

THE CONTINENTAL SHELF

BY

M. W. MOUTON

Doctor of Law
Captain Royal Netherlands Navy



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The undersigned, Secretary General of the Institute of International Law, declares herewith that the text of this work is in conformity with the one which has been submitted to the Jury appointed for the attribution of the Grotius prize 1952.

Footnotes and Appendix added to the original text are printed in italics.

Geneva, July 10, 1952.

(*Signé*) HANS WEHBERG

(Article 19 of the "Règlement des Prix institués par M. James Brown Scott en mémoire de sa mère et de sa sœur Jeannette Scott".)

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*This work was awarded the Grotius Prize 1952
of the Institute of International Law*



BIBLIOTHEEK EN LEESZALEN
DER GEMEENTE ROTTERDAM

SPRINGER-SCIENCE+BUSINESS MEDIA, B.V.
1952

© Springer Science+Business Media Dordrecht 1952
Originally published by Martinus Nijhoff, The Hague, Netherlands in 1952
Softcover reprint of the hardcover 1st edition 1952
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Additional material to this book can be downloaded from <http://extras.springer.com>

ISBN 978-94-017-5671-6 ISBN 978-94-017-5966-3 (eBook)
DOI 10.1007/978-94-017-5966-3

TO MY WIFE

PREFACE

This study was submitted to "The Institute of International Law", for a competition. The subject was: "To make a critical study of the juridical position of the Continental Shelf and of the questions concerning the utilization of the sea covering it, of its soil and subsoil beyond the outside limits of the territorial waters".

The Introduction explains the author's conception of the subject.

The small figures in the text refer to the Bibliography at the end. French, Spanish, German and Dutch quotations, if not given in the original language, have been translated by the author.

The author is greatly indebted to all those who have given him their advice or have helped him in any other way.

Wassenaar, Holland

1 August 1952.

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Additional material from *The Continental Shelf*,
ISBN 978-94-017-5671-6, is available at <http://extras.springer.com>



INTRODUCTION

The continental shelf is the part of the sea-bottom and the soil underneath, which is covered by shallow waters, up to a depth where the slope of the sea-bottom increases noticeably in steepness, which fringes large parts of the continents, over varying distances from the coasts.

Although the continental shelf has had some attention of international lawyers at an earlier date, it came into the limelight of interest only recently. The first instrument concerning this recent development was the Treaty between the United Kingdom and Venezuela relating to the submarine areas of the Gulf of Paria, of February 26, 1942, but a real impetus to the development of a continental shelf theory was only given by the Proclamation of President Truman with respect to the natural resources of the subsoil and sea-bed of the continental shelf of September 28, 1945. This Proclamation was followed in a short time by declarations and decrees of other countries.

What is the problem involved?

Modern engineering skill has made it possible to exploit the minerals contained in the subsoil of the continental shelf. To extract oil, being the principle mineral concerned for the time being, installations have been built in the sea, carrying derricks. It is obvious that such installations are obstacles for navigation, particularly if built in considerable numbers and in places frequented by shipping.

Leakages, and worse still a blow-out, could cause damage to fisheries through pollution of the sea-water with oil.

As soon as these installations are being built outside the territorial sea of a particular State, the question arises, who has the right to do so, any State, or only the coastal State.

In some proclamations, declarations, and national decrees, referred to above, the mineral resources in the sea-bed or subsoil

of the continental shelf have been claimed by the coastal State. In other instruments sovereignty over the continental shelf was claimed and even over the waters covering the shelf. Did these States have any right to do so, and what is the significance of such unilateral acts in International Law? The principle of the high seas is interfered with as far as navigation and fisheries are concerned. Here we are in the middle of a most fascinating subject, questions besiege us, problems dawn on our minds, the possibility of serious conflicts becomes obvious.

Oil reserves becoming smaller, exploitation of new fields is in the general interest of mankind, but so is an unhampered navigation on the high seas connecting the continents.

The growing world population needs an increasing food supply and one of the sources of this supply, fisheries, will be intensified. This will enlarge the danger of exhaustion and ways have to be found to prevent depletion of this valuable source of proteins.

Again President Truman took the lead with a Proclamation of the same date as the one referred to above, establishing conservation zones. Again his example was followed by other countries, although in many cases on a more drastic scale. Some instruments went as far as proclaiming the sovereignty of the coastal State over sea areas extending to a considerable distance from the coast irrespective of the existence of a continental shelf.

Can a State claim such rights, rights not only on the mineral resources outside its territory, including of course its territorial waters, but also on the biological resources, for instance in the waters covering its continental shelf? Here again questions of the utmost importance. The world needs these resources, and a solution has to be found to regulate exploitation activities in such a way, that a rush and grab policy will be forestalled, that each part of the world population gets its share, that exhaustion and conflicts will be prevented.

These problems, where often traditional rights are involved, are not easy to solve. Not a single person will be able to find a conclusive answer to all these questions. But each contribution of human thought may help. Several scientific associations and last but not least the International Law Commission, dedicated a

lot of thought and time to the subject. There are enough sources of conflict already in the world. Let us try to tackle this young problem together and lead it into channels where a peaceful development of the exploitation of these so much needed resources will be possible.

In the following pages a number of aspects of the subject will be discussed.

This study starts from the premiss that the juridical position of the continental shelf can only be spoken of in the sense of "de jure constituendo" or in that of "de lege ferenda". The sequence we have chosen is as follows.

First of all we attempt to give a definition of the notion "continental shelf". Then we will investigate which subjects come under the continental shelf theory. As there appears to be difference of opinion whether Fisheries are related to the continental shelf we have thought fit to start with the Fisheries, fishery rights being one of the rights derived from the principle of the freedom of the seas. We will deal with navigation immediately afterwards because this subject comes under the same principle. After that we will deal with the main subject, the mineral resources, and the means of their exploitation.

The first Chapter deals with the continental shelf as a scientific notion and in the light of the use which is made at the moment of the shelf, we will investigate whether this scientific notion as understood by geologists, oceanographers and geographers, can be used in law. A description of the main features is given and the relevant paragraphs of several legal instruments relating to the description and delimitation of the continental shelf are critically analyzed.

The second Chapter, on Fisheries, starts with a biological discussion on the geographical distribution of fish, in order to answer the question of the relation between continental shelf and fisheries. Again the relevant legal instruments are critically discussed and an attempt is made to base legal provisions on facts, because as we will see, a certain discrepancy between facts and proposals made for regulations has existed in the past. Special attention has been given to bottom-fisheries and sedentary fisheries, and the possible consequences of oil-exploitation for the fisheries.

The next Chapter deals with the other right derived from the principle of the freedom of the seas, i.e. navigation. An attempt is made to reduce criticism relating to the interference with free navigation to the right proportions. Some deviations were made into the fields of the theory of territorial waters and contiguous zones, to elucidate the discussion on the high seas. Pipelines as compared to telegraph cables are viewed in the light of International Law.

The fourth Chapter deals with the declarations and decrees in so far as mineral resources are concerned. A great deal of attention is dedicated to the nature of the rights which States may claim on the soil and subsoil and especially on the minerals contained therein. In particular reference is made to mine law in different countries and certain suggestions as to the application of mine-law principles to the subject under discussion are made.

In order to understand what oil-exploitation in the sea involves a Chapter is dedicated to offshore drilling technique. Some other mining techniques not interfering with shipping and fisheries are mentioned.

In the last Chapter salient points of the previous Chapters are summarized. Some special aspects are discussed, for instance the consequences of war and the question whether international control is desirable and possible.

Some suggestions are made concerning ideas and proposals which may be of some use for future international deliberation. The trend of the study is directed towards international agreement as the only means to solve international problems.

Where the method is concerned, we are aware of two peculiarities which may give rise to criticism if not explained beforehand.

One is, that we have introduced more references to other sciences than usually will be found in a treatise on a chapter of International Law. We believed, however, that in a new field of law, it was justified to investigate the facts on which the whole conception of the continental shelf-theory rests. We felt that it would serve a good purpose to dedicate some space to the experts in other branches of science and to listen to what they said on these facts, preferably in their own words in order to avoid misunderstanding and misinterpretation of these facts, which unfortunately has already taken place. Our investigation

led us as we have said above to the conclusion that there existed a certain amount of discrepancy, for instance between biological facts and theories advanced in International Conferences concerning fishery rights.

The other is, the great number of quotations. This, however, has been done consciously. We know that in International Law books or articles often too much copying takes place. However, in a new field of law, opinions of authors are more valuable than in older fields, where the practice of States and the Treaties are more important. We prefer to quote as fully as possible. The reader can see for himself, instead of either having to look it up in the source or believing us for having rightly given the gist of the author's idea.

We quoted extensively also to avoid the passages to be wrenched from their context. One cannot solve a new problem alone. One has to put the opinions next to each other, in their original wording, in order to be able to attain a certain amount of progression in thought and give the reader the chance, without forcing him to go through all the sources, to compare the arguments and judge whether he can or cannot agree with the conclusions we have produced.

A scientific work should be a most honest and constructively critical contribution. Only then it has value in the solving of a problem. This we have tried.

The first duty of all who work in International Law is to promote world-peace. We believe that particularly when working in a field of International Law so strewn with possible conflicts, one should be aware of this great responsibility.

CHAPTER I

ATTEMPT TO DEFINE THE CONTINENTAL SHELF

SECTION 1. GENERAL IDEA OF THE NOTION "CONTINENTAL SHELF"

The notion "continental shelf" is of purely geological, geographical and oceanographical origin. What do geologists and other scientists mean when they speak of "the continental shelf" (le plateau continental, der Kontinentalsockel)? From the middle of the last century onwards an increasing number of soundings in the seas and oceans have been carried out for scientific as well as practical purposes (shipping and telegraph cables).

One of the outstanding features of the sea-bottom relief was the fact that going from the shore towards the sea, the soundings showed that the depth increased slowly to a certain figure, not everywhere the same, but let us say for the time being about 200 metres, whereafter the depth increased more rapidly. In other words, generally speaking, it was found that the land shelves away to the sea with a small angle or gradient to an average depth of 200 metres, after which the gradient increases rather rapidly to a steeper slope going down to ocean-depth. The isobath of 200 metres forms in this simplified picture an edge.

The part of the sea-bottom between the shore and this edge is called the continental shelf. To quote Krümmel ¹, I, p. 103-104: "The need to give a special name to the framelike rim or margin of the continents with their long, sometimes narrow, sometimes wide but hardly ever completely failing shallow-water banks, was first (1887) felt by Hugh Robert Mill, and for that purpose, the notion *continental shelf* was used".

The part between the edge and the ocean-bottom is called the continental slope. To give an idea of the extent and the geographical form of the continental shelf a chart is given, which shows clearly the great differences in width of the continental shelf, for instance between the east and the west coast of South America, or between the coast of China and that of Spain and Portugal. In figures, quoted by Umbgrove², p. 99, the shelves all over the world cover 27,500,000 square kilometres, or 7.6 per cent of the surface of the oceans. He makes however a distinction between inner shelves and outer shelves, the latter covering a surface of 9,900,000 square kilometres, or 3.1 per cent of the ocean surface.

He writes, p. 98,: "Generally the shallow platforms bordering the continents are classified in two categories, viz. the inner and the outer shelves. The first group comprises such regions as the shelf of the North Sea and the Sunda Sea. Bathymetric charts show them to be furrowed by river-like trenches. And indeed, in the two examples just mentioned their sub-aerial origin as rivers extending over these regions during low stands of the sea-level in Pleistocene times was clearly demonstrated by data furnishing converging evidence. Their course can be followed towards the debouchement of present-day rivers. Moreover, the frequent finding of the remains of large vertebrates as far as the Dogger Bank shows the North Sea to have been a land area in the near past.

In the case of the Sunda-shelf the congruence of such animals as fresh-water fishes clearly proves e.g. the rivers of western Borneo and eastern Sumatra to have been connected in sub-recent times. The shelf of the Barents Sea is considered to belong to the European continent . . .". Concerning the Sunda Sea Molengraaff³ wrote earlier, p. 274: "By the beginning of the ice-period the sea regressed as a result of the fixing of great quantities of water in the pleistocene ice-caps and its level was then at least 40 fathoms (72 metres) lower than nowadays". (In a note he remarks that 40 fathoms is a conservative estimate, probably too low. Penck's estimate was 100-150 metres. We add that Umbgrove², p. 105, estimates "the amount of the lowering of the sea-level at the time the ice-sheets reached maximum size . . . at 75 metres, possibly as a lower limit 90

to 100 metres"). "A big area became dry, Sumatra, Borneo and Java were connected with each other and with Malacca into one united country". Molengraaff then describes how in that plain, water was collected from the mountain ranges bordering it. The rivers of Sumatra and Borneo were branches of a big river which debouched in the China Sea. The former course of these rivers, partly as continuation of the existing one's, can be followed by soundings showing the drowned river valleys, or is demonstrated by tin-ore deposits in old river beds outside the isle of Sinkep, as we will see later.

After the ice-period, the sea-level started to rise as the ice-caps on higher latitudes melted. The Sunda-plain was inundated and forms the so-called Sunda-plat ^a with an average depth of 50 metres.

This, a little more detailed, description of one of the "inner shelves" was necessary as we will see. The distinction between inner shelves and outer shelves, made by Umbgrove ^b is, in our opinion, of great importance for the subject we are dealing with. He leaves, in his article on the origin of continental shelves ⁴, p. 250, and in his book ², p. 99, "the origin and history of the inner shelf regions . . . out of consideration . . . *since they do not belong to the marginal zone proper of the continents*".

It seems that he does not comprise the inner shelves under the notion "continental shelf". In other words, certain shallow terraces, belong geologically speaking, rather to the continental masses proper than to the part which geologists call the continental shelf. In that train of thought the actual continental shelf outside the North Sea would start somewhere above the Dogger Bank and finish at the edge of the 100-fathom line running along the depression off the Norwegian coast and further round the Shetland Islands, whereas the actual continental shelf outside the Sunda Sea would start somewhere on the border of the South China Sea. Kuenen ⁵ does not seem to make this distinction.

^a Sunda-plat = Sunda-shelf.

^b Also Krümmel ¹, p. 105, makes a similar distinction when he speaks of "echte oder Randschelfe" (real or margin-shelves) and „falsche Schelfe" (false shelves) such as "Binnenschelfe" (inner shelves) of which he mentions those in the Baltic, Persian Gulf and the Hudson Bay, and the Aussenschelfe (outer shelves), but here in the sense of "loose" from the continents such as Farøer- or Iceland-shelves or freely situated banks like the Seychellen-Bank.

He speaks, however, p. 104, about insular shelves, referring to the belts of shallow water, which skirt the larger islands.

Must we assume that there is a continental shelf in a wide sense of all undersea terraces to a maximum depth of 200 metres, and a continental shelf *stricto sensu*, i.e. the margins of the continents directly facing the ocean? Has any distinction been made by Governments or lawyers when the continental shelf became a subject of governmental proclamations or decrees or juridical publications or discussions? To mention a few examples: First of all, in which way did proclamations refer to the continental shelf? The Proclamation by President Truman of September 28, 1945, (for Proclamations see Chapter IV) only used the term "continental shelf". In a Press release of 28 September, 1945⁶, a depth limit, namely the 100-fathom isobath, was mentioned. The Declaration of the President of Mexico of 29 October, 1945, mentions "the continental shelf, which is delimited by a two-hundred-metre isobath". The Decree Law No. 803 of 2 November, 1949, of Costa Rica refers to the submarine platform or the continental and insular shelves adjacent to the continental and insular coasts of the national territory, at whatever depth it is found. The Congressional Decree No. 102 of 17 March, 1950, of Honduras uses the same wording, adding however "and whatever its extent". The Royal Pronouncement of the Kingdom of Saudi Arabia with respect to the subsoil and sea-bed of areas in the Persian Gulf of May 29, 1949, speaks of those areas of the Persian Gulf seaward from the coastal sea of Saudi Arabia but contiguous to its coasts. The boundaries of such areas will be determined in accordance with equitable principles by our Government in agreement with other States having jurisdiction and control over the subsoil and sea-bed of adjoining areas.

The Proclamation of the Bahrain Government of June 5, 1949, promises a similar limitation.

We notice that in the instruments of the Western Hemisphere the continental shelf is mentioned with or without further delimitation. In the Decrees of Costa Rica and Honduras the term "insular shelf" is used. In the Saudi Arabian Pronouncement, however, no continental shelf is mentioned. Turning to discussions and publications we find the following explanation.