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Thank you.



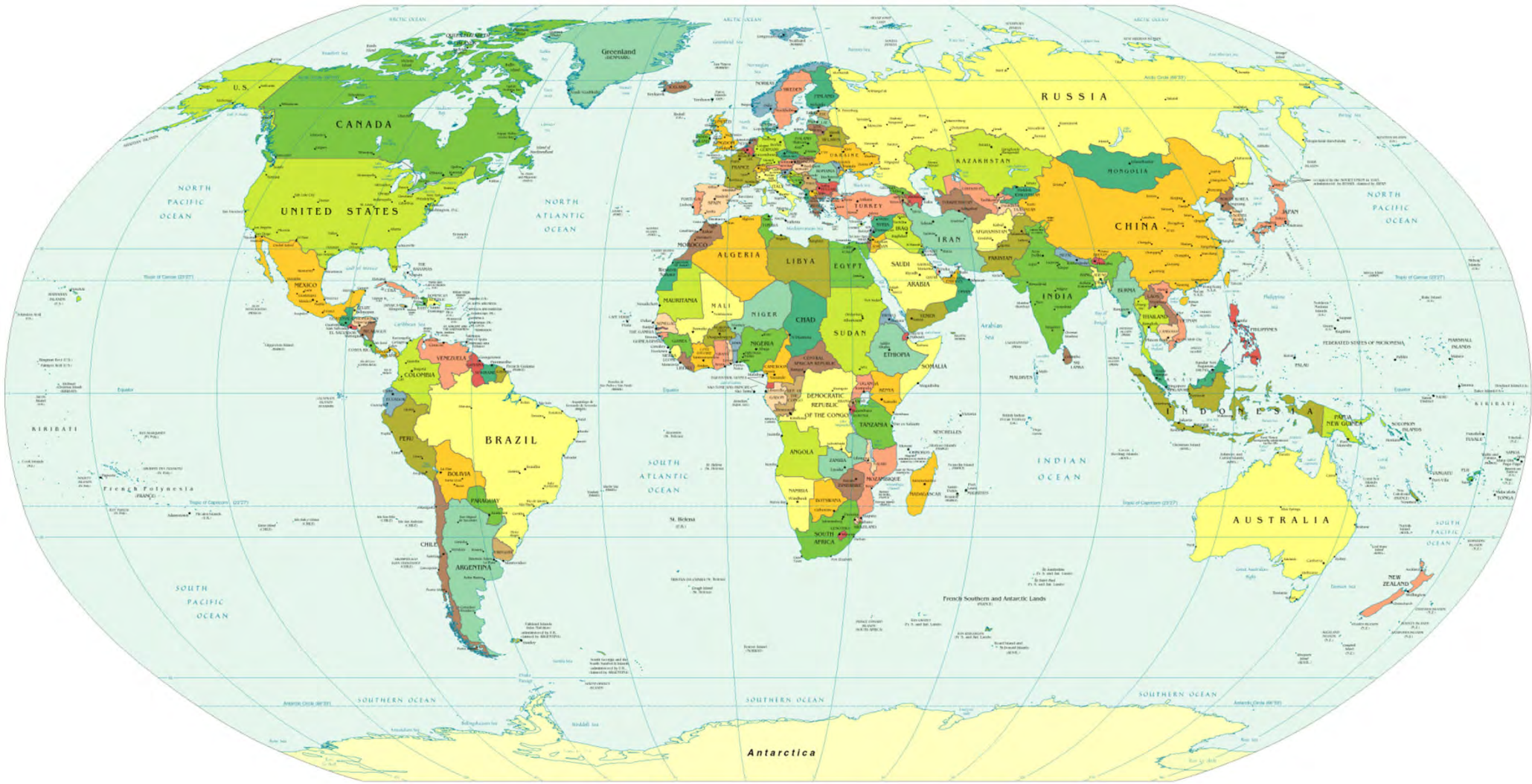
Principles of Boundary Demarcation & Maintenance



Martin Pratt

bordermap consulting

Geographical intelligence for international
boundary-making and dispute resolution



The unstable world political map

- 770 territorial changes 1816-1980 (Goertz and Diehl)
- 31 new states since 1990
- 158 territorial disputes 1950-1997 (Blake)

Africa	41	East & Southeast Asia	22
Americas	25	Middle East	21
Central & South Asia	18	Europe	31
- 39 boundary/sovereignty disputes submitted to third-party adjudication since 1980
- c. 50% of maritime boundaries still to be delimited

The 'razor's edge'

“Frontiers are indeed the razor's edge on which hang suspended the modern issues of war or peace, of life or death to nations.”

Lord Curzon of Kedleston

Viceroy of India 1898-1905 and British Foreign Secretary 1919-24

1907 Romanes Lecture, Oxford

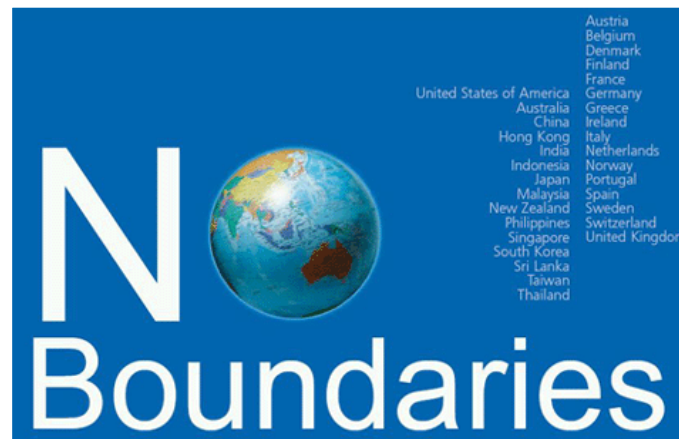
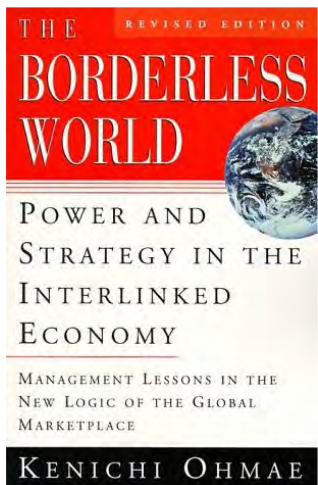


The 'borderless world'

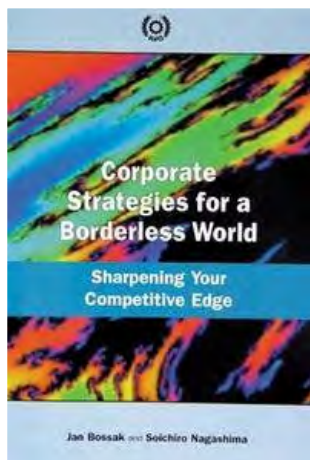
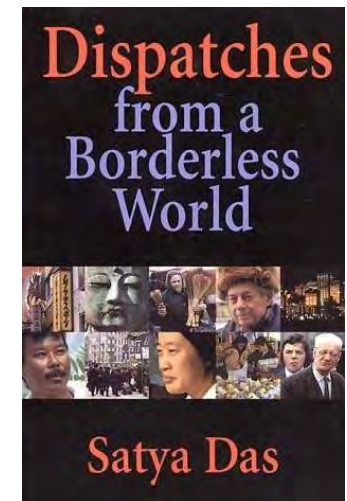
“You live in the age of interdependence.

Borders don't count for much or stop much, good or bad anymore.”

Bill Clinton, Harvard University, November 2001



CSK UOB
GLOBAL
Equity Yield Fund



'Schengenland'

Countries

- EU - Yes/Schengen - Yes
- EU - No/Schengen - Yes
- EU - Yes/Schengen - No



The not so borderless world...



Israel-Palestine



India-Pakistan



Mexico-USA



Bangladesh-India



South China Sea



Moldova-Romania

The not so borderless world...

“Without borders, we don’t have a country”

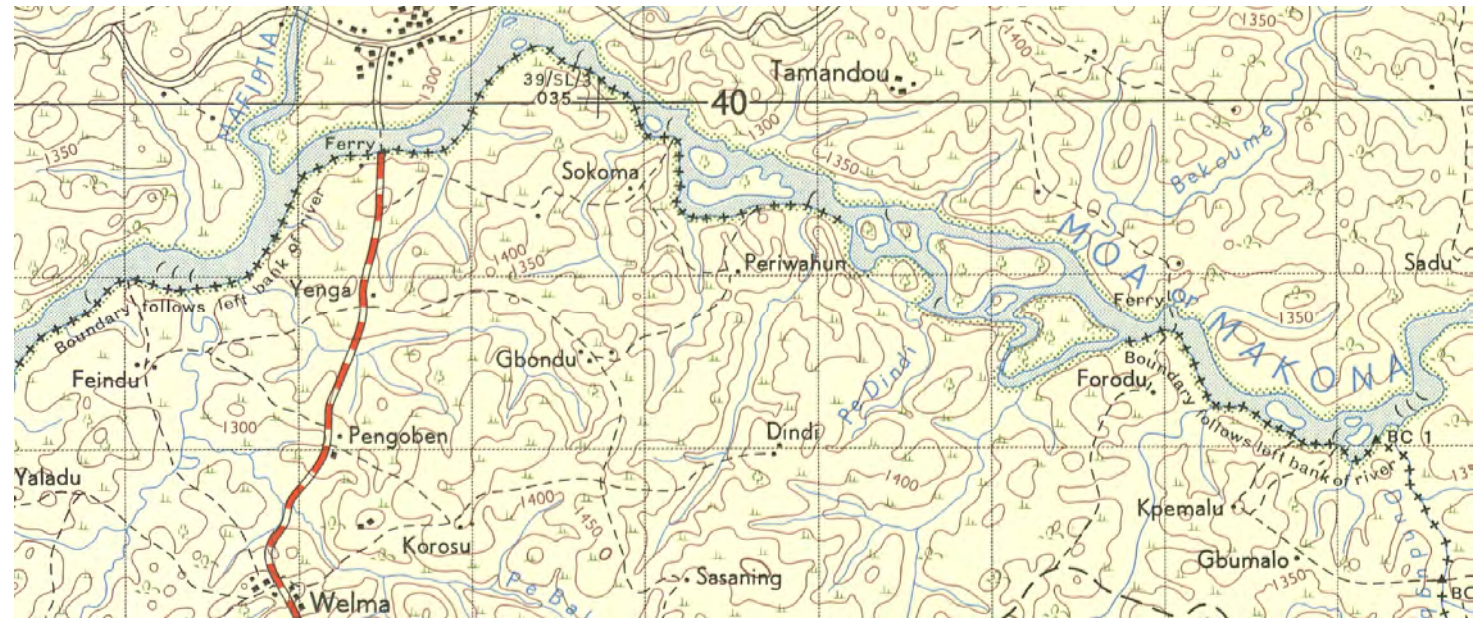
Remarks by President Trump at Law Enforcement Roundtable on MS-13, 6 February 2018

(www.whitehouse.gov/briefings-statements/remarks-president-trump-law-enforcement-roundtable-ms-13)

Israel-Palestine



Guinea-Sierra Leone: Moa/Makona river



Boundaries still matter

Clearly-defined and well-managed boundaries remain vital for:

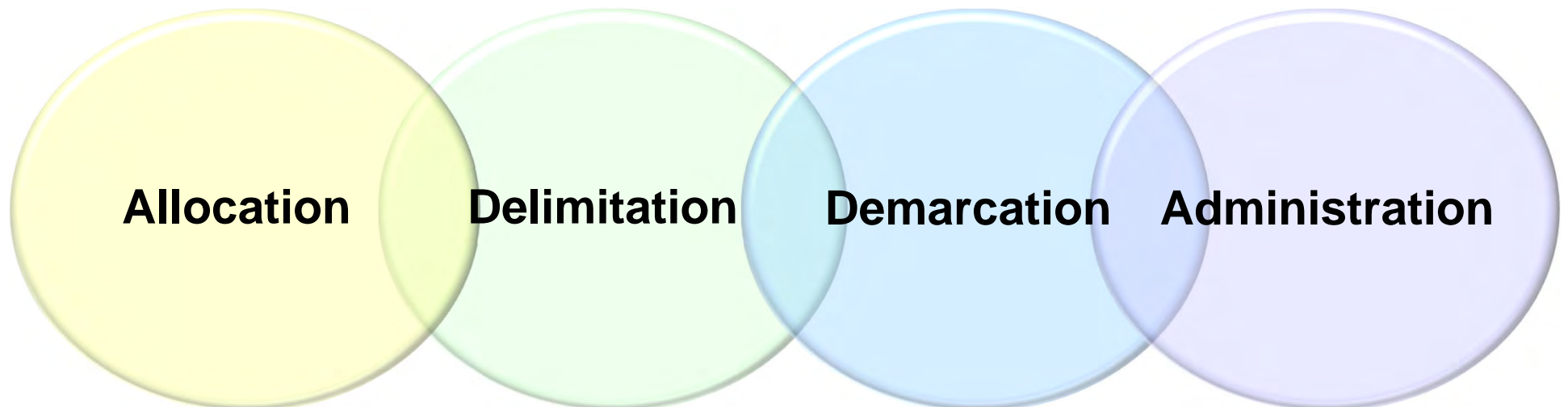
- National security
- Good international relations
- Efficient use of resources
- Effective local administration
- Borderland prosperity

Boundary-making

Thomas Holdich (1916) *Political Frontiers & Boundary-Making*

Stephen B. Jones (1945) *Boundary-Making: A Handbook for Statesmen, Treaty Editors and Boundary Commissioners*

(<https://www.wshein.com/catalog/1359/>)



Delimitation

- An agreed definition of the course of a boundary, usually in a legally-binding instrument such as a treaty
- Aim: To provide a mutually-acceptable, unambiguous definition of the boundary.
- Problem: Many international boundaries were initially delimited when limited geographical knowledge meant that an unambiguous definition was impossible to achieve

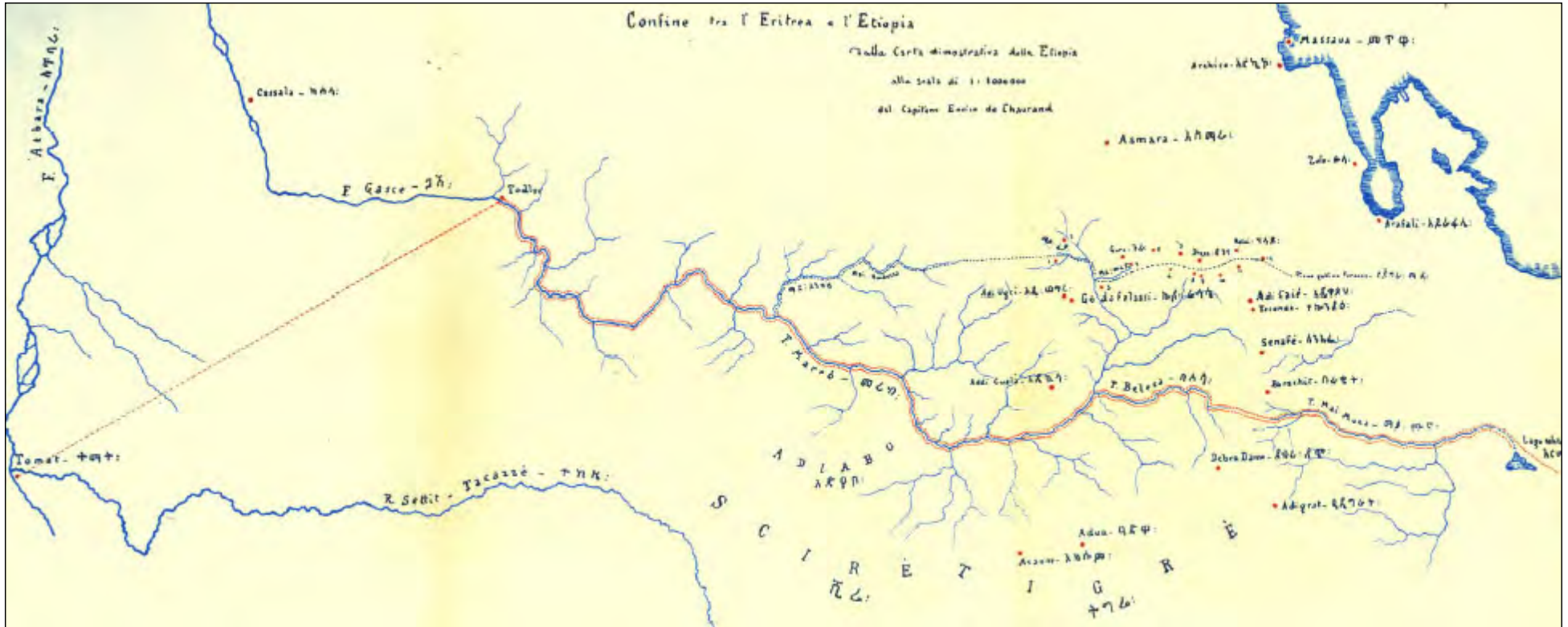
Imperial boundary-making...

“[We] have been engaged in drawing lines on maps where no white man’s foot ever trod; we have been giving away mountains and rivers and lakes to each other, only hindered by the small impediment that we never knew where the mountains and rivers and lakes were.”

Lord Salisbury, 1890

Eritrea-Ethiopia boundary treaty, 1900

“The line Tomat-Todluc-Mareb-Belesa-Muna, traced on the map annexed, is recognized by the two Contracting Parties as the boundary between Eritrea and Ethiopia.”



Demarcation

- The physical marking of a boundary on the ground

Aims:

1. To improve the quality of the delimitation

Demarcation to improve delimitation

Many early delimitation agreements anticipated that demarcators would adjust the boundary to reflect realities on the ground.

“The line from the junction of the Setit and Maieteb to the junction of the Mareb and Mai Ambessa shall be delimited by Italian and Ethiopian delegates, so that the Canama tribe belong to Eritrea.”

Ethiopia-Italy (Eritrea) treaty, 1902

“From Ghat to Tummo, the line will be determined after the crest of the mountains which stretch between these two localities, all the while attributing to Italy the direct lines of communication between the same localities.”

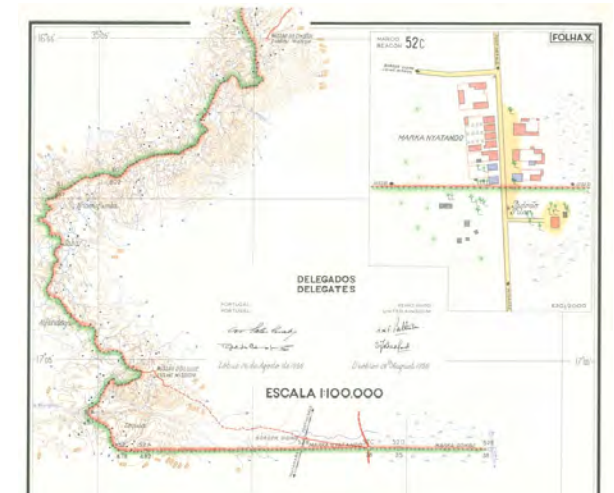
France (Algeria, Niger)-Italy (Libya) arrangement, 1919

“The Commissioners shall have the authority, generally, to make such minor rectifications, and adjustments, to the ideal watershed as are necessary to avoid the troubles which might arise from a literal interpretation of the treaty”.

Agreement respecting the Appointment of a Commission for the Demarcation of the Katanga (DR Congo)-Northern Rhodesia (Zambia) Boundary, March 1927

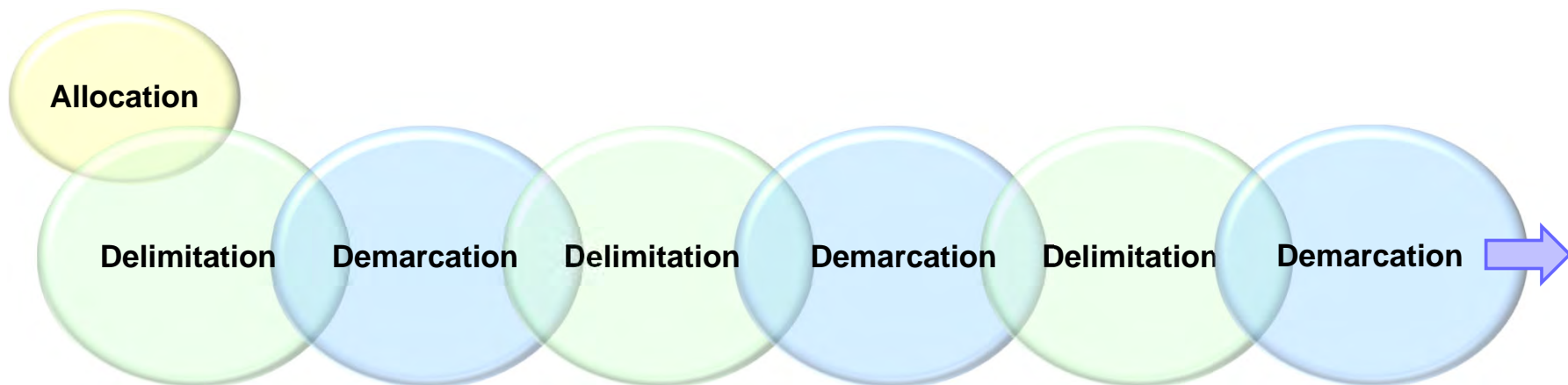
Demarcation to improve delimitation

- Demarcation reports and maps have frequently been annexed to earlier delimitation treaties or otherwise accepted as part of the formal definition of the boundary.
- Boundary definition can (and should) be improved over time through ongoing delimitation, demarcation and maintenance activity.



Malawi-Mozambique Boundary Commission, 1956

Developing the boundary-making model



Demarcation

- The physical marking of a boundary on the ground

Aims:

1. To improve the quality of the delimitation
2. To make the boundary sufficiently visible to meet the practical needs of the two states

Potential problems arising from boundaries which are not clearly understood on the ground

- Encroachment of settlement / land use across the boundary
- Disputes about land ownership / resource entitlement
- Development of perceived 'no-man's land' areas
- Law enforcement uncertainty

Making the boundary visible



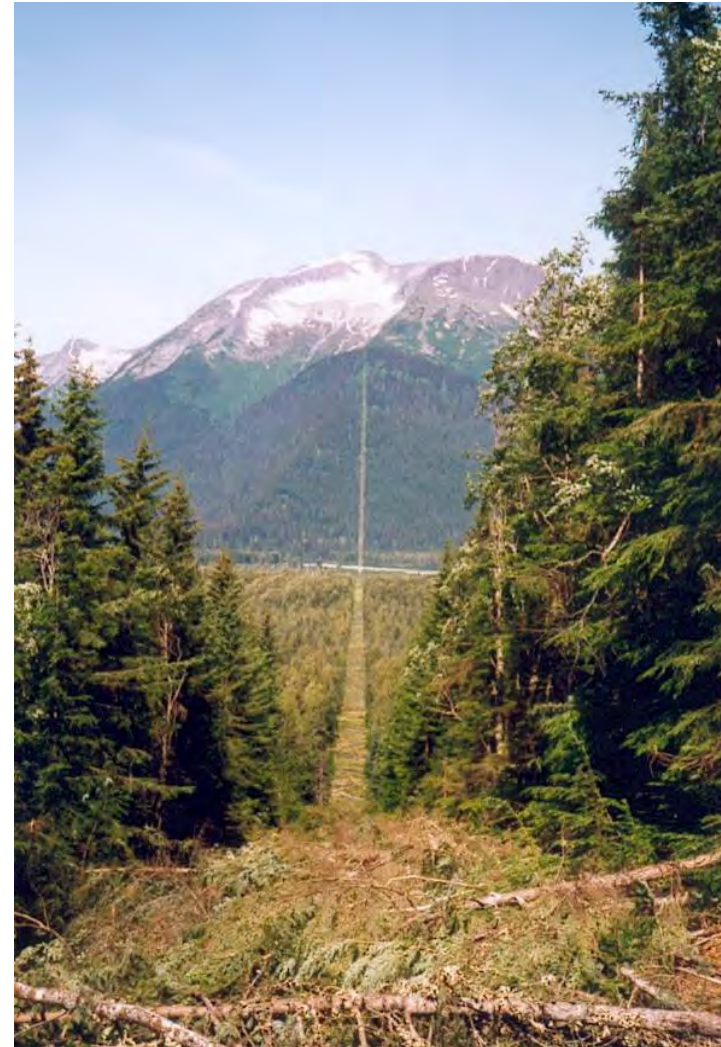
Brazil-Venezuela

Photo courtesy of Dauberson Monteiro Da Silva



Israel-Lebanon

Photo courtesy of Miklos Pinther



Canada-USA

Photo courtesy of Al Arsenault

Making the boundary visible - and sealed



India-Pakistan



Mexico-USA



Malaysia-Thailand

Changing practice in boundary demarcation

Alaska-Canada 1910-13



<http://bit.ly/alaska-canada>

Changing practice in boundary demarcation

Iraq-Kuwait 1992



Photos courtesy of Miklos Pinther

Changing practice in boundary demarcation

Saudi Arabia-Yemen 2001-06



Photos courtesy of Jochen Petring, Hansa Luftbild

Helicopters not essential!



Photo courtesy of Roman Meyer



Photo courtesy of Ouyang Yujin

Maintenance required!

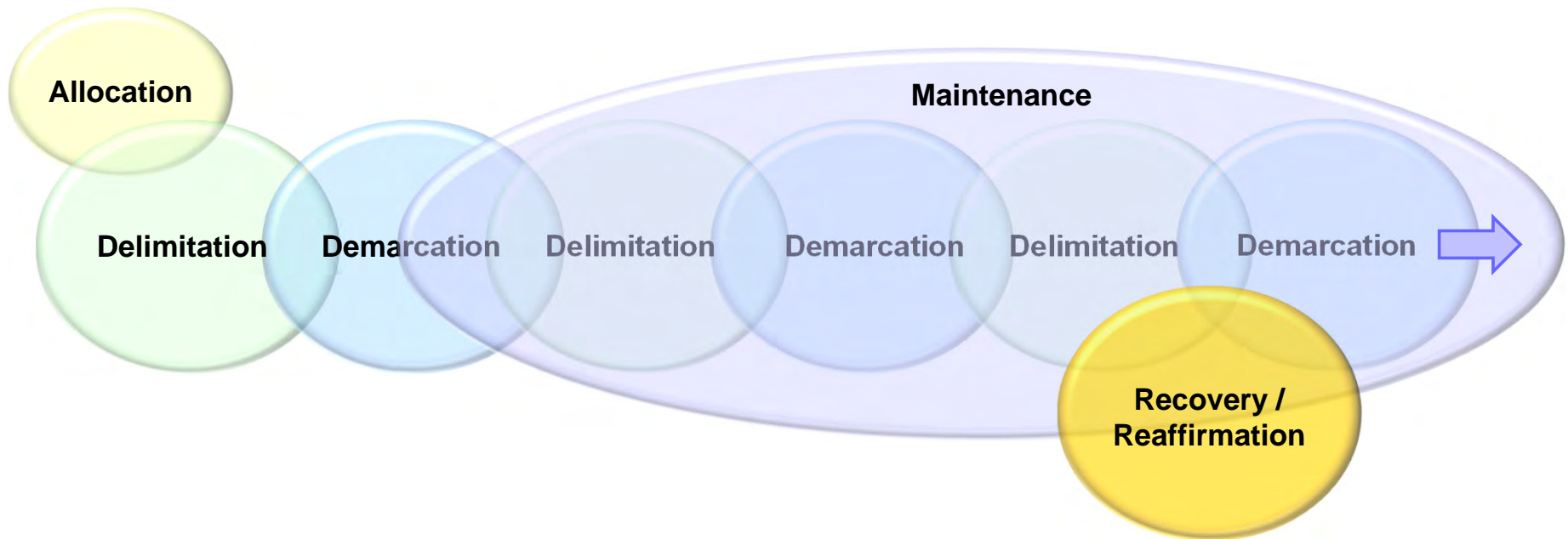


Photos courtesy of Royal Thai Survey Department

Keeping the boundary visible



Developing the boundary-making model



Recovery: locating as accurately as possible the alignment of a previously delimited / demarcated boundary.

Boundary recovery and reaffirmation



Photo courtesy of Roman Meyer

Fieldwork in boundary recovery

Cameroon-Nigeria



Photos courtesy of Alastair Macdonald

Fieldwork in boundary recovery

Israel-Palestine

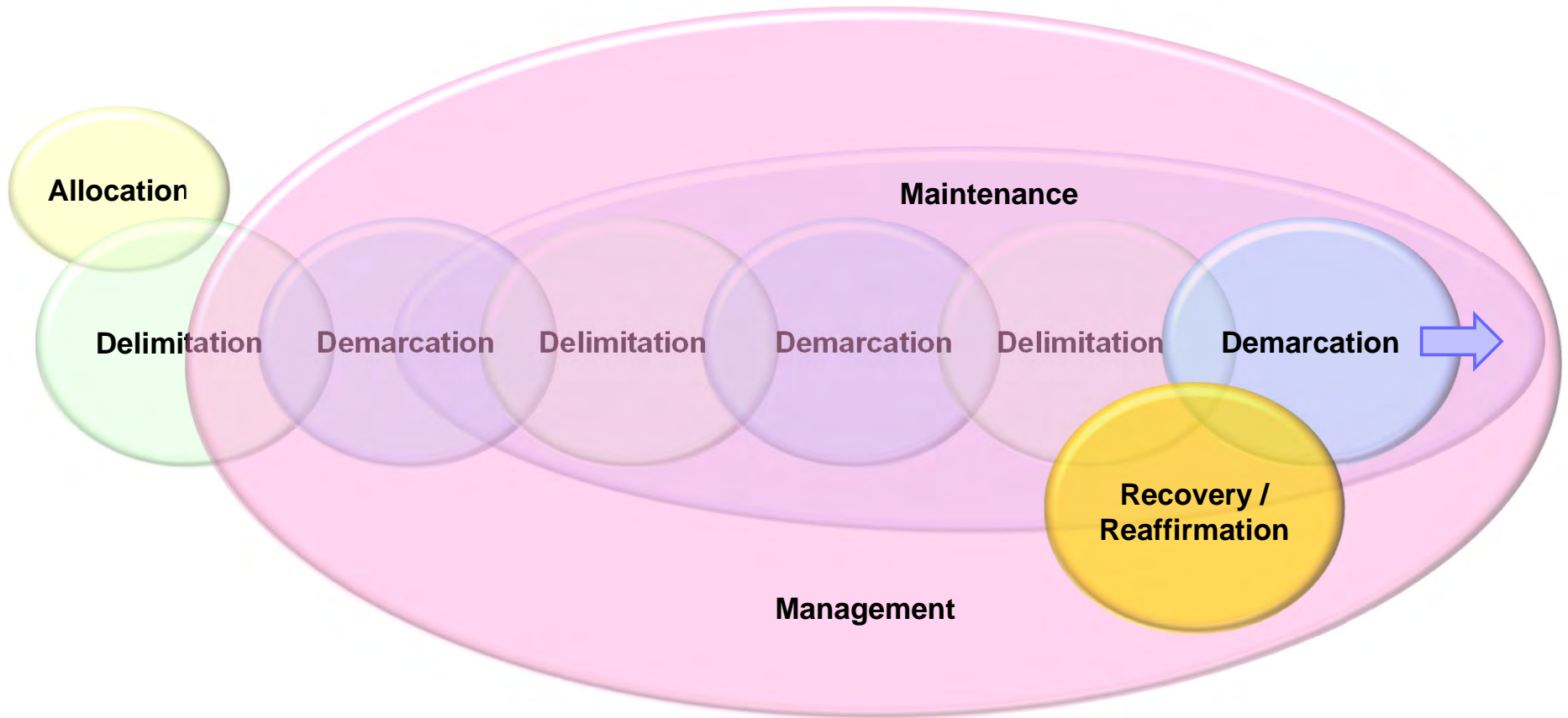


Boundary reaffirmation

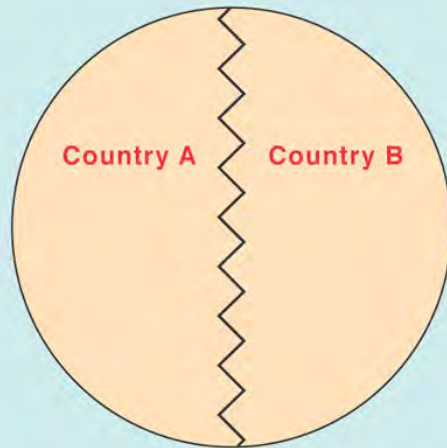


Photo courtesy of Roman Meyer

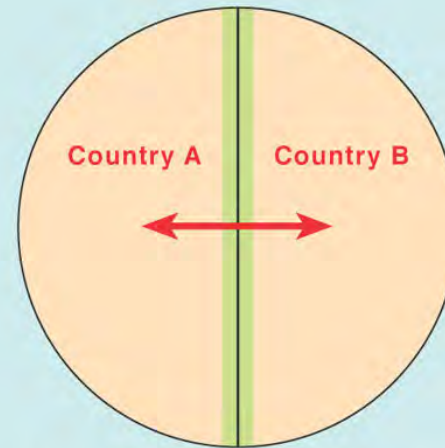
Developing the boundary-making model



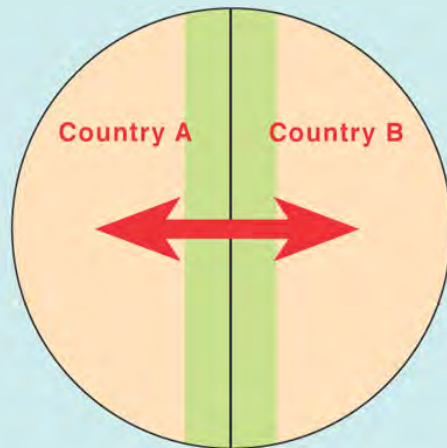
Martinez's model of borderland development



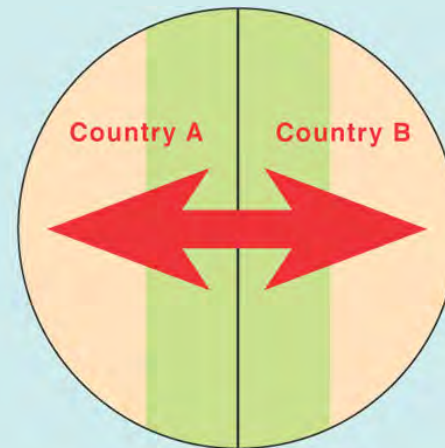
ALIENATED BORDERLANDS



CO-EXISTENT BORDERLANDS



INTERDEPENDENT BORDERLANDS



INTEGRATED BORDERLANDS

(after O.J. Martinez, 1994)

Major river boundaries



Perspectives on river boundaries 1

“The position of the river is unmistakable, no survey is required to identify or describe it”

Lord Curzon of Kedleston, 1907

“The selection of natural features such as streams and rivers has many advantages, not the least of which is that far fewer boundary pillars are required.”

Edward Goschen, British diplomat to German counterpart, 1908

River Tweed (England-Scotland)



River boundaries in Africa



Endeli (Eritrea-Ethiopia)



Mbomou (CAR-DRC)



Komadugu Yobe (Niger-Nigeria)



Congo (Congo-DRC)

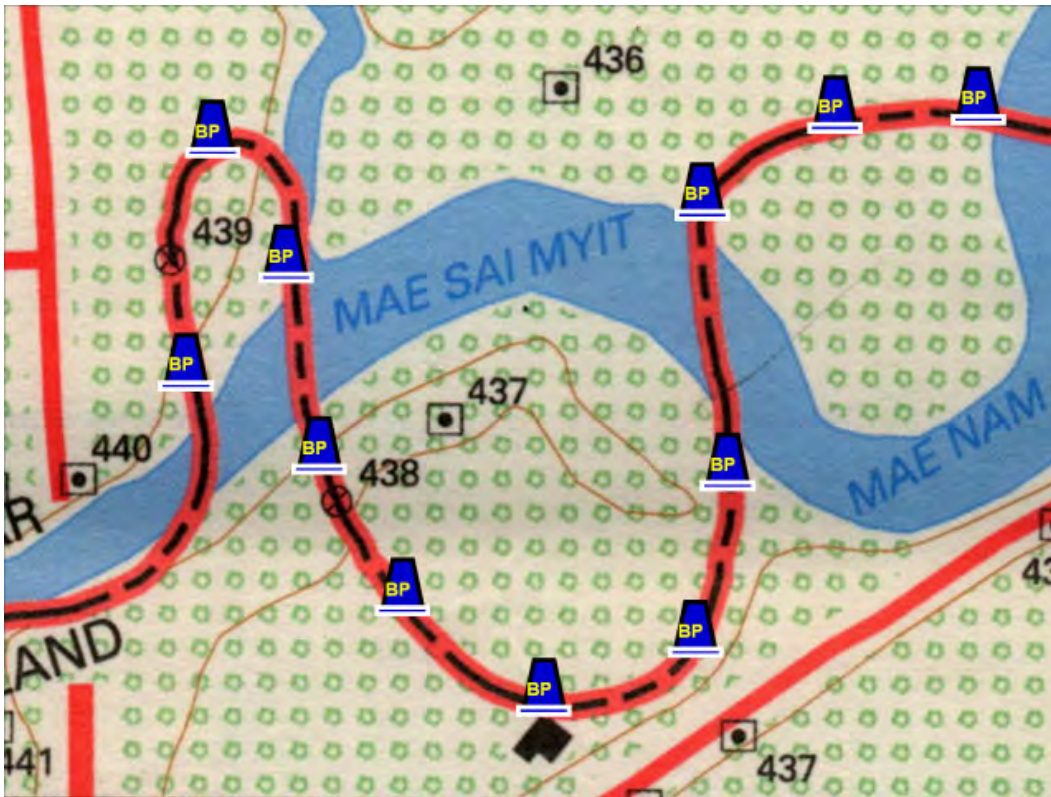


Moa/Makona (Guinea-Sierra Leone)



Orange (Namibia-South Africa)

Demarcation of former river channel Myanmar-Thailand



Maintenance of river channel

Guatemala-Mexico (Suchiate River)



Photo courtesy of Alejandro Reyes Huerta

Perspectives on river boundaries 2

“It is not merely because rivers change their courses or because their waters rise and fall that they provide awkward boundary markers; they necessarily of themselves provide no boundary line but only a boundary zone.”

Judge Stephen, High Court of Australia, 1980

“It is perhaps unnecessary to point out that these problems of marking, maintenance, and administration sum up to an admonition that river boundaries be avoided wherever possible.”

Stephen Jones, 1945

Transboundary protected areas

2007: 3,043 TBPA_s

Region	Area, km²
North America	1,511,627
Central and South America	1,424,698
Europe	188,153
Africa	931,618
Asia	570,506
Global	4,626,602

Source: UNEP-WCMC



www.tbpa.net



http://www.eoearth.org/article/Transboundary_protected_areas

Asking the right questions

- ~~Is the boundary delimited and demarcated?~~
- What needs to be done to ensure that the boundary is unambiguously delimited and appropriately demarcated?

The most appropriate form of demarcation may vary significantly along the length of a boundary.

Key questions for determining appropriate demarcation & maintenance strategies

- What are the physical and human landscapes through which the boundary runs? How visible does the boundary need to be?
- How much freedom should demarcators be given in defining boundary alignment?
- How open do you want your borders to be?
- What human, technical and financial resources are available?
- Should borderland populations be involved in demarcation and maintenance?

Thank you!



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Geographical intelligence for international
boundary-making and dispute resolution