

The Order of Precedence of Boundary Delimitations

Haim SREBRO and Maxim SHOSHANI, Israel

Key words: boundary demarcation, boundary documentation, boundary maintenance, boundary delimitation, international boundary agreement, boundary arbitration.

SUMMARY

The objective of this article is to analyze and define an order of precedence of boundary delimitations, which can help states that come to a boundary agreement to choose a reliable definition of the boundary that will enable the following stages of boundary making (e.g.: boundary demarcation, boundary documentation and boundary maintenance) to be more reliable and sustainable. Thus, it will contribute to the stability of the boundary. Stable international boundaries contribute to peace all over the world.

The achievement of stability and finality of an international boundary is one of the primary objects according to the International Court of Justice (ICJ reports, 1962, 34). There are various ways of definition of boundary lines. The traditional ones, which were practiced in unilateral Orders or formal Declarations, or in bilateral Agreements, include verbal descriptions, graphic charts or schemes, maps, coordinates or combination of them.

Sometimes their quality is poor and sometimes there are contradictions between various definitions. Such cases do not contribute to the stability of the boundary. Since the boundary making process takes time, problems may pop up as early as the demarcation phase, when the definition of the boundary in the delimitation has to be transferred to the ground in the implementation stage.

Furthermore, along time physical markers may disappear and the boundary line requires restoration. The political status on the two sides of the boundary may also change, and disputes and conflicts may arise with regard to the location of the boundary line. The solution of such a conflict can be resolved either by bilateral negotiations, or conciliation, or by arbitration of an international Tribunal and sometimes by the International Court of Justice itself. Such a solution will always depend on the definition of a final boundary line, based on the various evidences of the boundary delimitations that are available to the tribunal or to the ICJ.

This article deals with the order of precedence, given to the various boundary definitions in the delimitation and demarcation stages, in order to supply the boundary engineer with essential

information about the measures, methods and techniques, which should be used during the boundary making process, to ascertain a stable, final, easy to restore boundary.

The article contains the recommendation of the authors for a list of order of precedence. The list is based on judgments of ICJ and of international Tribunals, on practice of states and on the practice of the authors during the tracing of several international boundaries.

The adoption of the conclusions of the article may prevent future boundary disputes all over the world and thus to contribute to peace.

The Order of Precedence of Boundary Delimitations

Haim SREBRO and Maxim SHOSHANI, Israel

1. BACKGROUND

Stabile international boundaries contribute to peace all over the world.

The achievement of stability and finality of the boundary is one of the primary objects according to the International Court of Justice (ICJ reports, 1962, 34).

There are various ways of definition of boundary lines. The traditional ones, which were practiced in unilateral Orders or formal Declarations, or in bilateral Agreements, include verbal descriptions, graphic charts or schemes, maps, coordinates or combination of them.

Sometimes their quality is poor and sometimes there are contradictions between various definitions. Such cases do not contribute to the stability of the boundary. Since the boundary making process takes time, problems may pop up as early as the demarcation phase, when the definition of the boundary in the delimitation has to be transferred to the ground in the implementation stage.

Furthermore, along time physical markers may disappear and the boundary line requires restoration. The political status on the two sides of the boundary may also change, and disputes and conflicts may arise with regard to the location of the boundary line. The solution of such a conflict can be resolved either by bilateral negotiations, or conciliation, or by arbitration of an international Tribunal and sometimes by the International Court of Justice itself. Such a solution will always depend on a definition of a final boundary line, based on the various evidences of the boundary delimitations which are available to the Tribunal or the Court.

This article deals with the order of precedence, given to the various boundary definitions in the delimitation and demarcation stages, in order to supply the boundary engineer with essential information about the measures, methods and techniques, which should be used during the boundary making process, to ascertain a stabile, final, easy to restore boundary.

As was already commented by Rushworth (1997-8), it would be valuable if a scholarly international lawyer was to put together comments and guidance with reference to the order of precedence of evidences, either geodetic, cartographic or physical markers, with regard to their legal aspects and relevance as evidences in land frontier arbitrations. Such a work should be based, mainly, on international law and on judgments of the International Court of Justice and other arbitration Tribunals.

In the absence of such a commentary or a guide, the following is an attempt of a boundary engineer to suggest a preliminary recommendation, which reflects the personal experience of the authors, as well as various judgments of ICJ and arbitration Tribunals. This recommendation is introduced under a reservation that the authors do not have the pretension to be considered as legal experts.

On the other hand, such a model has a considerable importance for boundary engineers, who have to decide on the technological support, including the technical methods to be implemented during the boundary making process including the boundary documentation.

2. REFERENCES AND SOURCES LEADING TO THE INTRODUCED MODEL

The following is a partial list of cases which were referred to in our analysis:

The ICJ Judgment in the Preah Vihear Temple Case between Cambodia and Laos (ICJ reports, 1962), with regard to the object to achieve stability, with regard to the importance of behavior and acceptance over the years relative to the parent treaty, and with regard to the acceptance of maps as evidence.

The ICJ Judgment in the Burkina Faso-Mali Dispute Case (ICJ reports, 1986) with reference to the pre-eminence accorded to legal title over effective possession as basis for sovereignty. In the same case there was a reference to the relative importance of coordinates and maps for the decision.

In the El Salvador-Honduras Case (ICJ reports, 1992) the Court referred to the interrelation between coordinates and maps.

The Award of the Egypt-Israel Arbitration Tribunal (29 September 1988), with reference to the weight of an accepted demarcation, relative to the Agreement or with regard to maps in case of contradiction. In the same Award the Tribunal refers also to the acceptance of maps with reference to their exactness and scale.

The dissenting opinion of Professor Ruth Lapidoth, in the same Award, refers to the preference of the boundary as established in the agreement (in conformity with the principle of *uti possidetis juris*) versus changes (of boundary markers) in the field (which are in conformity with the principle of *uti possidetis factis*).

The Arbitration Tribunal in the Beagle Channel Award (ILR, 1977 vol. 52), refers to the evidence of maps, in comparison to a description or definition in an agreement.

Our analysis refers also to various publications which refer to this subject, including: Ress (1985), Munch (1977), Jones (1945), Cukwurah (1967), Adler (2001), Rushworth (1996, 1997, 1997-98).

The analysis will refer to the above mentioned references in wide, in the following relevant paragraphs.

The precedence of boundary definitions, as reflected in the Court decisions, decisions of International Tribunals, and the practice of States, follows, in general, a direction which is parallel and reverse to the stages of boundary making.

A special weight is given to a joint acceptance of the two states. Signatures of authorized official representatives of both sides express the highest degree of joint acceptance on the relevant documents of definition of the boundary line.

If joint signatures do not exist, than an exchange of official notes, with regard to the acceptance of the boundary line, stands (The Iraq-Kuwait example (Brown, 1994)).

At the absence of any mutual written acceptance, the practical behavior of the States, which reflects their de facto acceptance, is relevant (*Uti possidetis*). The acceptance of the appearance of a line on maps either by act (like when a State publishes its own official maps with a certain appearance of the boundary line) or by a silent acceptance, comes, in the order of precedence, after the practical behavior in the field.

The length of the period of time, along which a de facto situation exists without an objection, is also considered relevant, since the desire not to interfere with the peaceful reality of the population that lives in the area is a value by itself.

The following is a general list of order of precedence, before taking into account the joint acceptance of documents or of markers in the field, and the length of the period of that acceptance.

This list is our offer. It is based, as indicated above, on Court and International Tribunals judgments, on practice of States, and on our own practice during the tracing of old boundaries together with members of mixed international teams, for example: with Egyptian surveyors in 1981, in the process of tracing the 1906 boundary pillars; with Jordanian surveyors in 1994, in the process of tracing the 1922 boundary, and with members of the UN cartographic team in 2000, in the process of tracing the 1923 boundary between Palestine and Lebanon.

The importance of the order of precedence is unveiled when an old boundary should be reconsidered, and especially if the old boundary had been demarcated on the ground and has to be traced and restored or reconstructed.

3. THE MODEL OF ORDER OF PRECEDENCE

The following is a model of order of precedence of boundary evidences:

3.1 Order of Precedence of Evidences:

- Official jointly signed precise boundary documentation
- Existing original boundary pillars
- List of coordinates of boundary pillars
- Appearance of the boundary line on maps
- Graphic description
- Verbal description

3.2 Precise Detailed Documentation

This is a document which is a result of the demarcation that follows a treaty or an agreement, between two states. It consists of a list of coordinates of boundary pillars and/or boundary points, preferably on a common datum that is agreed by both parties.

In addition, this document includes, usually, a map or a layout, showing the boundary line route and the boundary pillars. The document should declare whether the coordinates or the maps are binding.

In addition, the documentation should be sufficient in order to well maintain the boundary line, to enable the restoration or replacement of any boundary pillar or to densify the boundary posts if required.

The main legal strength of such documentation is given to it by signatures of authorized official representatives of both States.

The existence of such documentation has the potential to prevent boundary disputes or to support quick resolutions with no necessity for Arbitration.

The importance of precise boundary documentation has been practiced for the last twelve years along the Israeli – Jordanian boundary since the peace treaty between the two states. Every construction near the boundary is easily monitored by a combined team, using the mutual boundary documentation, and any suspicious deviation is corrected according to the documentation, thus preventing future disputes.

The first step of a professional surveyor that intends to restore a boundary, either a cadastral boundary or an international boundary, is to look for existing, authorized, preferably registered, documentation. This was exemplified even in 1979 in the case of the restoration of the mandatory line between Israel and Egypt. Both professional teams looked for documentation of the 1906 Turco-Egyptian boundary. Wherever a reliable documentation was found it was used for the restoration of the boundary. Even the UN cartographic team that was responsible for the definition of the Israeli line of withdrawal from Lebanon in 2000, invested significant efforts in looking for documentation of the mandatory boundary between Palestine and Lebanon to serve as the reference line.

3.3. Existing Boundary Pillars

In the absence of a precise detailed documentation, existing boundary pillars, preferably accompanied by a partial documentation, are the significant evidence.

These boundary pillars, if recognized by the two sides, and especially by the people in the area, for a long period of time influencing their behavior, are pointing out a situation de facto.

The situation de facto, as mentioned earlier, supports the legal claim of *Uti Possidetis*.

An example to the relative high order of precedence of boundary pillars over maps can be found in the decisions of the special tribunal to the 1986 arbitration between Israel and Egypt with regard to the boundary dispute between the two states. The tribunal preferred to take decisions with reference to evidences on the ground, either boundary pillars or remnants of boundary pillars rather than on the basis of maps. Furthermore the tribunal gave precedence to existing pillars, which had been accepted by the two sides for a long period, even over the original agreement! "It is therefore to be concluded that the demarcated boundary line would prevail over the agreement if a contradiction could be detected." (Award of the Egypt-Israel Arbitration Tribunal, September 1988, para. 210). With reference to the precedence of existing pillars over maps the tribunal says: "If a boundary line is once demarcated jointly by the parties concerned, the demarcation is considered as an authentic interpretation of the boundary agreement even if deviations may have occurred or if there are some inconsistencies with maps (Ibid). The tribunal refers in this case to the ICJ Judgment in the Temple case (1962 ICJ Reports 34) and to Munch (1977) and Ress (1985).

3.4 Maps

Maps are complicated evidence, but have a valuable potential in case that recognized coordinates and pillars do not exist.

The basic value of maps is that they are referenced to the real world by a known coordinate system, that they are scaled, so measurements can be made on them, that they include geographic data about the landscape in the area, either natural or man made, that they make use of regular

language and names, as well as a recognized cartographic language (map symbols), and that they include the boundary on top of the reference data of the real world and the coordinate grid.

The basic problem of maps is that they are, usually, published by one country and they are not common to both States. This fact takes out from the maps a strong legal argument, which refers to a joint acceptance. Considering that states tend to produce maps which are in their favour, so that an official map may show, to a certain extent, the acceptance of the state, it can serve strongly an argument against the state which published the map, by obliging it to the interpretation shown on its maps. (ICJ, 1962, The Temple Case).

Typical problems for the joint use of maps are different languages, different coordinate systems and reference geodetic data, different cartographic projections, different names for the same places, different cartographic symbols and, especially relevant, different interpretations of the boundary line.

There are various parameters that define the adequacy of a map to serve as evidence in boundary disputes:

- The scale of the map: International standards and conventions define, usually, ranges of precision with reference to map scales. The larger the scale of the map, the higher is the resolution of the details and features on the map, and the higher is the expected accuracy of it.

One millimeter on a 1:10,000-1:20,000 map means 10-20 meters on ground with up to several meters of accuracy, while one millimeter on a 1:250,000 map means 250 meters on ground and around 100 meters of accuracy, which makes it irrelevant for disputes of several meters or even tens of meters. In many cases, especially in rural areas, existing maps were produced in the past, using low accuracy equipment and methods, and they are far from meeting even the present standards of small-scale maps.

The Egypt-Israel arbitration tribunal referred to the issue of scale, when it did not accept a map evidence in the case of absence of alleged remnants or other physical markers saying: "The Tribunal does not consider these map based indications to be conclusive since the scale of the map (1:100,000) is too small to demonstrate a location on the ground as exactly as required..." (Award of the Egypt-Israel Arbitration Tribunal, 29 September 1988, para. 182). On the other hand the tribunal says that "maps can be of some assistance, for instance when they show straight lines through a number of boundary pillars." (Ibid).

- The quality of the mapping data: This quality is analyzed by two parameters, the richness and density of the geographical features (due to rich or poor mapping or qualitative or poor cartographic selection of features), and the positional accuracy of the features on the map. These parameters are crucial with regard to the usefulness of the map. The quality of the map is decreasing in time, due to changes in the area, which increase the problem of update-ness of the map and the difference between the real world and the way that it is represented on the map.

- The presentation of the boundary line on the map: In areas of dispute, state maps are usually suspicious of favouring the approach of the state rather than presenting the positions of both sides. In intermediate situations there is a remark indicating the dispute. But there are additional problems with regard to the presentation of boundary lines. In many cases they are shown on maps in wrong places because of mistakes or because of poor mapping. The way to qualify the position of the boundary line on the map, after the qualification of the map itself, is by measurement of its turning points with regard to the map features. In the case of poor quality maps the result is different, and if one tries to transfer the data to an accurate new map or to ground, it will result in two different boundary lines, as an outcome of contradicting data from other sources, like a detailed description of the boundary line in the delimitation. This may be shown in the shape of the line or in the distances from recognized features.

Kadmon (1993) analyzed the depiction of the 1906 boundary between Israel and Egypt on 107 maps between the years 1906 and 1982, and referred to the maps which were submitted to the Tribunal dealing with the boundary dispute between the states. He found big differences due to variety of reasons, like geodetic transformation, cartographic projection, accuracy of mapping features, accuracy of the boundary line interpretation and depiction, scale problems etc. The result of his analysis is that maps are not reliable to be used as a sole evidence for the location of a boundary line. This was the reason for the Tribunal not to base its decision on maps but on field evidences. I compared many maps covering the same area during the years 1979-82 and found relative differences bigger than 500 meters between the depiction of the boundary line on historic maps due to the choice of the basis of comparison, either with reference to the coordinates or with reference to the position of recognized features.

These reasons undermine the legitimacy of maps as evidence. An example of a disqualification of maps is given by the Tribunal on the Beagle Channel Award (ILR 1977 Vol. 52:82). This approach is also reflected in the ICJ words in the Burkina Faso V Mali case (ICJ, 1986:562)¹. However, later on the Court did accept the map in the absence of other sources. "...where all other evidence is lacking, or it is not sufficient to show an exact line, the probable value of the IGN map becomes decisive".

Even an ambiguous definition in an agreement can have preference over a map. A big importance is given to the acceptance of the map by the two parties. On the other hand it is worthy to mention the acceptance of the map by ICJ in the Temple Case (ICJ Reports 1962) in spite of its poor quality.

Precedence should be given to the use of maps with regard to the following parameters: maps that were prepared close to the agreement by official authorities; maps of the parties that clearly

¹ Where the Court says: "... Map can still have no greater legal value than that of corroborative evidence endorsing a conclusion at which a court has arrived by other means unconnected with maps."

show the location of the boundary on an accurate topographical background; contemporary maps at the time of the agreement to illustrate the state of contemporary geographical knowledge etc.

3.5 Graphical Scheme or Layout

This is a graphic description, which may in certain cases show the boundary line, like a chart or a map but without a coordinate reference system, and, usually, with no accurate scale.

In old boundaries, a graphical description of a narrow strip, sometimes accomplished the boundary delimitation. Such graphical descriptions were, usually, drawn after a field reconnaissance or survey. They include the geographic information, which is incorporated in the boundary allocation or delimitation, and additional descriptive data, sometimes with regard to boundary pillars, if they had already been demarcated, and maybe with distances or configuration with regard to well known features.

In the extreme cases, these schemes were even called maps though not meeting map standards.

In the absence of better witness documents, graphical schemes like these, if prepared in the relevant period of time (close to the delimitation or demarcation) can add significant information for the geographic interpretation of old delimitations.

3.6 Verbal Delimitation

This is the very basic definition and description of the boundary. In the absence of all the more accurate, preferably joint, and later definitions of the boundary, there is always the reference verbal delimitation or even allocation. Its strength is in its originality and its guiding directive, that, actually, what ever came later has its roots in it. In addition, if all the later evidences fall legally this is the last station. In addition, in spite of any other evidence, even much stronger ones, the original verbal definition, which was born at the same time as the specific boundary, or maybe the State itself, usually during the colonial time, has a special value.

The verbal definition suffers usually from many weaknesses. First of all it is not accurate enough, so it can be interpreted in many ways. The geographic names and features, which are contained in it, change during time, and in many cases, are either not relevant, or cannot be recognized or traced after many years.

In addition, later interpretations, especially if demarcated, documented and accepted by both sides, are much stronger legally, even if they were based on misinterpretation. The behavior de facto in the relevant area is stronger legally than the documents, including the original verbal definition, according to the Uti Possidetis principle.

4. AN EXAMPLE TO THE ORDER OF PRECEDENCE OF BOUNDARY EVIDENCES - THE HISTORICAL LAND BOUNDARY NEAR THE GULF OF AQABA

The allocation of the 1994 International Boundary between Israel and Jordan , as defined in the Common Agenda, was 'with reference to the boundary under the Mandate'. Since the section of the boundary near Aqaba was demarcated in 1946 during the Mandate, the tracing of this demarcated section could serve for the reconstruction of the required reference. In fact, this process unveiled all the components which are included in our model. This is the reason that this case was chosen, as an example which illustrates the order of precedence of boundary definitions.

Background: The issue of land boundary between Israel and Jordan near the Gulf of Aqaba was raised during the peace negotiation in 1994 as a potential area of dispute.

The original verbal definition of the September 1922 Order in Council defined the boundary in this area by the following: “from a point two miles to the west of the town of Aqaba in the Gulf of Aqaba up the center of the Wady Arabah”.

This line had not been demarcated until the recent days of the British Mandate over Jordan in May 1946. Until 1946, interpretations of the undemarcated boundary line were shown on maps, (only small scale maps, 1:250,000 and smaller, were published during that period) beginning at the north western corner of the head of the gulf.

During the 1946 demarcation, the line was demarcated from the gulf northwards to a distance less than 4km, beginning at a point on the gulf close to the center of the northern shore of the gulf.

During 1946, the Survey of Palestine published two versions of a 1:250,000 map including the relevant area: One, showing the line beginning at the north western corner of the gulf. The other, showing the 1946 demarcated line beginning near the center of the gulf (two miles from Aqaba). The 1949 Armistice Agreement between Israel and Jordan included an attachment of the 1946 edition of the 1:250,000 pre-demarcation map, showing the line beginning in the northwestern corner of the gulf in favor of Jordan. This map was signed by the representatives of both states, Dayan of Israel and Jundi of Jordan.

The Armistice Agreement said that: "The Armistice Demarcation Lines... are agreed upon by the parties without prejudice to future territorial settlements or boundary lines..." (Article VI, paragraph 9).

The Armistice line is marked on the map along the international boundary, with a written indication “not demarcated”, though it was already demarcated at that area three years before the agreement was signed.

Since the Armistice Agreement in 1949, Israel continued to occupy the area according to the 1946 demarcation and to show it on maps accordingly. The line following the 1946 demarcation was shown also on Jordanian large scale maps.

Until the peace negotiations in 1994, and during the peace talks, the Jordanians claimed this small, but very important area (from the point of view of the city of Elat), according to the Armistice map.

Following is an example of the implementation of the model of order of precedence of boundary definitions as a methodological way of evaluating and presenting the evidences.

4.1 Precise Detailed Documentation

Following the 1946 demarcation, a documentation report was prepared. The documentation was signed by authorized representatives of both sides, the director of the survey of Palestine Mr. Mitchel and the director of Lands and Surveys of Trans-Jordan Mr. Walpole.

This documentation contains the following components: The description of the process of demarcation (including the costs), the field surveys, the computations, a list of coordinates of the boundary pillars and a large scale 1:25,000 chart. This chart shows the boundary pillars, the boundary line and all the relevant geographic features which had been mentioned in the 1922 definition: the last house in Aqaba in 1922 (to show the reference for the 1946 interpretation to the definition of the first point of the boundary line), the northern relevant shore of the Gulf of Aqaba and the Wadi Araba as interpreted in 1946, in the relevant sector, to define the end of the line in this sector.

Since the historical mandatory line was chosen as the reference line for the new international boundary, this official mandatory documentation signed by the authorized representatives of both governments, is actually sufficient from any point of view.

4.2 Existing Boundary Pillars

Photographs of pillar no.1, the first pillar which was demarcated in 1946, and which were taken in 1946, still exist and were presented. This pillar was hardly observed from the Israeli side in 1994, because of bushes and inaccessibility due to minefields, but a photograph of it as observed from the Jordanian side was published in 1994 in the Jordanian Newspaper Al Rai.

Those photographs of 1946 and of 1994 of pillar no.1, near the center of the northern shore of the Gulf, were very strong evidence, and would be first in order of precedence in the absence of the above-mentioned documentation. Figure 1 shows part of the 1946 documentation: coordinates, a pillar and a chart.

Documentation

As a result of an exchange of notes between the two Governments it was agreed that the application to the ground of the frontier defined in the Order of the High Commissioner dated 1st September 1922 shall be as follows :

- a) The point two miles West of 'Aqaba shall be measured from the most westerly house of 'Aqaba, and that for this purpose the town of 'Aqaba shall be deemed not to include the port and other military installations which were erected later than the date of the definition of 1922.
- b) Since the two-mile point does not coincide with the centre of the Wadi 'Araba, which is further to the West, a line shall be traced due North from the said point until the thalweg of the Wadi 'Araba is reached.

2. The boundary has been demarcated by 5 rubble masonry pillars. The pillars marking the ends of the demarcated frontier were fixed by a triangulation survey, and the rectangular coordinates, computed in the Palestine Transverse Mercator system, are :-

South Pillar ... Y (East) 147,525.52
 X (North) 883,920.33

North Pillar ... Y (East) 147,532.14
 X (North) 887,595.32

3. It is agreed that all pillars shall be maintained by the Trans-Jordan Government and that expenses incurred on repairs shall be borne equally by both Governments.

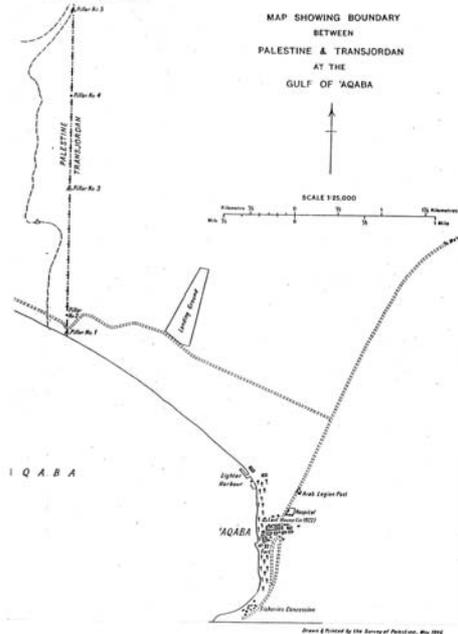
4. The frontier delimited on the ground is shown on the attached map signed by us.

W. Saeed
 DIRECTOR OF LANDS & SURVEYS,
 TRANS-JORDAN GOVERNMENT.

A. P. Mitchell
 DIRECTOR OF SURVEYS,
 PALESTINE GOVERNMENT.

Date *May 5th 1926*

Chart (map)



Boundary Pillar



Fig.1: Boundary Documentation, Pillar, Chart

In fact, a strip of land, on both sides of the 1946 demarcated line, was closed by fences on both sides, contained minefields and was not accessible to both sides, so 1946 mandatory demarcated sector was also a de facto boundary barrier from 1949 until 1994.

4.3 Maps

In spite of 1949 Armistice Map, which was signed by two authorized representatives of both sides, showing the Armistice Line beginning at the northwestern corner of the Gulf, almost all the maps, drawn since 1949 by the two states, show the international boundary line according to the 1946 demarcation, beginning at a point near the center of the northern shore.

All the Israeli maps, at any scale, show this line, calling it an international boundary, as well as Armistice Line between 1949 and 1967 and Cease Fire Line between 1967 and 1994.

Most of the Jordanian maps either at medium scale, like 1:100,000, or at small scales, including part of the tourist maps, show the 1946 demarcated line.

Even a large scale map of about 1:5,000, which the Jordanian team brought to the negotiations, showed the 1946 demarcated line.

The conclusion of the analysis of the maps of both sides shows that both states accepted de facto 1946 interpretation of the mandatory international boundary.

4.4 A Graphic Scheme or Layout

The chart, which was produced in 1946 after the demarcation, shows the only known attempt of large scale graphic interpretation of the definition of the 1922 OIC line.

4.5 The Verbal Definition

According to the 1922 verbal definition the boundary should begin at a point two miles west of the town of Aqaba. According to maps, drawings and photographs there was no actual town at Aqaba but a Fort and a few huts, and many trees from the north eastern corner of the gulf and southwards. The interpretation in 1946, to refer to a suspicious single hut to the west of Aqaba as representing the town of Aqaba for the interpretation of the 1922 boundary verbal definition, was much in favor of Trans-Jordan.

In any case, the point two miles west of that hut is near the center of the northern shore, while the north western corner of the head of the gulf is about 3.5 miles west of it.

5. CONCLUSIONS

The analysis of the example of tracing the mandatory boundary near the Gulf of Aqaba shows that all the evidences - the precise documentation, the existing boundary pillars, the map and the verbal definition - show the same results, which confirm with the tracing of the old demarcated boundary. But, the order of precedence shows the relative strengths of the evidences, which is important in case of contradiction between the evidences.

Since the above mentioned order of precedence is only a recommendation, it is recommended to specify this order in the original documents.

This recommendation was implemented in ANNEX I (a) paragraph C.3 of the 1994 Peace Treaty between Israel and Jordan:

".... This list of geographic and U.T.M. coordinates Shall be binding and shall take precedence over the maps as to the location of the boundary line".

As a result of the analysis and the model introduced at the first part of this article and of the case study of the 1946 demarcation of the boundary between Palestine and Trans Jordan we can see the importance of a model of order of precedence of boundary delimitations in documents and on the ground and especially the importance of a joint precise documentation of the boundary. This is a real contribution to the stability of the boundary for a short and long term period, enabling future boundary restoration, eliminating boundary disputes and thus contributing to peace all over the world.

BIBLIOGRAPHY

1. Adler R. (2001) Geographical Information in Delimitation, Demarcation and Management of International Land Boundaries, Boundary and Territory Briefing 3(4), IBRU, Durham.
2. Brown H. (1994) The Iraq-Kuwait Boundary Dispute: Historical Background and The U. N. Decisions of 1992 and 1993, 'IBRU Boundary and Security Bulletin 2 (3), October 1994', 66-80.
3. Cukwurah A.D. (1967) The Settlement of Boundary Disputes in International Law, Manchester.
4. Jones S.B. (1945) Boundary Making A Handbook For Statesmen, Treaty Editors and Boundary Commissioners, Washington D.C Carnegie Endowment For International Peace.
5. Kadmon N. (1993) Delineation of the International Boundary Between Israel and Egypt in the Taba Area – A Cartographic Evaluation, in: Studies in the Geography of Israel, Israel Exploration Society, Department of Geography, The Hebrew University, Jerusalem, pp. 50-70.
6. Munch (1977) Karten im Volkerrecht, Gedachtnisschrift fur Friedrich Klein, Munich, p. 344.
7. Ress (1985) The Delimitation and Demarcation of Frontiers in International Treaties and Maps Institute of International Public Law and International Relations in Tesseloniki, pp. 435-437.
8. Rushworth D. (1996) Mapping In Support of Frontier Arbitration, 'IBRU Boundary and Security' 4 (3) 57-60.
9. Rushworth D. (1997) Mapping In Support of Frontier Arbitration: Delimitation and Demarcation, 'IBRU Boundary and Security' 5 (1) 61-66.

10. Rushworth D. (1997-1998) Mapping In Support of Frontier Arbitration: Maps as Evidence, IBRU Boundary and Security **5** (4) 51-55.
11. Srebro H. (2005) A Process Driven Boundary Making Model: Generalizing the Case Study of the Gulf of Aqaba and the Aravah Valley, Ph.D. Thesis, Bar Ilan University.
12. Srebro H. Shoshani M. (2006) Towards a Comprehensive International Boundary Making Model, Proceedings of the XXIII FIG Congress in Munich, October 2006.
13. Treaty of Peace between the State of Israel and the Hashemite Kingdom of Jordan, 26 October 1994.

BIOGRAPHICAL NOTES

Dr. Haim Srebro is the Director General of the Survey of Israel, a co-chairman of the Israeli-Jordanian Joint Team of Experts, responsible for the delimitation, demarcation and maintenance of the International Boundary. He has been involved as a leading figure in all the boundary negotiations and demarcations between Israel and its neighbors since 1974.

Prof. Maxim Shoshany is Associate Professor in the Department of Geo-information Engineering in the Faculty of Civil and Environmental Engineering, Technion, Haifa. His research includes spatial analysis and Modeling with emphasis on utilising historical evidences from maps and aerial photography.

CONTACTS

Haim Srebro
Survey of Israel
1 lincoln st.
Tel-Aviv
ISRAEL
Tel. + 972 3 6231901
Fax + 972 3 5610866
Email:haim@mapi.gov.il
Web site: www.mapi.gov.il

Maxim Shoshany
Faculty of Civil & Environmental Engineering, Technion, IIT
Technion City
Haifa
ISRAEL
Tel. + 972 4 8292274
Fax + 972 4 8295708
Email: maximsh@tx.technion.ac.il