LETTERS FROM RENOWNED EDUCATIONAL INSTITUTES & UNIVERSITIES AROUND THE WORLD PROVING THE DIRECTION OF QIBLAH FOR UNITED STATES AND CANADA IS

East - South -East (ESE) or
Slightly South of East

National Research Council
Canada

Herzberg Institute
of Astrophysics

Ottawa, Canada
K1A 0R6

Conseil national de recherches
Canada

Institut Herzberg
d'astrophysique

Ottawa
17 Feb. 1987

To whom it may concern:

I have been asked to comment on the question:

From Ottawa, Canada, what is the direction to Mecca?

The word 'direction' usually requires the statement of an angle measured from a base line. The line and angle imply a coordinate system. Thus the first elements in any such discussion must be a definition of the coordinate system and exactly what the questioner means by 'direction to Mecca'.

There are many coordinate systems in which 'directions' are defined. There is a coordinate system centered at the Sun in which directions among the planets are defined. The Earth and other planets are considered to be only points in this system. Directions in space near the Earth are frequently defined in a coordinate system whose origin is at the centre of the Earth. For small areas and distances on the Earth, it may be considered as flat. For large distances, both angles and distances are calculated in spherical trigonometry, a complicated coordinate system which in fact is based on angles measured at the centre of the Earth.

But in simple language we 'know' terms and concepts such as 'north', 'south', 'east', and 'west'. We know that Mecca is east of Ottawa. We know also that Mecca is south of Ottawa in the sense that 'south' means having a lesser value of latitude. Before civilization had developed the sophisticated but abstract measures of longitude and latitude, these things were known from the sun. East was the direction where the sun rose, west where it set. If the length of the shadow cast by a standard vertical post at noon in city A was longer than in city B, then A was further 'north' than B. The ancients would have known that Ottawa was north of Mecca.

'The direction to Mecca' becomes largely a matter of definition and interpretation. But there are some guidelines that may be taken into consideration. We cannot define 'the direction to Mecca' by the direction that light would take in travelling from Mecca to our eyes here, because light cannot follow the curvature of the Earth. An acceptable definition is the following: If we set out to travel to Mecca is there a value of the 'bearing' (direction angle measured from the north) such that if we maintain that bearing during the whole of the trip we will arrive at Mecca? The answer is Yes; this direction is known to navigators as the 'rhumb line'. There is further justification in using this value in that it is the direction of the straight line joining Ottawa and Mecca on a flat map of the Earth if it is a Mercator projection - the most commonly used type of map. Since this direction is about ten degrees south of east, it also fulfills the concept that Mecca is slightly south of Ottawa.

D.A. McIntosh, Ph.D.

Telex 053 3715
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Canada

ARAB INSTITUTE OF NAVIGATION
C/O ARAB MARITIME TRANSPORT ACADEMY

الجمعية العربية للملاحة
بمقر الاكاديمية العربية للنقل البحرى

مشهرة برقم ٧٩/٦٦٧

Ref 1/1/1065 — النبد :

Date : 18.12.91 — التاريخ :

Mr.Munir Hag
Association of Islamic Charitable Projects
Suite 228
6 University Drive - Amherst , Massachusetts 01002
USA

Dear Munir,

Reference to your letter dated 23 November 1991 , I am pleased to inform you that the precise direction of Makkah , for the people of North America is: South East

Best wishes

Yours sincerely

Cdre.A.Sadek

President AIN

طريق الزعيم خال عبد الناصر - مساهل. ص.ب٢٩ ١٠٢ اسكندرية - جمهورية مصر العربية ت: ٥٤٨١١٦٣
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THE UNIVERSITY OF BRITISH COLUMBIA

Department of Geography
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May 1, 1992

To whom it may concern:

Having read over the letters presented to me (from McGill, Concordia, the National Geographic Society, Carleton, the National Research Council of Canada, and McMaster), and reviewing my previous correspondence, I am even more confident that the true direction one must face from North America to Mecca is the bearing, which for North Americans is East Southeast. If a tower were to be built in Mecca that could be viewed from North America, that tower would appear on the East Southeast horizon.

The bearing is a constant direction, whereas the route that airlines take, for example, is one that constantly changes direction (although it may be the shorter route).

If we consider the accepted convention of dividing the world into four quadrants, then North America falls within the northwest quadrant, and from Mecca would appear to the West Northwest.

Sincerely,

Dr. Brian Klinkenberg

THE UNIVERSITY OF BRITISH COLUMBIA

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May 1, 1992

To Whom it May Concern:

The answers to your questions are as follows:

1. What is the location of North America in general with respect to Mecca, and the location of Vancouver in particular with respect to Mecca?

A. North America (and Vancouver in particular) are West Northwest of Mecca

2. How to go from North America to Mecca? How to direct ourselves from North America to Mecca?

A. The Direction from North America to Mecca is East Southeast.

3. How would the people of South America direct themselves to Mecca

A. The direction from South America to Mecca is East Northeast.

I hope this will help you.

Yours truly,

Paul Jance
Cartographer

P.S. The Great Circle route is the shortest distance (used for travel). The most direct way if we could dive through the earth. PJ.

CONCORDIA UNIVERSITY

19 February 1987

To Whom It May Concern,

I have been asked by Imam Kamal Bastami to state the direction which one must face at Montreal towards Mecca. The direction, determined from a Mercater Map, is 104° East of North.

To locate this bearing by simple methods, observe the location of the sun at noon (12:00) Eastern Standard Time. A vertical stick will cast a shadow that is exactly N-S and the required angle 104° E can easliy be applied to that line, either with a protractor or with a magnetic compass.

The method outlined above avoids the complications posed by magnetic declination and relies on the fact that Montreal is located at 75° W, the central meridian of Eastern Standard Time.

The fact that Mecca is located in the Eastern Hemisphere while Montreal is in the Western is of no consequence for this calculation. The great circle route or 'gnomon' between the two cities does not correspond to the line of constant compass bearing and can only be determined from a globe or a gnomonic map projection.

Sincerely,

Dr. David B. Frost
Associate Professor
Department of Geography

DBF/ts

SIR GEORGE WILLIAMS CAMPUS
1455 DE MAISONNEUVE BLVD WEST
MONTREAL, QUEBEC H3G 1M8

UNIVERSITÉ LAVAL

FACULTÉ DES LETTRES
Département de géographie

Cité universitaire
Québec, Canada G1K 7P4

le 1 septembre 1992

M. A.Seddiqui
Représentant la communauté musulamane
de Québec

Monsieur,

Suite à votre visite du 28 août, j'ai demandé à l'un de nos cartographes, Monsieur Jacques Letarte, de faire le calcul qui vous intéressait. Voici le résultat de cette démarche. En fixant le Nord, l'orientation de la Mecque par rapport à Québec est Est-Sud-Est (ESE) à 105°.

En espérant que ce renseignement vous sera utile, je vous prie d'agréer mes sentiments les meilleurs.

Dean Louder
Directeur

McMASTER UNIVERSITY
Department of Geography
1280 Main Street West, Hamilton, Ontario, L8S 4K1
Telephone: 525-9140 Ext 4535

QUESTION: If we are standing in Hamilton, in precisely which direction must we face so that our chest will be facing toward the Kaaba (Mecca) or the air above the Kaaba along that straight line?

ANSWER: The straight line between Hamilton, Ontario, and Mecca, which never changes its direction, is at 12°29' (12 1/3°) South of East : 102°1/3 from North, by East.

On the globe, a great-circle route is the shortest route between Hamilton and Mecca, but this line is constantly changing direction. The line begins at 30° North of true east but ends up running southward into Mecca.

The fact that the earth is not a perfect sphere does not affect the direction of the straight line (Rhumb line). The earth is slightly flattened at the poles and bulges slightly at the equator, because it is spinning. However, the line does not come close to either the poles or the equator, and the difference from a perfect sphere is too small to be measured by ordinary instruments anyhow.

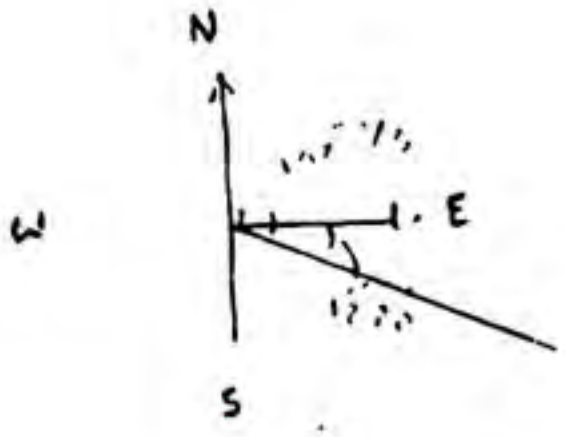
If one begins from Hamilton along the great circle route (30° North of true east) and does not change direction, one would pass by Iceland and end up at the North Pole.

True north is 10° east of magnetic north, and therefore the rhumb line to Mecca is 112° 1/3 east of magnetic north.

Andrew Burghardt
Professor of Geography

This calculation is prepared from the request of Imam Kamal Bastani and President of Muslim Association of Hamilton Shuja Qureshi

January 22, 1967



McGill University

Department of Geography
Burnside Hall

1987-02-18

To whom it may concern:

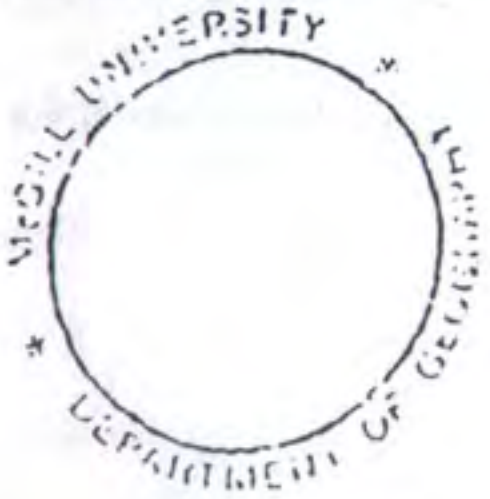
Question: What is the direction to face from Montreal to Mecca, such as that Mecca is reached, or the air above it?

Answer: The rhumb line direction from Montreal to Mecca is 104°30' from true north, or 14°30' south of east.

In Montreal, 1987, magnetic north is 16°15' west of true north and increasing at a rate of 1.6' per year. Thus, the rhumb line direction from magnetic north is 120°45'.

The Great Circle route necessitates constant changes of bearing from true north, whereas the rhumb line, derived from a Mercator projection involves a constant bearing. The Mercator projection is most accurate for directions, but involves distortions for area and distance. The Great Circle route direction, with a constant bearing from Montreal will terminate at the North Pole.

T.R. Moore
Associate Professor of Geography



TRM:am

This calculation has been done at the request of Imam Kamal Bastami

Postal address: 805 Sherbrooke Street West, Montreal, PQ, H3A 2K6

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DEPARTMENT OF GEOGRAPHY
TELEPHONE (604) 228 2663

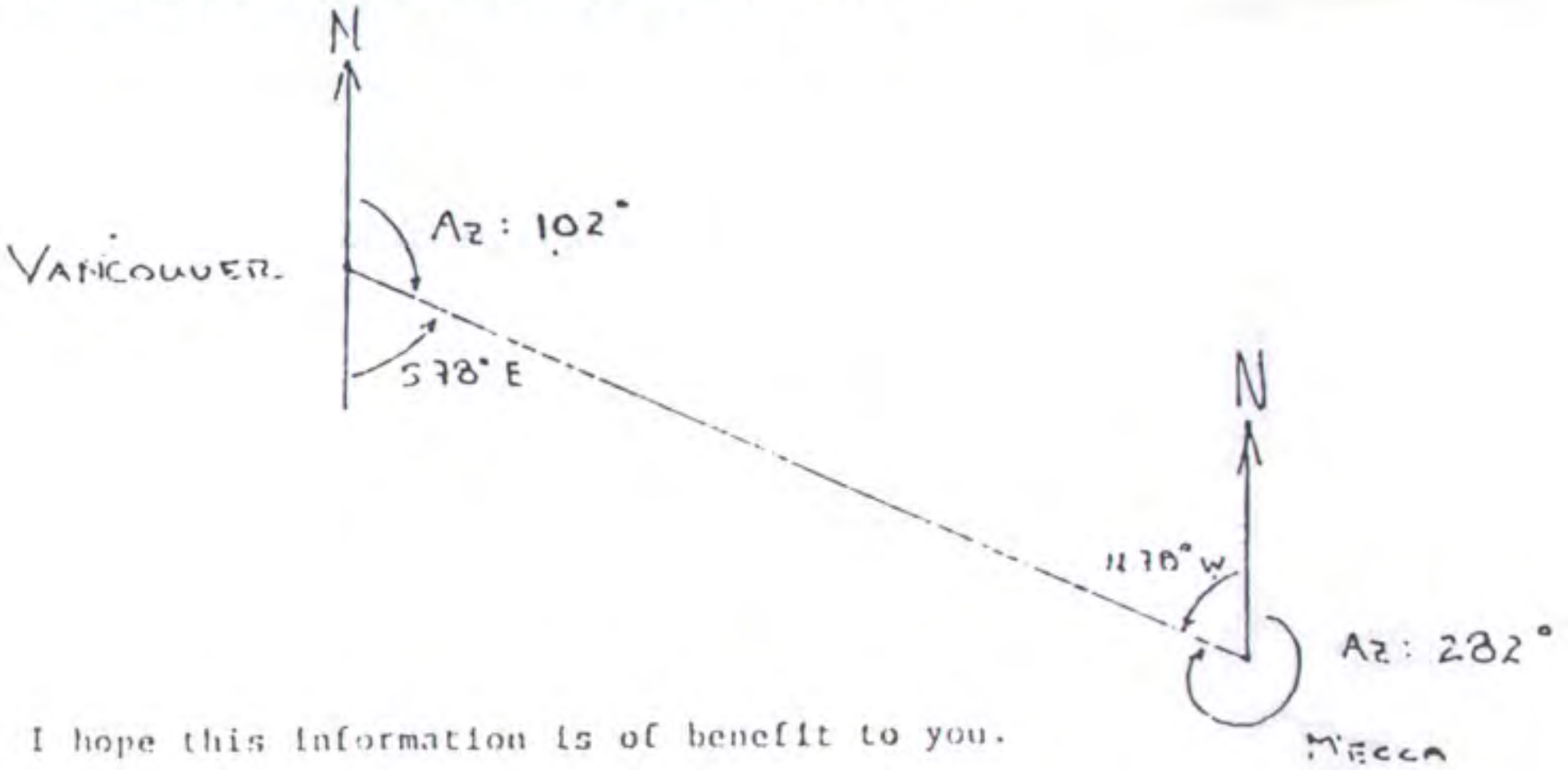
28 January 1986

Naser Alam
BCIT I.E. Office
3700 Willingdon Avenue
Burnaby, B.C.
V5G 3H2

Dear Naser:

Further to your request, and based on my knowledge as an Instructor of cartography, I have accurately determined the direction from Vancouver to Mecca.

From Vancouver, the true bearing to Mecca is S 78° E (East southeast), or equivalently, the azimuth is 102°. Correspondingly, the bearing from Mecca to Vancouver is N 78° W (West northwest), the azimuth is 282°. The figure below illustrates these values.



I hope this information is of benefit to you.

Sincerely,

Brian Klinkenberg

BK:cr