian Sahara, the boundary dispute between Algeria and Morocco, Moroccan sovereignty claims in Spanish Sahara and against Mauritania, and the dispute between Niger and Dahomey over the Island of Lette. No doubt, more disputes are yet to come out in the open.

the national governments consolidate their positions at home and then would begin to look further afield, and boundary questions would assume a wider significance in their neighbourly relationship.

Many of the peace treaties following the end of the major wars of the nineteenth and twentieth centuries dealt with territorial adjustments. Negotiations for the delimitation of boundaries which came within the terms of the respective treaties, were on multilateral basis because of the general recognition that matters of this nature would effect the relative power positions of many nations. Wars, more than any other factor, have created the present pattern of boundaries in Europe<sup>(64)</sup>.

#### ***Delimitation of Mountain Boundaries***

Although mountain systems may be fairly regular in a general form when seen on a map or scanned from a distance, nevertheless, as experience has shown, they are always surprisingly irregular in details<sup>(65)</sup>.

In the case of mountain boundaries, failing any special treaty arrangement, the general practice is that the boundary runs along the watershed<sup>(66)</sup>. Compared with other types of boundaries, there is much in favour of the watershed line, except that if it be strictly implemented, particularly in areas where it traverses small agricultural or urban holdings, it may upset the social balance established over a period of time. This is certainly one of the few occasions when demarcators may reasonably depart from the early line in order to avoid the inconvenience which may arise from ignoring existing communal boundaries. It is in this sense that it could be suggested that the ideal system would be to draft treaty terms on broad lines but to leave the details to be worked out under well considered instructions by a competent commission<sup>(67)</sup>.

Another point of detail as regards watersheds boundaries which is worth noting is the practical difficulty of determining the treaty line especially where the topographical setting of the area is complex. The work is not as simple in practice as it may appear on paper. In the first place, the term watershed in common language has a double meaning. It is used not only to define the basin or drainage area of a river but also to designate the crest or water-parting line, separating two contiguous water basins.

For delimitation purposes, however, the second meaning is usually intended. Even here too, there will still be some difficulty in fixing the true watershed, if the

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(64) The Treaty of Berlin, 1878, in which Great Britain played the role of the broker, revised an earlier Treaty of San Stefano in order to restore the balance of power in the Balkans. A greater Bulgaria extending from the Danube to the Aegean and from the Black Sea to Albania, as envisaged in the San Stefano Treaty, was restricted to the country between the Danube and the Balkans, by the Treaty of Berlin. Again, after the Second Balkan War 1913 the boundaries of the Balkan States were defined in a conference held at London in which the great powers participated. At the end of the First World War, the Treaty of Versailles, parts II & III, delimited the boundaries of Germany and other European States. And following World War II, negotiations were held on a multilateral basis, but the Council of Ministers designated to write preliminary drafts of the Peace Treaties was unable to agree on some boundaries.

(65) The promontory on which the Temple of Preah Vihear we mentioned above is situated, affords a good example. As described in the judgement-report, it belongs to the eastern sector of the Dangrek range of mountains which generally constitutes the boundary between Cambodia and Thailand in this region. Considerable portions of this range consist of a high cliff-like escarpment rising abruptly above the Cambodian plain. From the edge of the escarpment; the general inclination of the ground in the northerly direction is downwards to the Nam Moun river, which is in Thailand. (ICJ Report 1962. p. 15).

(66) **Oppenheim**, *International Law, op. cit.*, vol. 1, p.534.

(67) **Adami**, *op. cit.*, p. 112.

documentary definition is not clear specific. The true topographic watershed, for instance, is as different from the crest line<sup>(68)</sup>. The latter may refer to the watershed as the true water-parting (hydrographic crest) or to high peaks (orographic crest) or to the summits of the steepest slopes (transportational or military crest)<sup>(69)</sup>. It will seem that the best way to circumvent such ambiguities will be to grant demarcation the discretionary power to determine the most convenient boundary line within the general framework of the treaty arrangement, where, however, there is no special agreement, it will be reasonable to assume that the watershed boundary refers to the water-divide or water parting and to demarcate the line accordingly.

All the same, it must be remembered that a water-parting is not always a barrier or along a line of hills and mountains. This is often taken for granted, although it may not be supported by the facts. We shall illustrate the peculiarities of water-partings (or watershed boundaries, if one prefers it that way), with the well-known case of the Cordillera of the Andes, which was the subject of a boundary controversy between the Republic of Argentina and Chile.

The international boundary between these two South American Republics was delimited along the central water-parting in the treaty of 1881, which decreed that it should follow the main range of the Cordillera of the Andes, which as the treaty-makers imagined, divided the rivers flowing into the Pacific (Chilean side) from those of the Atlantic (on the Argentine side) to a point near the trait of Magellan.

The disputed area was from Lake Lacar, about (40) South latitude and extended for nearly (900) miles southwards to latitude (52) south, beyond which point an agreement had already been reached. This is the region of the Patagonian Andes, Patagonia giving all the southern extremity of south America, south of the River Negro, which traverses the continent from the Andes to the Atlantic<sup>(70)</sup>.

It was found that on the Argentine side the mountain system softens down towards the pumpes and plains into a comparatively irregular formation of low ridge and valley flanked by broad traces<sup>(71)</sup>, which phenomena in turn affected the river formations in this region. These river formations were found to break across the great mountain masses and to intersperse wide valleys, across which the boundary must either be carried from one mass of peaks to the next, or else be made to skirt indefinite edge of Cordillera and Pumpas where the two insensibly combine, and where these rivers arise. A very little examination proved the incompatibility of highest crests with water-parting as a fixed principle of demarcation in these parts<sup>(72)</sup>. This raised a vexatious and embarrassing question unexpected by the treaty-makers. The protocol of 1893, attempted to resolve the issue, though not far enough, by providing that the line of the most elevated crests of the Cordillera of the Andes, or the main chain, should be the

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(68) *Ibid.*, p. 112.

(69) **Jone, Stephen**, *op. cit.*, p. 104.

(70) According to **Sir T. H. Holdich**, who commanded the British Commission of experts sent to survey the actual geographical conditions of the Patagonian Andes, he said "...the boundary here passes through a region of mountains and lakes, very different in many essential points of its configuration from the Andes north of Lake Lacar, where the one long extended and dominating meridional range had been found which arises on its crest the international dividing line..." (**Holdich, Sir Thomas H.**, *The Countries of the King's Award*. London, Butterworths, 1904, p. 43).

(71) **Hope, Gibson**, *The Boundary Dispute between Chile and Argentina*, *Scot. Gea. Magazine*. vol. **18**, 1902.

(72) **Holdich, Sir Thomas H.**, *The Countries of the King's Award*, *op. cit.*, p. 50.

determining feature in defining the nature of the water-parting, or divide, which is to carry the boundary<sup>(73)</sup>.

This case illustrates not only the peculiarities of mountain boundaries, which are not discoverable without effective reconnaissance, but also the unpredictability of boundary lines based on assumed or inaccurate geography. As we have seen, watershed boundaries may not correspond with the zone of the highest peaks. Sometimes they contain eccentric waterways, lakes and swamps with outlets in both directions, thus distorting the topographical formation of the dividing line. Unless a prior survey is carried out to reveal nature's adjustment in the territory to be delimited, it will surely be futile to attempt precision in documentary definitions<sup>(74)</sup>.

### **Boundary Rivers**

Rivers serve not only varied economic needs but also to delimit international boundaries. In one case, for instance, rivers were described as more than geometrical divisions and as arteries of trade and travel<sup>(75)</sup>. From very early times, rivers have provided excellent means of easy communication. It is, therefore, paradoxical that they should also separate neighbouring communities, who, as riparian owners, must have a common interest in their use and control.

In general, the practice of fixing boundary lines in rivers raises various problems<sup>(76)</sup>, and in fact, a considerable part of the case law on boundaries deals with riverian matters. Many problems, for instance, arise from the terminology employed for the purpose of describing the feature of the river which actually constitute the boundary. Moreover, physical changes in the course of rivers create additional problems particularly in respect of the geographical elements by which a river boundary has been described. Besides, there are issues relating to the utilization of rivers<sup>(77)</sup> such as for navigation and for transport other than navigation for fishing, irrigation, hydro-electric development<sup>(78)</sup> or for domestic purposes. Treaty provisions for delimiting the boundary line in contiguous waterways do most frequently take into account the common interest which adjoining states may have in these functional aspects of waterways.

One of the techniques for delimiting a river boundary is by the use of both banks of the rivers in question. According to this method which goes back to the Middle Ages, the boundary of each riparian state is placed on its own bank, leaving the river itself as a neutral space, owned jointly by the two countries. For instance, Article 27 of the Delimitation Treaty of June 26, 1816, between Prussia and Netherlands provides as follows "...in all cases where streams of rivers form the frontiers they shall be common

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(73) Experts for Argentina claimed the main range as the true and correct interpretation of the boundary; while Chilean experts adhered to the theory of *dinotium aquarum*, or main line of water parting between the Atlantic and the Pacific, which as is now known, sometimes followed a prominent range and some times was lost in marshy flats. Feeling were aroused on both sides and armed conflict seemed inevitable. But the outbreak of war was eventually averted when both parties agreed to submit their dispute to arbitration by King Edward VII of England, who gave his award in 1902.

(74) **Hope, Gibson**, *op. cit.*, pp. 87-90.

(75) **Lauterpacht, E.**, *River Boundaries, Legal Aspects of the Shatt Al-Arab Frontier*, C.L.Q., vol. 9, 1960, p. 208.

(76) **Bouchez, R.**, *The Fixing of Boundaries in International Boundary Rivers*, vol. 12, 1963, p.789.

(77) **Smith, B.**, *The Economic Uses of International Rivers*, Rolin, London, 1931. p. 47.

(78) *Legal Aspects of the Hydro-Electric Development of Rivers and Lakes of Common Interests*, a study prepared for the committee on Electric Power of the UN Economic Commission for Europe, January 1952.

to the two states, unless the contrary is expressly stipulated..."<sup>(79)</sup> Following this condominium, it was further stated in the same Article that no alteration whatever, no concession, no drawing off of water should be allowed without the agreement and consent of both governments<sup>(80)</sup>.

Again parties are equally free to fix their boundary along one of the banks of their contiguous river. The effect of adopting this type of international boundary will be to transfer the entire river to none of the states<sup>(81)</sup>, leaving the other with no control over the water margin<sup>(82)</sup>.

The location of an international boundary along the bank of a river as shown above, raise three possible assumptions; it may be treated as the result of mutual agreement between the parties concerned. On the other hand, the boundary line may be the result of unequal treaty or power politics, where, for instance, the state acquiring sovereignty over the stream is shown to be more powerful than the adjoining state<sup>(83)</sup>. The same situation will arise where one of the border states is not seriously interested in the boundary river.

### ***Non-Navigable Rivers***

In the case of non-navigable boundary rivers, the territories of the riparian states are, as a rule, separated by an imaginary line running through the middle, that is to say, the median of the river<sup>(84)</sup>. It follows, therefore, that where rights of navigation are not at issue, boundary waters will be equally divided unless the boundary line is fixed otherwise by agreement or understanding between the parties. Many boundary treaties<sup>(85)</sup>, however, and some publicists too, simply take the median line of the waterways as boundary without necessarily specifying whether the practice applies alike to non-navigable and navigable rivers.

In this respect, some writers explain that the older authorities had generally taken the middle line of the river as the true boundary in obedience to the rule of Roman Law for the delimitation of properties<sup>(86)</sup>, whereby a boundary river was generally presumed to be common and the jurisdiction of the two states extended to the middle of the stream.

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(79) **B.F.S.P.**, *op. cit.*, vol. 3, p. 729.

(80) In the Dutch-Prussian Condominium of 1816 case an issue arose as to how far these provisions affected the rights of private individuals and corporates to the use of the boundary waters. In 1931, a German citizen drew water for the purposes of his mill from one of the streams which separated Germany and Holland, and water not so used be returned to the stream. But when he applied for registration of these water rights in the Water Register in accordance with the German Water Act, the District Committee refused his application. The appeal of the miller to the German Supreme Administrative Court was also dismissed on the ground that a joint and undivided jurisdiction existed over that portion of the stream, Prussia could not legislate unilaterally for the territory in question, since the Prussian State did not enjoy unrestricted jurisdiction over it.

(81) For instance, in their unexecuted treaty of peace and friendship signed at Paris on August 10, 1797, France and Portugal agreed that the boundary between French and Portuguese Guiana should be the river called by the Portuguese Calcuene (or Calsoene) and by the French Vincent Pinzon, emptying into the ocean above Cape Nord, the French, however, were given sole rights of ownership and sovereignty over the mouth and also the whole course of that river. (*I & C.L.Q.*, vol. 9, 1960, p. 208).

(82) **Ireland, G.**, *Boundaries Possessions and Conflicts in South America*, Rolins. London, 1938. p. 148.

(83) See *International & Comparative Law Quarterly*, vol. 12, 1963. p. 791.

(84) **Oppenheim**, *op. cit.*, p. 532.

(85) **Jones**, *op. cit.*, 1945, p. 114.

(86) **Westlake, R. K.**, *International Law*, Collins, London, 1904. p. 141.

A median line, boundary is relative to the level of the shoreline at any given time. On the other hand, the width of a river depends partly on the level of water and partly on the inclination of its banks. Consequently, the position of the median line will alter, as often as the volume of a river changes with the season. Where, therefore, a median line forms the boundary between adjoining riparian states, it is important to specify in the documentary definition at what state of the water the *medium filum aquae* will be determined. Such a stipulation will fairly safeguard the principle of equal rights of the border states to the use and exploitation of the waters on which the practice of the median line is based<sup>(87)</sup>.

A different and rather unsatisfactory result will be produced if the median line is simply treated as a line joining the midpoints of lines from one shore to the nearest points on the other<sup>(88)</sup>. Moreover, the median line of a new tidal river will differ from that of a tidal river. It is therefore, suggested that in the former case the middle line will be more appropriately determined at ordinary and average state of the river, idub in the latter case, half way between the low-water marker of ordinary tides on each side of the river may he taken as a basis<sup>(89)</sup>.

### ***Navigable Rivers***

The general rule is that where a navigable river forms the boundary of conterminous states, failing any special arrangement, the middle of the channel or the thalweg, or its principal channel, if it has more than one, is taken as the boundary line, although it may divide the river into two very unequal parts<sup>(90)</sup>. The doctrine of thalweg was devised primarily to modify, and thereby remedy, the inconvenience of the more ancient principle which, as shown above, required equal division of territory<sup>(91)</sup>. In practice, it preserves to each riparian state equality of right in the beneficial use of the stream as a means of communication. However, as in the case of the median line, it is not uncommon to find certain treaties (50) and works of publicists<sup>(92)</sup> which designate thalweg boundaries without differentiating navigable and non-navigable waterways.

Westlake described the thalweg as "...the course taken by boats going down stream, which again is that of the strongest current, the slack current being left for the convenience of ascending boats.. "<sup>(93)</sup>, In the *Grisbadorna* case between Norway and Sweden, the Permanent Court of Arbitration spoke of the rule of thalweg or the most important channel.

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(87) **I. & C.L.Q.**, *op. cit.*, p. 793.

(88) **Jones**, In Annual Association American Geography.

(89) p.107.

(90) **Wisdom, G. S.**, the *Medium Filum Rue*, *International Relations Journal*. vol. **33**, 1969, p. 218.

(91) **Kaackeneck, R.**, *International Rivers*, Grotius Soc. Publication. London, 1918, p. 176.

(92) See Documents, E/ECE, pp. 220-231.

(93) The notion grounding the Thalweg doctrine is said to have been proposed and elaborated at the congress of Rastatt 1797, but the term Thalweg, a word meaning in this context "down way" was used for the first time in the Treaty of Lunville of February 9. 1801. In Article 3 of that treaty, the boundaries of the Cisalpine Republic were fixed by the thalweg of the Adige and in Article 6, it was laid down that thalweg of the Rhine should form the boundary between the French Republic and the German Empire, the word itself has been taken over into various languages, in treaties and in decisions on books of publicists, in most cases without further definition. However, in the Treaty of January 30,1827 between France and Prussia, Article 9 provides that the thalweg of the Rhine is the most suitable channel for downstream navigation at the normal lowest level.

Various expressions have been used in treaties and in judicial decisions to indicate the thalweg boundary. In some cases, it has been styled as fairway, midway, or main channel, and in others, as the middle of the channel, the middle of the stream, or the mid-channel of the river and valley line<sup>(94)</sup>. Watercourse or thalweg was preferred in the arbitral award of December 23, 1906 made by the King of Spain concerning the boundary between Honduras and Nicaragua. The Treaty of Versailles of June 28, 1919, between the allied and Associated Powers and Germany, it has been explained<sup>(95)</sup> was framed in such a way as to avoid the use of a term of German origin, that is to say the thalweg, in the territorial dispositions. Thus, Article 30 reads "...in the case of boundaries which are defined by a waterway, the terms "course" and "channel" used in the present Treaty signify, in the case of non-navigable rivers, the median line of the water way or of its principal arm, and in the case of navigable rivers, the median line of the principal channel of navigation..."<sup>(96)</sup>.

The reference to mid, middle or median in connection with these expressions which have been shown to designate a thalweg boundary need not lead to any confusion with the median line boundary in non-navigable rivers. Whereas, in thalweg boundaries middle relates to channel of navigation, in median line boundaries proper, it contemplates the whole width in question. In the boundary dispute between the States of Iowa and Illinois, the Supreme Court of the United States hold that "...the jurisdiction of each state extends to the thread of the stream, that is to the mid-channel, and if there be several channels, to the middle of the principal one or rather the one usually followed..."<sup>(97)</sup>.

The judgement of the court remarked as follows: "...in international law, therefore, and by the usage of European nations, the term middle of the stream as applied to navigable river, is the same as the middle of the channel of such stream, and in that sense the terms are used in the treaty of peace between Great Britain, France and Spain concluded at Paris in 1763. By language, a line drawn along the middle of the river Mississippi, as there used is meant along the middle of the channel of the river Mississippi." <sup>(98)</sup>

In another case, it was similarly stated that where a boundary line is described as "UP" a specified navigable river, the boundary must be fixed at the middle of the main navigable channel, and not along a line equidistant from each bank.

The main interest which is protected by the application of the thalweg as a boundary is freedom of navigation for both riparian states. If, therefore, the geographical centre is taken as the boundary in a navigable river, the result will be a crooked line, conforming to the sinuosities of the bank, but without relation to the needs of shipping. In terms of this functional approach, the underlying rationale of the doctrine of the thalweg has been aptly described as one of equality and justice.

In the dispute between Honduras and Nicaragua concerning the Arbitral Award made by the King of Spain on December 23, 1906, which came before the ICJ<sup>(99)</sup>,

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(94) **Westlake**, *op. cit.*, p. 141.

(95) **Moore, Digest**, *op. cit.*, p. 618.

(96) **B.F.S.P.**, *op. cit.*, vol. **112**, p. 1.

(97) **Iowa V. Illinois**, *American Bar Association Journal*. vol. **34**, 1893, 147. US. 1, at p.13.

(98) **Iowa V. Illinois**. *op. cit.*, p. 8.

(99) *ICJ Report* 1860, p. 192.

Nicaragua argued, inter alia, that the mouth of a river is not a fixed point and cannot serve as a common boundary between two states. Moreover, she pointed out that vital questions of navigation rights would be involved in accepting the mouth of the river in question as boundary. The operative clause of the award, as already indicated<sup>(100)</sup>, delimited the boundary line to follow, from the mouth of the Segovia or Coco, the watercourse or thalweg of the river upstream. The ICJ ruled that in this context the thalweg was contemplated in the Award as constituting the boundary between the two states even at the mouth of the river<sup>(101)</sup>. The court was also convinced that the determination of the boundary in this section should give rise to no difficulty. Nonetheless, it did not attempt to recommend to the parties how best such a boundary could be determined<sup>(102)</sup>.

Assuming that there are two channels in a part of a river, even if in its mouth, the general practice, as stated above, is to adopt the thalweg of the main channel as the boundary. On the other hand, the boundary may well be fixed in such a way that each state possesses its own channel, leaving the boundary line between the two channels. In fact, the international boundary at the mouth of the River Guadiana, which separates Portugal and Spain, was determined in this way. Article 6 of the Final Protocol of March 27, 1893, provides that "...It is expressly declared that the maritime line of the Guadiana shall be fixed by common agreement within the term set forth in the notes exchanged on this date between the two Plenipotentiaries, on the basis that the middle line, starting from the centre of the line of the mouth of the river, will descend in the direction of the junction of the thalweg of the two bars, so that both Portugal and Spain will be able to navigate in their own waters..."<sup>(103)</sup>.

It must be stressed again that the general principles discussed above give way to any special arrangement which parties may prefer to adopt in delimiting their river boundaries. They can adopt, for example, an arbitrary line between turning points if the circumstances of a particular case indicate that the more orthodox methods will not resolve the dispute satisfactorily, similarly, a median line will be permissible where, otherwise, a thalweg boundary would be expected and vice versa. Here, the problems of delimitation under the Finnish-Norwegian Treaty of April 28, 1924<sup>(104)</sup> is in point. In the River Inerjoki, the channel is at a certain place split by some islands into three streams. The stream situated on the Norwegian side is the deepest but relatively narrow. Moreover, this stream is most suitable for navigation especially at low-water. The stream which is situated nearly in the centre of the middle stream being straight is particularly fit for timber floating. Norway claimed the thalweg of the stream situated near the Finnish bank and vice versa. The final result was that both parties agreed to accept the middle stream as the boundary between the two states<sup>(105)</sup>.

Again, in the exchange of notes of October 27- November 1, 1932, between Britain and Brazil, constituting agreement for the delimitation of riverian areas of the boundary between Brazil and British Guiana, the thalweg of the river wherever the thalweg may

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(100) *New Jersey V. Delaware*, 291 US, *AJIL.*, vol. 32, 361, 1934, at p. 365.

(101) *JCI Report* 1960, p. 192.

(102) *ICJ Report* 1960, p. 216

(103) *B.F.S.P.*, *op. cit.*, p. 463.

(104) *B.F.S.P.*, *op. cit.*, p. 341.

(105) *Bouchez, Lord A.*, *The Fixing of Boundaries in International Boundary Rivers*, I & CLQ, vol. 12, 1963, p. 789. p. 795.

be situated at that time, was fixed as the boundary-line. But it was further provided that "...where, owing to rapids, or to any other cause, it is possible to determine the position of the thalweg, the median line of the channel which offers the most favourable course for downstream navigation should be the boundary..."<sup>(106)</sup>.

On December 31, 1963, a dispute arose between Zambia and Rhodesia (Zimbabwe) over the determination of their boundary in the Zambezi River. Zambia claimed an international boundary with Rhodesia to be fixed at the deep-water channel of the Zambezi River. Such a thalweg boundary would have given Zambia the ownership of most of the Victoria Falls a great tourist attraction. Rhodesian Government on the other hand, claimed that the boundary should lie in the middle of the Zambezi and this was finally accepted by both parties<sup>(107)</sup>.

### **Accretion**

If a boundary river gradually and imperceptibly changes its course by the denudation of one of its banks and the accretion at the other, it will carry with it the existing boundary line unless, it is provided otherwise by treaty<sup>(108)</sup>. For example, in the treaty of Peace of 1919 between Allied Powers and Germany, Article 30 Provides, inter alia, that "...it will rest with the Boundary Commissions provided by the Present Treaty to specify in each case whether the frontier line shall follow any changes of the course or channel which may take place or whether it shall be definitely fixed by the position of the course or channel at the time when the present Treaty comes into force.." <sup>(109)</sup>.

The practice of English Law is also that any slow continuous change of the course of a boundary river carries the boundary with it. As between riparian owners, accretion is generally regarded as an addition to land coterminous with the water, which is formed so slowly that its progress cannot be perceived. It is not necessary that the formation must be one not discernible by comparison at two distinct points of time<sup>(110)</sup>, In this respect, some writer said that "...the whole doctrine of accretion is based upon the theory that from day today, week to week, and month to month, a man cannot see where his whole line of boundary was by reason of gradual and imperceptible accretion of alluvium to his land..."<sup>(111)</sup>.

Therefore, the rule amounts to is that although observers may see from time to time that progress has been made, but they cannot perceive it while the progress is going on<sup>(112)</sup>, Thus, if a river has two substantial channels and adjoining riparian states have named the centre of one channel as their boundary, this will remain the boundary subject to changes which result from accretion. Thus, the boundary line will not eventually shift to other channel, even if the latter in the course of years becomes the most important and is properly called the main channel of the river<sup>(113)</sup>.

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(106) *League of Nations Treaty Series*. vol. 177, pp. 127-137.

(107) *The Time*, London, November 1, 1963, p. 12.

(108) **Oppenheim**, *International Law. op. cit.*, vol. 1. p. 563.

(109) **B.F.S.P.**, *op cit.*, vol. 112, p 1. at p. 27.

(110) **Jeffris V. Eastern Omaha Land Co.** (1890) US. at p.189. *American Bar Association Journal*. Vol. 32, 1890.

(111) **Hindson V. Ashby** (1896) J.P. 484, at p. 487, *A.B.A.J.*, vol. 36, 1900.

(112) *St. Clair County V. Lovington* 90 US, 23 Wall 46.

(113) **Oppenheim**, *International Law, op. cit.*, vol. 1. pp.533-566.

### **Avulsion**

Where a boundary river, from any cause, natural or artificial, suddenly leaves or abandons its old bed to form a new one by the process known as avulsion, the resulting displacement of the channel does not alter the original boundary line. All the authorities are of the same opinion that avulsion does not vitiate the thalweg doctrine. The boundary remains as it was, in the middle of the old channel, although no water may be flowing in it and irrespective of subsequent changes in the new channel<sup>(114)</sup>.

Thus, in the leading case between Iowa and Nebraska<sup>(115)</sup> where the Missouri river, which separates the two states and which had pursued a course in the nature of an oxbow above Omaha, suddenly cut through the neck of the bow and made a new channel of itself, the Supreme Court of the United States held that their boundary remained, as it was prior to the avulsion, the centre line of the old channel or the thalweg<sup>(116)</sup>.

In other words, if a navigable boundary river abandons its bed as a result of avulsion, the boundary line continues to run along the thalweg. But if this cannot be ascertained, as is most likely where the river-bed is completely dry, it will be permissible in such cases as in the case of non-navigable rivers, to consider the line as running through the middle of the abandoned bed, even if the territory of one riparian state is thereby diminished<sup>(117)</sup>.

As seen above, accretion and avulsion are distinctive terms generally employed for describing the nature of the changes which affect the course of rivers. Accretion implies gradualness, avulsion suddenness. The practical consequences of this distinction are well laid down in the convention of November 12, 1884, between the USA and Mexico<sup>(118)</sup>. Article (1) provides that "...the dividing line between the two countries in the Rio Grande and Rio Colorado shall in conformity with prior treaties, forever, follow the center of the normal channel of the river named, notwithstanding any alteration in the course of those rivers provided that such alterations be effected by natural erosion and deposit of alluvium and not by the abandonment of an existing river bed and the opening of a new one..." Article (2) goes on to provide that "...any other change wrought by the force of the current whether by the cutting of a new bed, or when there is more than one channel by the deepening of another channel than that which marked the boundary at the time of the survey made under the aforesaid Treaty<sup>(119)</sup> shall produce no change in the dividing line as fixed by the survey of the International Boundary Commission in 1852, but the line then fixed shall continue to follow the middle of the original channel bed, even though this should become wholly dry or be obstructed by deposits..."<sup>(120)</sup>. Those provisions, no doubt, followed the pattern of international practice. But owing to the erratic and eccentric actions of the Rio Grande, it subsequently became very difficult to say whether a true avulsion under Article (2) or a mere erosion under Article (1) had occurred<sup>(121)</sup>. Therefore, a new Treaty was signed

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(114) **Kaeckenbeek**, *International Rivers*, *op. cit.*, p.176.

(115) *Moore's Digest*, vol. 1, p. 747. See Laso Hills in: *Geographical Journal*, vol. 28, 1906, p. 148.

(116) **Oppenheim**, *International Law*, *op. cit.*, vol. 1, p. 566.

(117) **B.F.S.P.**, *op. cit.*, vol. 75, pp. 994-995.

(118) **B.F.S.P.**, *op. cit.*, p. 567.

(119) *AJIL*, vol. 5, pp. 782-833.

(120) *Annual Digest*, *op. cit.*, 1935-7. Case No. 14.

(121) **De Martens. N.**, *Recueil de Traites de Paix*, V, 11, 1820, p.123. cited in *I.&C.L.Q.*, vol.12, 1963. p.804.

in 1905 in order to fix the territory of and the sovereignty over all bank lands in accordance with their actual situation on the left or right bank<sup>(122)</sup>.

### *Changes of River Course*

In accordance with the rules of international law and international practices a dislocation of the bed of a boundary river following an avulsion, as has been pointed out, will not ipso facto alter the existing boundary unless the neighbouring states agree otherwise. There are, however, certain cases where parties have specially agreed to bring about an adjustment of the river boundary at intervals. In the Treaty between Baden and France of January 30, 1827, concerning the changes of the thalweg of the Rhine. Article (10) states that "...the thalweg shall be surveyed and determined annually at the end of the high-water season, in the month of October..." It was further stipulated in Article (1) that "...when the position of the thalweg had been surveyed it would still constitute the conventional limit between the two states, whatever changes the thalweg proper might have undergone in intervals between one survey and another<sup>(123)</sup>, Again, in order that Portugal and Spain may continue to navigate in their own waters at the mouth of the River Guadiana, their Exchange of notes of September 27, 1893, declares that the line of demarcation may be altered by mutual agreement of the two Governments whenever the mobility of the channels of the bar requires it<sup>(124)</sup>. Another example is the Treaty of September 27, 1953, between Czechoslovakia and Germany which provides in Article 2(2) as follows "...the frontier fixed in accordance with paragraph (1) shall follow the gradual natural changes in the channel of navigation and such artificial changes as may be made by agreement between the competent authorities of the contracting states, in so far as, these changes are acknowledged by the said authorities. In 1941, and every ten years thereafter the position of the channel of navigation shall be examined, and the frontier shall if necessary be adjusted in accordance with the principle laid down in paragraph (1). In the event of a considerable change in the channel of navigation, a further delimitation of the frontier may be proposed within this period. Such a proposal must be acted on within one year<sup>(125)</sup>.

Some of these special arrangements, on the other hand, empower either state to take such action as would prevent any possible change in the course of the boundary river, provided that these measures do not themselves aggravate the dislocation of the river bed. Alternately, the necessary actions may be undertaken jointly by the adjoining states and usually, a time-limit is set for accomplishing this task. For instance, in the Boundary Convention of August 8, 1943, between Belgium and the Netherlands, Article (11) provides that "...if, by reason of any catastrophe whatsoever, the Me use shall leave its present bed and form a fresh one, the thalweg of this new bed shall nonetheless continue to form the frontier between the two states, however, the state which sustains loss by the separation of a portion of its territory, shall have the right to execute, at its own expense the work necessary to make the river return to its old bed, the state shall

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(122) **B.F.S.P.**, *op. cit.*, p.55.

(123) **L.N.T.S.**, *op. cit.*, vol. **182**, 1924, p. 267.

(124) **B.F.S.P.**, *op. cit.*, vol. **35**, p. 1202.

(125) Similarly, in the Exchange of note between the UK and Brazil, of October 27.1932. concerning the delimitation of the riverian areas of the Brazil-British Guiana boundary, Paragraph (3F) empowers each state "... to protect its own banks and islands from the gradual and natural action of the river and also effect works from its course at the time, provided in both bases that such works do not themselves cause any deviations elsewhere..." **U.N.T.S.**, vol. **321**, 1963, p. 77.

maintain this right for a period of four years from the time of the event. Six months after this period a new frontier will be established. During' these four years the detached portion will remain subject to the power of the state to which it belongs..."<sup>(126)</sup>.

The said convention, moreover, providing that the boundary line shall continue to be the thalweg of the river if it happens to abandon its course due to any sudden natural phenomenon and open up another, the convention, then empowers the state affected by the loss of territory to force the river back into its abandoned bed within a space of four years, from the date on which the change of course became known to it<sup>(127)</sup>.

However, the convention between Finland and Norway signed on April 28, 1928 does not fix any definite time-limit for carrying out any contemplated preventive or restorative work. Thus, it does not leave in doubt that it is generally undesirable to acquiesce for a long time in a divergence between the existing boundary and the new course. Accordingly Article (4) provides that "...with a view to preventing alterations in the beds of rivers or water-courses owing to erosion or sitting, the state which might suffer damage or inconvenience thereby shall be entitled to take in its own territory such measures as may be necessary. If such changes should occur so suddenly that no preventive action was possible, the state concerned shall be entitled to take the necessary measures on its own territory to restore the situation previously existing, provided that such action is taken as soon as possible after the damage has occurred..."<sup>(128)</sup>.

It would be noted that the right to carry such preventive measures can only be exercised within the territory of the state involved. As a corollary to that, the same article further stipulates that the measures in question must not affect the waters in such a way as to inflict damage or inconvenience on the other state or on its nationals.

#### ***Island in Boundary River***

Island may be formed by the gradual accumulation of alluvial deposits, some by other natural processes. Normally, sovereignty over such islands will depend upon the delimitation of the boundary line<sup>(129)</sup>. Thus, they may be separated according to their position in relation to the thalweg or the median line as the case may be in boundary rivers.

In this connection, Article (3) of the convention of May 25, 1891, between the Congo and Portugal provides that "...all the fluvial islands of the Congo mentioned by name or not in the body of the present article, but situated between the median line of actual channel of navigation and the right bank of the river, the other islands situated between this same line and the left bank, belong definitely and independently of all eventual displacement of the channel, the former to the Congo and the latter to Portugal..."<sup>(130)</sup>.

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(126) **L.N.T.S.**, *op. cit.*, vol. 30, pp. 49-62.

(127) **Hyde, C. H.**, *op. cit.*, vol. 1, 1947, p. 449

(128) **Hertslet, M. O.**, *op. cit.*, vol. 1, 1896. p. 236.

(129) This situation envisaged in the convention signed in Paris on September 30, 1915 by France and Netherlands concerning the River Itany Section of the boundary between French Guiana and Dutch Guiana in which the parties agreed that the boundary should be the median line of the stream at the ordinary height of water.

(130) **Oppenheim**, *op. cit.*. vol. 1, p. 286.

The use of the expression, median line of actual channel of navigation in the above mentioned convention should be understood to refer to the thalweg of the boundary river<sup>(131)</sup>. The situation where the position of islands is dependent upon the median of the river, with islands following the side of such line in which they were wholly or for their greater part situated within side<sup>(132)</sup>.

On the other hand, if the entire river belongs to one of the riparian states, sovereignty over islands are specially reserved to one of the states<sup>(133)</sup>, for economic or historic reasons. Alternative solution often adopted by an expressing agreement which islands belong to the one and which to the other state. For instance, Article (3) of the Declaration of October 4, 1910 between Brazil and Argentina, assigned to Argentina three islands which constitute a group of islands in the Uruguay River from the confluence of the Quarahim to the mouth of the Pepiri-Guazu and to Brazil two of the groups in the Iguazu-River below the confluence of the San Antonio River<sup>(134)</sup>.

Sovereignty over islands in boundary rivers may well depend on their status in relation to the boundary line and large of the solution to this question will depend on the readiness and willingness of the parties to compromise their claims. Special provisions are often incorporated in conventions to regulate the legal status of such islands. A good example could be mentioned in the Exchange of Notes of October 27, 1932 between Brazil and the U.K. in which paragraph (2) of this agreement provides that "...the sovereignty of islands shall be determined by their situation in relation to the thalweg at the time of demarcation, or the median line in reaches where it forms the boundary..."<sup>(135)</sup>.

There are also provisions concerning the change of sovereignty of islands on account of the movement of the thalweg covering nearly all possibilities and will constitute a useful basis for settling analogous situations. These provisions envisaged in paragraph (3) of this agreement which reads as follows "...(a) where, owing to the gradual movement of the thalweg, an island situated at the time of demarcation on one side of it is found at any subsequent time to be situated on the opposite side of the thalweg and still remains an island its sovereignty shall not change, despite the change in the position of the thalweg<sup>(136)</sup> (b) where, owing to the gradual movement of the thalweg or the deposit of alluvium or to the other gradual and natural causes, an island situated at the time of demarcation in the territory of one state becomes joined to the territory of the other, its sovereignty shall change. (c) where in virtue of the gradual and natural action of the river, two islands of different sovereignty unite and form one island, the sovereignty of the island resulting from that union shall be determined by its position with relation to the thalweg at the time. (d) where owing to the deposit of alluvium, or gradual and natural causes, a new island is formed attaining a height greater than that of the water at other than flood periods in that part of the river, where previously no land existed, it shall belong to that state on whose side of the thalweg it may be situated, whatever, the thalweg may be at the time of the appearance of island..."

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(131) **Adami**, *op. cit.*, vol. 1, p. 286.

(132) **B.F.S.P.**, *op. cit.*, vol. 103, p. 341.

(133) *Ibid.*, vol. 103, p. 341..

(134) **B.F.S.P.**, *op. cit.*, vol. 1, Part 1, p. 156.

(135) **Adami**, *op. cit.*, p. 29.

(136) In the Boundary Treaty of August 8, 1849, between Austria and the Duchy of Modena, it was agreed that should two islands belonging to different states become joined together, both islands should be assigned without relation to the valley line to the state which owned the bigger of the two.

### ***Boundaries on Bridges***

Bridges form an essential link between riverian states. They carry roads and motor-ways as well as railways, and if a waterway is an international boundary the question of inter-state jurisdiction over its bridges will arise in order each state will be eager to know its rights and responsibilities in relation to the other. Such matters are usually settled beforehand in the delimitation or the demarcation agreement<sup>(137)</sup>, otherwise a separate instrument to that effect will have to be produced to cover not only details of ownership and supervision of already existing bridges but also the construction, control and maintenance of new ones<sup>(138)</sup>.

There is no general practice of a mandatory nature marking the division of rights of sovereignty on a boundary bridge coinciding with the line of delimitation recognized in the river bed itself. Supposing this method is adopted, complications may well arise if the boundary in the river changes. On the other hand, in a fairly stable surrounding it will not present any unusual difficulties. The views of writers on the question of boundary on bridges are mostly recommendatory and not expressive of any general practice<sup>(139)</sup>. In individual cases much still depends on the intention of the parties concerned. For instance, the Treaty of Peace of November 20, 1815, between the Allies and France, provides that<sup>(140)</sup>. "...the thalweg of the Rhine shall form the boundary between France and the states of Germany..." But sub-section (ii) states that "...one half of the bridge between Strasbourg and Kehl shall belong to France and the other half to the Duchy of Baden..."<sup>(141)</sup>.

Following the delimitation of the river boundary along the thalweg in the Treaty of November 12, 1884 between the USA and Mexico Article (?) provides that "...if any international bridge have been or shall be built across either rivers, named Rio Grande and Rio Colorado, the point on which bridges exactly over the middle of the main channel as herein determined shall be marked by a suitable monument, which shall denote the dividing line for all purposes of such bridges, notwithstanding any change in the channel which may thereafter supervene..."<sup>(142)</sup>.

However, a completely different solution was employed in the Treaty of Peace with Germany 1919, where Article (66) provides that "...the railway and other bridges across the Rhine now existing within limits Alsace-Lorraine shall as to all their Parts and their whole length be the property of the French State which shall ensure their upkeep. ...". These instances, which have been cited, confirm a lack of uniformity or common formula in the technique for delimiting boundaries on bridges crossing international boundary rivers.

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(137) **U.N.T.S.**, vol. **321**. 1964. p. 77.

(138) See the convention of August 29, 1963, between the USA and Mexico for the solution of the Problem of the Chamical, **AJIL**, *op. cit.*, vol. **58**, 1964, p. 336.

(139) **Oppenheim**, *International Law*, *op. cit.*, vol. **1**, p. 533.

(140) **B.F.S.P.**, *op. cit.*, vol. **3**, p.280.

(141) **B.F.S.P.**, *op. cit.*, vol. **112**, p. 45.

(142) The Provisions of the Declaration of January 21, 1861, respecting the limits of sovereignty over Bridges of the Rhine between France and Baden which declared as follows: "...(1) the middle of the fixed bridge over the Rhine between Strasbourg and Kehl shall be regarded as the limit of sovereignty between France and the Grand Duchy of Baden. (2) The same principle shall be adopted hereafter respecting the bridge of boats between Strasbourb and Kehl, as well as for all bridges which shall be constructed in the future between France and the Grand Duchy of Baden, (3) These provisions are independent of the limit of the waters and shall be without prejudice as to the limit, such as is established annually, according to the thalweg of the Rhine..." **B.F.S.P.**, *op. cit.*, vol. **3**, p. 280.

### ***Lakes, Bay, Strait and Landlocked Seas***

The general principles of boundary delimitation which have been already discussed in connection with rivers are similarly employed in these other forms of waters boundaries<sup>(143)</sup>. For instance Article (2) of the Peace Treaty of Moscow signed on July 12, 1920 between Lithuania and the USSR provides that "...in those cases where the frontier is carried along lakes, rivers and canals, it shall pass through the middle of these lakes, rivers and canals, unless otherwise provided for in this treaty..."<sup>(144)</sup>.

On the other hand, the Supreme Court of the USA said in the dispute between the states of Louisiana and Mississippi on their boundary line, the thalweg boundary was applicable where the situation was approved as applicable, and in respect of water boundaries where there is no track of navigation the line of demarcation is drawn in the middle<sup>(145)</sup>. In this connection the Court observed "...this judgement related to navigable rivers, but we are of opinion that on occasion, the principle of the thalweg is applicable in respect of water boundaries, to sounds, bays, straits, gulfs, estuaries and other arms of the sea. As to boundary lakes and landlocked seas, where there is necessary track of navigation, the line of demarcation is drawn in the middle, and this is true of narrow straits separating the lands of two different states, but whenever there is a deep-water sailing channel therein, it is thought by the publicists<sup>(146)</sup> that the rule of the thalweg applies..."<sup>(147)</sup>.

However, in the case of median line boundaries, it is essential, in aid of accurate demarcation, to define the shores or banks by specifying the stage of water. This rule is one universally employed in international law. But as in other cases, these general principles are only applicable in the absence of any special agreement between the parties in question<sup>(148)</sup>.

### ***The Territorial Sea of Adjacent States***

The maritime territory is an essential appurtenance of land territory<sup>(149)</sup>. A close relation exists between certain sea areas and the land formation which divides or surrounds them. Thus, the majority of judges in the Norwegian Fisheries case observed that, it is the land which confers upon the coastal state a right to the waters of its coasts<sup>(150)</sup>.

This judgement is important not only because it is issued from a supreme tribunal of the community of Nations, but also because it underlies a fundamental principle of international law according to which the territory of a coastal state extends beyond its land territory and its internal waters to a belt of sea adjacent to its coast, described as the territorial sea<sup>(151)</sup>. Thus, no doubt, there is unanimous agreement on the sovereignty of coastal states over a belt of the sea round their coasts.

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(143) **B.F.S.P.**, *op. cit.*, vol. **112**, p. 45.(144).

(144) **Hunt**, *op. cit.*, in *AJIL*, vol. **4**, 1910, p. 285; See also **Sir Cecil Hurst**, the Territoriality of Bays, *B.Y.B.I.L.*, vol. **3**, 1922-3, p. 42.

(145) Boggs in *AJIL*, vol. **45**, 1951, p. 240.

(146) **Moore's Digest**, vol. **1**, p. 658.

(147) **Oppenheim**, *International Law, op. cit.*, vol. **1**, pp. 482-483.

(148) The Grisbardana Case, Norway v. Sweden, October 23, 1909, **Scott Hague Court Report**, New York, 1916, p. 121.

(149) Anglo-Norwegian Fisheries Case, *ICJ, Report* 1951, p. 115.

(150) **McMahon, Sir. H.**, *International Boundaries Journal of the Royal Society of Arts*. vol. **84**, 1935, p. 4.

(151) **Boggs** in *AJIL, op cit.*, vol. **45**, p. 240.

With regards, however, to the breadth of this belt, there were considerable differences of opinion<sup>(152)</sup>. These divergent views originated largely in the fact that geographical and economic considerations differ in various countries and parts of the world. The conditions of navigation in war time have also certain bearing on this question which even today still provokes lively contentions between states<sup>(153)</sup>.

It must be noted that the Law of the Sea Conference of 1968 produced a general formula of delimitating the boundary through the territorial sea of adjacent states. This technique described in Article 12 of the Convention on Territorial Sea and Contiguous Zone, provides an acceptable basis for further negotiation in case the contracting Parties fail to agree on any other method.

However, the UN Convention on the Law of the Sea of 1982 reaffirms sovereignty of coastal states over their internal waters, territorial sea, and continental shelf and as a consequence, on all the living resources in those areas. It establishes, in addition an exclusive economic zone extending seaward beyond the limits of the territorial sea. Finally, it settles, once and for all, the difficult problems of the breadth of the various jurisdictional zones.

The straight baselines system followed by the 1982 UN Convention in determining the landward limit of the territorial sea, with minor adjustments, is the same as in the Geneva Convention on the Territorial Sea and Contiguous Zone. The waters on the landward side of baseline form part of the internal waters of coastal states and thereby of their national territory<sup>(154)</sup>, All resources in the internal waters fall under the sovereignty of the coastal state.

States have also the right to establish the breadth of their territorial sea up to a limit not exceeding 12 nautical miles, measured from the baselines as determined under the convention. This provision should, therefore, have the effect to bring to an end unilateral extensions of the territorial sea beyond the distance of 12 miles and to render illegitimate any extensions beyond that limit. It provides a final settlement to this difficult matter the sovereignty of a coastal state and, therefore, its jurisdiction over living resources, extends to its territorial sea<sup>(155)</sup>. This sovereignty is only limited by the right of innocent passage of foreign ships<sup>(156)</sup>.

We may note very briefly, as it is hoped to consider a general formula for delimiting the boundary through the territorial sea of adjacent states. We shall attempt an evaluation of the technique expounded by various writers. Lapradelle described two possible methods as the first suggestion envisaged a seaward extension or prolongation of the land boundary to a line drawn to seawards and perpendicular to the general direction of the coast line at the point where the land boundary terminates<sup>(157)</sup>.

The first solution does not require further simplification, but it will be noticed that the second presupposes a landward baseline from which the proposed boundary line

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(152) *The Marginal Sea*. *AJIL*. vol. 17.1923, p. 89.

(153) *AJIL*. vol. 45. 1951, p. 240. See also Sir Gerald Fitzmaurice, vol. 5, 1959. pp. 73-121.

(154) Article (3) states that "... every state has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from the baselines determined in accordance with this convention...", the Law of the Sea. UN, New York. 1983, p. 3.

(155) Article (2) of the Law of the Sea, UN Convention, UN, New York, 1983. p. 3.

(156) Article (17) *Ibid.*, p. 6.

(157) Paul de Lapradelle, *La Frontiere Etude de Droit International*, Rollins, Paris. 1928, p. 215.

will be constructed. If we simply consider this proposition literally, it will be difficult to understand how a perpendicular, in the geometrical sense, can be constructed, with the coastline as the base. It will seem that the true explanation is implicit in the observation of the ICJ in the Anglo-Norwegian Fisheries case where it was stated that "...the principle that the belt of territorial waters must follow the general direction of the coast makes it possible to fix certain criteria valid for any delimitation of the territorial sea"<sup>(158)</sup>.

Lapradelle's first method had been applied in Article (5) of the Treaty of Guadalupe Hidalgo of 1848 between the USA and Mexico and repeated in Article (5) of the Gadsden Treaty of December 30, 1853, which provides *inter alia*, that "...the boundary line between the two Republics shall commence in the Gulf of Mexico, three leagues from land opposite the mouth of the Rio Grande, otherwise called Rio Bravo del Notre, or opposite the mouth of its deepest branch, if it should have more than one branch emptying directly to the sea..."<sup>(159)</sup>.

Equally, too Lapradelle's idea of a perpendicular line seaward boundary has been influenced by earlier technique employed by states<sup>(160)</sup>. A good example would be the Norwegian-Swedish arbitration of October 23, 1909, in the Grisbardana case where the tribunal stated that "...whereas, consequently, the automatic dividing line of 1658 should be determined, the delimitation should be made today by tracing a line perpendicular to the general direction of the coast, while taking into account the necessity of indicating the boundary in a clear and unmistakable manner, thus facilitating its deservation by the interested parties as far as possible..."<sup>(161)</sup>.

This method was considered as acting much more in accord with the ideas of the seventeenth century and with the notions of law prevailing at that time. Because the general direction of the coast swerves about (20) degree westward from due north<sup>(162)</sup>, the boundary line was stipulated to be traced in a direction west to (19) degrees south until it reached the high sea<sup>(163)</sup>.

As to the merits of these two methods which Lapradelle advocated, Boggs pointed out that they are somewhat defective for the following reasons:

"...(1) the continuation of the last land boundary section is open to the objection that it is usually accidental in direction, having no relation to the necessities of delimiting a water boundary.

(2) The second, that is the perpendicular line is open to criticism because it is not always feasible to determine the general trend of the coast; and

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(158) *ICJ Report*, 1951, p. 129.

(159) B.F.S.P., *op. cit.*, vol. 37, p. 567.

(160) The Agreement of February 15, 1957 between Norway and the USSR concerning their sea frontier in Varanger Fjord furnished another example where a similar technique was employed (UNTS, vol. 312, 1958, p. 289.)

(161) *Scott Hague Court Report*, p. 121.

(162) *Ibid.*, p. 129.

(163) Poland and the USSR in the Protocol of March 18, 1958 concerning the delimitation of the territorial waters in the Gulf of Gdansk of the Baltic sea agreed in Article (1) that "...the boundary separating the territorial waters of the Polish Republic and the USSR shall follow a line perpendicular to the shoreline at the terminal point of the Polish-Soviet state frontier on the Baltiskoya Kosa and running to the point of intersection with the outer limit of the territorial waters of the Polish Republic. (UNTS, *op. cit.* vol. 340, p. 89).

(3) Boundaries delimited by both methods produce a zone of water of controvertible jurisdiction...<sup>(164)</sup>.

Therefore, Boggs suggested a universal three-mile limit of territorial sea as a basis where there are no islands or exceptionally irregular coastline, the normal terminus of the territorial sea boundary between two adjacent coastal states would be that point which is three miles from the nearest land of the two sovereignties. The boundary line itself would be a straight line or, if necessary, a series of straight lines, from the terminus of the land boundary to that normal terminus at the high sea<sup>(165)</sup>.

Boggs developed a technique based upon the principle of equidistance. It would be true to say that this principle offers by far a more equitable result and is distinguished for its convenience and widespread applicability<sup>(166)</sup>. In fact, this was the only method explicitly referred to by the Geneva Convention of 1958 on the Law of the Sea. Article (12) paragraph (1) of the Convention on the Territorial Sea and Contiguous Zone provides that "...where the coasts of two states are opposite or adjacent to each other, neither of the two states is entitled, failing agreement between them to the contrary, to extend its sea beyond the median line every point of which is equidistant from the nearest points on the baselines from which the territorial seas of each of the two states is measured..."<sup>(167)</sup>.

The baseline as understood in this article is the same as that required for the purpose of measuring the breadth of the territorial sea, namely the low-water mark as opposed to the high-water mark or the mean between the two tides which has generally been adopted in the practice of states<sup>(168)</sup>. It is submitted that Boggs idea of describing an envelope of arcs from a series of salient points on the coastlines, including islands if any, eliminates the need for an acceptable baseline. To this extent alone it can be said to differ from the method described in Article (12) paragraph (1) referred to above, otherwise, both of them underline the same principle, namely, the principle of equidistance. As we observed, this principle offers a reasonable basis for negotiating the delimitation which in fact, conforms to this standard will normally be justifiable, unless special circumstances supervene. If the same boundary exceeds the line of equidistance, it would be void, *protonto*, provided the course, that there is a prompt protest by the other state. Otherwise, the uncontested line might ultimately be validated by prescription<sup>(169)</sup>.

### **Demarcation**

Demarcation is the crux of all boundary making. It is a technical matter in nature and this is discussed in the previous section during the consideration of distinction between delimitation and demarcation. It requires a team of experts comprising a mixed boundary commission of the Contracting Parties or neutrals respectively appointed by each side, in order, to carry out this spade work of boundary construction<sup>(170)</sup>.

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(164) **Boggs**, *International Boundaries*, 1940, *op. Cit.*, pp. 188-189

(165) *Ibid.*, p. 191.

(166) **Boggs** in: *AJIL*, *op. cit.*, vol. 45, 1951, p. 250.

(167) See Article (6) of the Convention on the Continental Shelf.

(168) Norwegian Fisheries Case, ICJ Report 1951, p. 130. See also, North Atlantic Coast Fisheries Arbitration, July 27, 1909, in: *AJIL*, vol. 5, 1911, pp. 1-31.

(169) Temple of Preah Vihear Case. *ICJ Report* 1962, p. 30.

(170) *L.N.T.S.*, vol. 70, p. 305.

The process of demarcation could be developed into a very difficult and complex undertaking due to a number of causes. For instance, impenetrable jungles, the hazards of rugged, and mountainous terrains, adverse weather conditions, inhabited region, hostile tribesmen which delay and frustrate demarcation work at great expense of time, labour and money<sup>(171)</sup>.

The demarcators are bound by the terms of the boundary agreement except where they are allowed discretionary powers. Thus, their first task is to fit the boundary line as reasonably as possible to the conformation of the land. Secondly, they should determine the Sites for, and set up, appropriate pillars and other artificial boundary marks. This will normally be considered necessary where the boundary is indefinite or is crossed by other features, and must be accompanied by statements relating to the placing and inauguration of the boundary marks<sup>(172)</sup> On each mark, for instance, the exact longitude and latitude of the spot should be indicated together with the date and names of the contracting parties on each side of the mark which faces their respective territories. Thirdly, on completing demarcation work, it is the duty of the demarcators to compile a detailed general description of the boundary line and the topographical co-ordinates of all the boundary posts, marks and beacons<sup>(173)</sup> including their types, forms, dimensions and colouring.

A mixed boundary commission may be designated to carry out boundary making functions which requires some degree of expert and technical knowledge<sup>(174)</sup>, in addition to the entrustment of determining the ownership of certain islands. Finally, it may be noted that it is essential to consult both the delimitation and the demarcation instruments in order to obtain an accurate picture of any given boundary<sup>(175)</sup>.

One of the reasons for making this special technical report is to prevent the loss of data which may be of value both to future demarcation commissions and to future surveying or geodetic work<sup>(176)</sup>.

### ***The Methods of Demarcation***

The methods by which the demarcation of boundaries is actually effectuated have differed from time to time with the character of the country to be dealt with and the scientific means at the disposal of the demarcators<sup>(177)</sup>. Exact boundaries could not be determined until the sciences of geography, geodesy and cartography had reached the point where they could furnish the data needed for delimitation and demarcation.

In some boundary treaties, the mixed boundary commissions entrusted with demarcating the boundary line on the ground are liberally asked to employ the most efficient or accurate methods possible<sup>(178)</sup> or such methods as may appear to them most

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(171) **Hartshorne. W. R.** Suggestions on the Terminology of Political Boundaries, *Abstract in: Annual Association of American Geo.*, vol. **26**, 1936. pp. 56-57.

(172) Jones Boundary-Making, *op. cit.*, London, 1945, pp. 190-203.

(173) *Ibid.*, pp. 211-214.

(174) See the exchange of Notes between Siam and Tenassarim Province of Burma, June 1, 1934, between the UK and India (*L.N.T.S.*, vol. **154**. 1935, p. 373).

(175) See Article 1 of the Treaty between the USSR and Afghanistan of January 18, 1958 (*UNTS*, vol. **321**, p.77).

(176) Jones Boundary-Making, *op. cit.* p. 199.

(177) **Holdich**, Political Frontiers. *op. cit.*, London. 1916.

(178) See the Exchange of Notes of November 7, 1929, between Brazil and Venezuela (*L.N.T.S.*, vol. **99**, p. 427).

suitable<sup>(179)</sup>. On the other hand, a specific approach may well be stipulated for the demarcation team of experts in such instruments. For instance, in the Treaty of March 18, 1930, between the UK and Brazil for the demarcation of the boundary between British Guiana and Brazil, paragraph (7) provides for "...the mixed commission which shall proceed to establish the whole of the frontier described in Article (1) and its paragraphs of the General Boundary Treaty of April 22, 1926, by means of triangulation wherever possible. Where the nature of the terrain or consideration of time and cost render this method impracticable, the boundary may be based upon control positions fixed astronomically at intervals of not less than 25 nor greater than 50 miles, using wireless time signals connected by traverse of the most accurate character practicable. All field work shall be plotted and compared while still near enough to visit any point over which there be disagreement..."<sup>(180)</sup>

It is essential in demarcation that the commissioners must mutually agree upon the position of the point of departure from which the rest of the boundary line would be determined by both parties independently, with a satisfactory agreement<sup>(181)</sup>.

If during the process of demarcation there should arise any doubtful points or disagreements between the two parties represented on the mixed commissions: or if any mistakes come to light, the work of demarcation would not thereby be suspended, except, in respect of the part in connection with which doubts, disagreements or errors have arisen<sup>(182)</sup>. Where the exercise of discretionary powers is granted expressly or impliedly, the mixed commission by exercising such powers may mutually agree to compromise on terms acceptable to the respective parties which they represent<sup>(183)</sup>.

This solution was adopted when a discrepancy was discovered during the demarcation of the boundary between the two new Guineas. The 141st meridian of east longitude formed the boundary between Netherlands New Guinea and the Mandated Territory of New Guinea administered by Australia<sup>(184)</sup>. A body of mixed surveyors was designated by both governments to re-examine and demarcate its exact location<sup>(185)</sup>.

On the other hand, if the boundary agreement so provides, the doubts, disagreements, or errors, may be submitted direct to the contracting parties, who shall make every effort to settle them rapidly and amicably. Alternatively, a neutral body will have to be consulted. For instance, in the demarcation agreement of March 18, 1930 between the UK and Brazil, it was provided that failing a direct solution by the parties, they shall be submitted by them to the arbitral decision of three members of the Academy of Sciences of the Institute of France, chosen by the president of the Academy<sup>(186)</sup>.

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(179) See the Treaty between the UK and Portugal. Article (2) paragraph (3) with regard to northern Rhodesia-Angola Frontier of November 18, 1954 (*U.N.T.S.*, vol. 210, p. 265).

(180) *Ibid.*, p. 265.

(181) Holdich. *Political Frontiers and Boundary-Making. op. cit.* p. 220.

(182) See Jones, *Boundary-Making, op. cit.*, pp. 159-192.

(183) *L.N.T.S.*, vol. 173, p. 325

(184) This was determined by the Netherlands surveying vessel from the astronomical point. VaI-Aller. disclosing a difference in longitude of 398.0 metres with the Australian observations made in 1928. which again was checked by the Australian surveyors. By mutual agreement. it was decided to halve the difference as determined by the national representatives. This position not proving suitable for a monument, after further conference. a site was decided on for practical purposes approximately (31) metres was of such mean position.

(185) *Ibid.*, p. 328.

(186) *L.N.T.S.*, vol. 101, p. 401.

### ***Apportionment of Demarcation Expenses***

Each contracting party, at its own expenses, usually appoints and equips its own side of the mixed boundary commission with the materials necessary for the topographical and astronomical services indispensable for the execution of its mission. The total expenses<sup>(187)</sup> as regards labours<sup>(188)</sup>, materials, transport and supplies<sup>(189)</sup>, incurred in the work of constructing the boundary beacons and monks, however, are normally defrayed in equal portions. But the salaries, emoluments and expenses of subsistence of the personnel of the commission, their assistants and escorts, are borne by their respective governments. In other words, each state defrays its own expenditure and half of the costs of the general work of demarcation.

### ***Protection, Maintenance and Repair of Boundary Marks***

The delimitation and demarcation of an international boundary will be to no avail if, in the long run, no provisions are made by parties for the protection, maintenance and repair of an established boundary, the inviolability of such boundaries is generally recognised in the policies and practices of states. This sanctity can advance or destroy the good neighbourliness existing between adjoining states. And this fact is very often reaffirmed in boundary treaties.

Article (5) of the Treaty of Guadalupe Hidalgo of February 2, 1848, between US and Mexico, provides that "...the boundary line established by this article shall be religiously respected by each of the two republics and no change shall ever be made therein, except by the express and free consent of both Nations lawfully given by the general governments of each in conformity with the constitution..."<sup>(190)</sup>.

The above-mentioned article is very reminiscent of the strong condemnation of deliberate and wanton destruction of or interference with boundary posts and marks in private law. Under Roman Law, for instance, as we have seen, the offender was ordained to be sacrificed to the God, in International Law, as well, any unlawful interference with established boundary marks will surely invite some punishment. Thus Article (8) paragraph (8) of the Agreement of November 30, 1956 between the USSR and Czechoslovakia, provides that the "...contracting parties shall take measures for the proper protection of the frontier marks and shall bring to justice any person found guilty of moving, damaging or destroying a frontier mark..."<sup>(191)</sup>.

In such a case, the state of which the offender is proved to be resident or national, as the case may be, will be held vicariously liable to restore the damaged marks at its own expenses<sup>(192)</sup>. Where a boundary mark is being restored, care must be taken not to change its original position. This can be achieved by consulting the detailed description of the boundary line in the general demarcation report, since it contains particulars which can be verified on the spot. Similar measures may be employed where the boundary mark is completely obliterated and there are no indications of its position.

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(187) Jones. *Boundary-Making, op. cit.*, pp. 176-179.

(188) *Ibid.*, pp. 171-172.

(189) *Ibid.*, pp. 174-175.

(190) **B.F.S.P.**, *op. cit.*, vol. 37, p.567.

(191) **UNTS.**, *op. cit.*, vol. 226, pp. 243-310.

(192) **U.N.T.S.**, *op. cit.*, vol. 173, p. 375.

The maintenance of an international boundary involves functions of great magnitude and variety, depending on the nature and the location of the boundary in question. For instance, Article (4) of the Treaty of February 24, 1925, regarding the demarcation of the boundary between the US and Canada<sup>(193)</sup>, the commissioners appointed under the provisions of the Treaty of April 11, 1908, were jointly empowered and directed "...to inspect the various sections of the boundary line between the Dominion of Canada and Alaska at such times as they shall deem necessary, to repair all damaged monuments and buoys to relocate and rebuild monuments which have been destroyed, to keep the boundary waters open, to move boundary monuments to new sites and establish such additional monuments and buoys as they shall deem desirable, to maintain at all times an effective boundary line..."<sup>(194)</sup>.

In effect, the continuous functioning of the boundary commission in all cases is an important factor in the efficient operation of the boundary.

### Conclusion

Since the end of the Second World War, several new independent states have emerged, particularly in Asia and Africa, as a result of which many formerly internal boundaries have become international boundaries. This phenomenon, therefore has enlarged the area in which boundary controversies may possibly occur and such conflicts at present constitute one of the major threats to international peace and security.

According to this study, the boundaries of a state indicate certain limits of its territorial jurisdiction. Therefore, the alteration of an international boundary and the transfer of a piece of land as a result from one state to another may have far-reaching consequences. However, the location of a boundary line may decide for millions of people the language and ideas which children shall be taught at school, the books and newspapers which people will be able to buy and read, the kind of money they shall use, the markets in which they must buy and sell, and perhaps, even the kind of food they may be permitted to eat.

It may determine the national culture with which they will be identified, the army in which they may be called to serve, the soil which they may be called upon to defend with their lives whether or not they would choose to defend it.

These observations fairly illustrate the extent of the political powers which states exercise within their boundaries. Therefore, a clash of interests is unavoidable in populated areas or in areas with economic prospects, where international boundaries are undefined or ill-defined.

There has been considerable progress in the methods of boundary making. A whole range of new scientific equipment has been devised. Aerial surveys nowadays supplement conventional field-triangulations with the result that most of the familiar errors and inaccuracies which characterized earlier boundary works have become increasingly rare. But these advances are not alone sufficient to eliminate all the possible causes of boundary disputes.

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(193) **L.N.T.S.**, *op. cit.*, vol. **43**, p. 240.

(194) **B.F.S.P.**, *op. cit.*, vol. **101**, p. 210.

However, international boundaries affect the lives of people and should more be adapted to human convenience. In conformity with the UN Charter and in order to achieve the kind of stability and finality, international boundary disputes must be settled peacefully. Apart from the legitimate exercise of the right of self-defence, the use of force, which unfortunately occurs very frequently in boundary disputes is no longer compatible with modern international law.

Comparatively direct negotiations between disputing parties seem to offer the widest opportunity for reaching an effective settlement in all forms of boundary conflicts. Mutual concessions by both sides, whether territorial or otherwise, are unavoidable in such disputes. Without doubt, the atmosphere for achieving the necessary compromise settlement is more readily attainable under diplomatic procedures which do not suffer from the constitutional limitations of adjudication.

There is a general need today for permanent mixed-boundary commissions to replace the hitherto ad hoc bodies with highly temporary and limited functions, which adjoining states have set up from time to time, in the course of different boundary settlements. This is essential in areas where states are separated by long boundaries. Minor disputes can very conveniently be resolved by inter-states organs, while the more serious ones may well be referred to the governments concerned for their immediate attention. The regular supervision and maintenance of boundary marks, and the permanent work of mixed-commissions will surely have a stabilizing effect on common boundaries.

A number of boundary disputes has been submitted to the ICJ; similarly, on a few occasions its predecessor, the PCIJ had given advisory opinions on boundary questions. In any case, with regard to adjudication, the more frequent practice of states has been to refer boundary claims to arbitration.

The United Nations Charter epitomize world concern for international peace and security. One of its fundamental demands on members of the organization and even on states which are not members is to refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state. In effect, the Charter postulates territorial integrity and gives no pretext for aggressive action. It unqualifiedly advocates the settlement of international disputes by peaceful means in such a manner that international peace, security and justice are not endangered.

This is the kind of spirit which should guide adjoining states in the course of settling their boundary disputes. It is particularly to their interest not to allow such disputes to deteriorate into armed conflict.

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## المفهوم القانوني للحدود الدولية

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**المستخلص:** ينبغي أن يكون إقليم الدولة محددًا لتستطيع ممارسة سيادتها عليه، ويبدو لأول وهلة أن إقليم الدولة يتكون من سطح الأرض بما تحتويه من يابسة ومياه، وفقا لذلك المفهوم تحدد حدود الدولة بالطول والعرض والعمق والارتفاع، وكانت الحدود في السابق محصورة في سطح الأرض، ولكن الحاجة في العصر الحديث إلى الثروات التي في قاع الأرض استلزمت تحديد الحدود بتلك الأبعاد، لذا يشكل إقليم الدولة الأرض وما عليها من الظواهر الطبيعية كالجبال والأنهار والبحيرات والمستنقعات والصحاري والغابات، كما يشمل ما في باطن الأرض من ثروات حتى المناطق السفلى، وإلى ما لا نهاية.

ومن دراسة الخلافات العالمية تبين لنا أن كثيراً منها يتعلق بمشاكل حدودية، لذا يجب أن يكون إقليم الدولة محددًا بموجب اتفاقيات دولية منعا لتلك الخلافات، وعليه يلزم لوجود الدولة أن يكون لها إقليم محدد يقطن عليه شعبها، والمقصود بالإقليم هو البقعة من الأرض المحددة التي تمارس الدولة عليها سيادتها، يضاف إلى تلك البقعة من الأرض شريط بحري يحاذي سواحلها إلى مدى يقره القانون الدولي، وفضاء جوي يعلو الأرض والماء ويطلق عليه الفضاء الجوي أو الإقليم الجوي. ومن هذا المنطلق ينبغي أن يكون إقليم الدولة محددًا مرسوما بموجب معاهدات دولية. وفي هذا البحث عالجنا مشاكل الحدود على الأرض وما عليها من ظواهر طبيعية كالجبال والأنهار والبحيرات والمستنقعات والصحاري والغابات، بالإضافة إلى دراسة الحدود البحرية وفقا لاتفاقية الأمم المتحدة لعام ١٩٨٢، ثم عالجنا الفارق بين التحديد والترسيم، ثم أعطينا نظرة موجزة لإجراءات ترسيم الحدود الدولية، ثم الخاتمة.