GEOG 220 (Alan Nash)

“The Human Environment: Place, Space and Identity”

The Fundamental Concepts of Geography

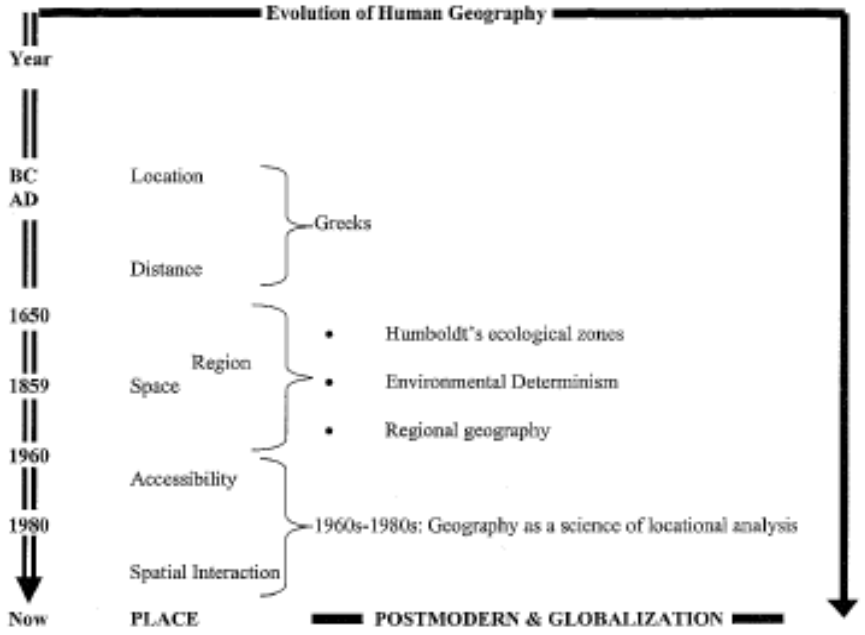
Concepts 1-5

- Lets take a look at the major concepts in geography.
- There are 9 of them (I think!)
- This is another way of looking at human geography – the first way was our look at the history of the subject (which is what we have spent our first classes on)

9 Fundamental Concepts

- 1. Location
- 2. Distance
- 3. Space
- 4. Accessibility
- 5. Spatial interaction – especially “diffusion”
- 6. Scale
- 7. Region
- 8. Landscape
- 9. Place

The importance of the concepts has varied over the history of geography's development



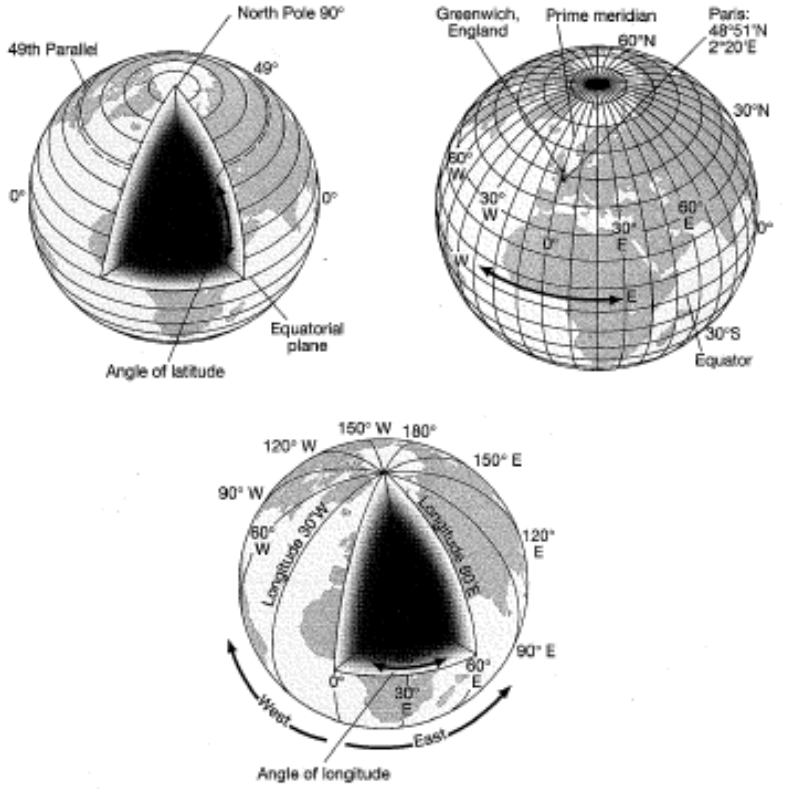
Ancient Greeks more Interested in Location And Distance

Postmodern geog more interested in PLACE

Concept 1. Location – three main sub-types

- Absolute location (i.e. latitude and longitude)
- Relative location (i.e. “near the #24 bus stop”)
- Cognitive loction (where a place seems to be – a mental map)

Location – absolute- latitude and longitude



Spend some time figuring out latitude and longitude

- Some clues:
- Latitudes are lines that run around the globe (like Equator, or the Arctic Circle) and are of different lengths
- Longitude are lines that run through the poles (Like the Greenwich Meridian) and are always the same length
- Example: Vancouver is given as 49°20’N 123°10 W [give the latitude first, then the longitude]

Location – absolute – how measure?

- Absolute location can be measured today by using GPS (Global Positioning Satellite) information

- In Middle Ages, European navigators relied on instruments such as the astrolabe (see picture of Champlain's astrolabe – next slide ....

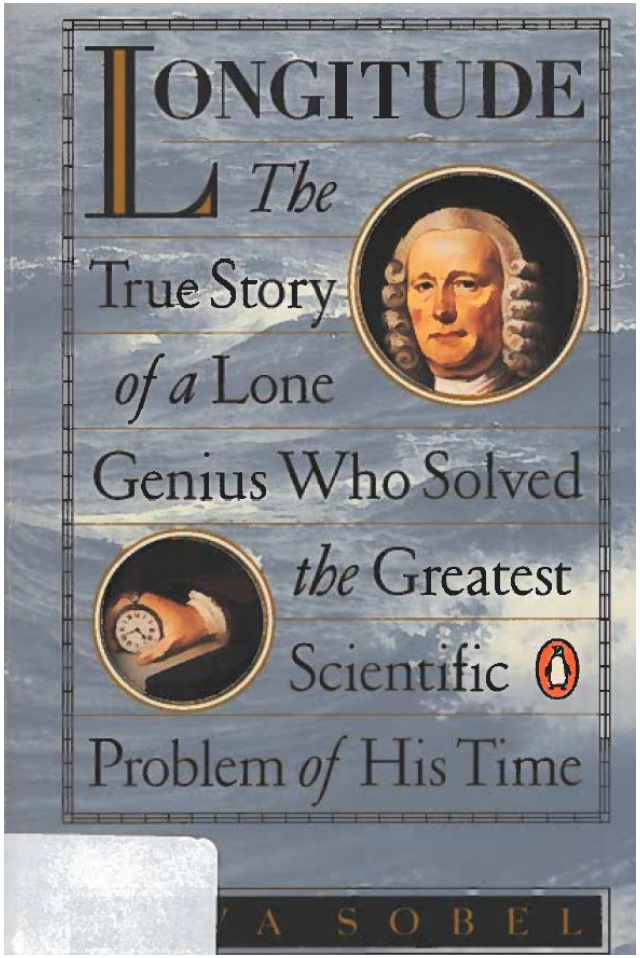
Champlain's astrolabe

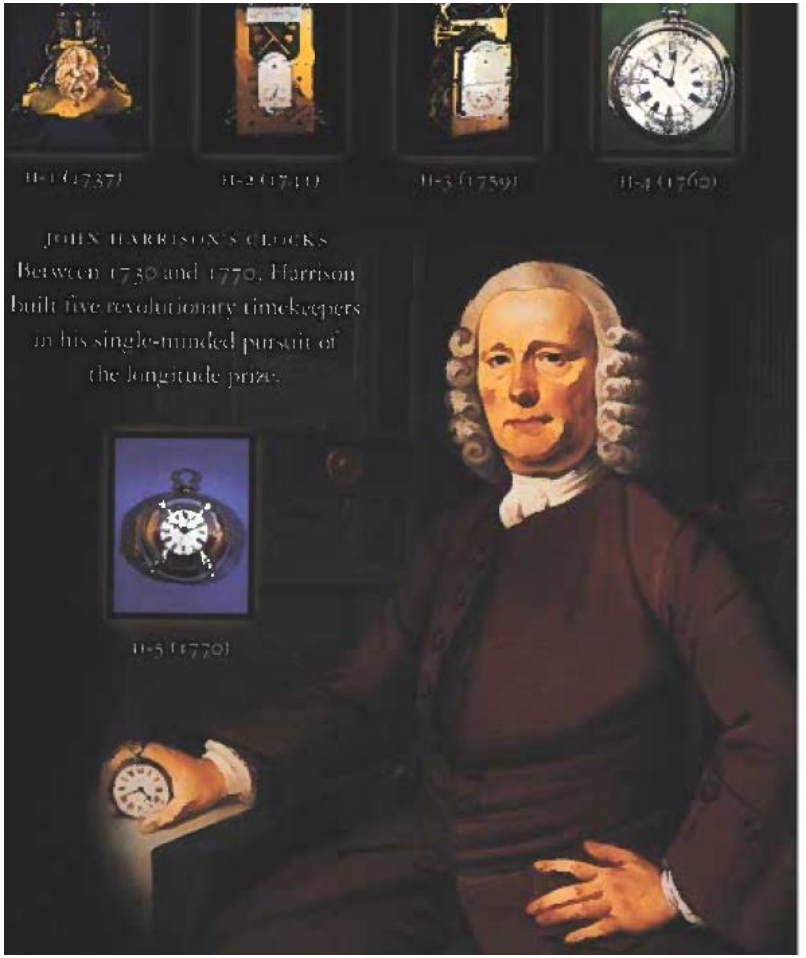
Figure 2.7 Champlain's astrolabe
Lost soon after Champlain set out through the Ottawa Valley, this astrolabe was recovered in the nineteenth century. It is now on exhibit in the Canadian Museum of Civilization in Gatineau, Quebec.

Location – absolute- how measure?

- Latitude was “easy” to fix – could use height of sun (that is what an astrolabe does)
- Longitude was much harder –
  - In Gulliver’s Travels (1726), the author Jonathan Swift says finding longitude at sea is an impossibility.
  - European navies could not accurately navigate
  - So by the 18thC, European navigators were experimenting with astronomical phenomena such as the “Transit of Venus” (which is why Captain Cook was sent to Hawaii) or – more promisingly -- the use of clocks.

Dava Sobel, *Longitude (London: 1995)*

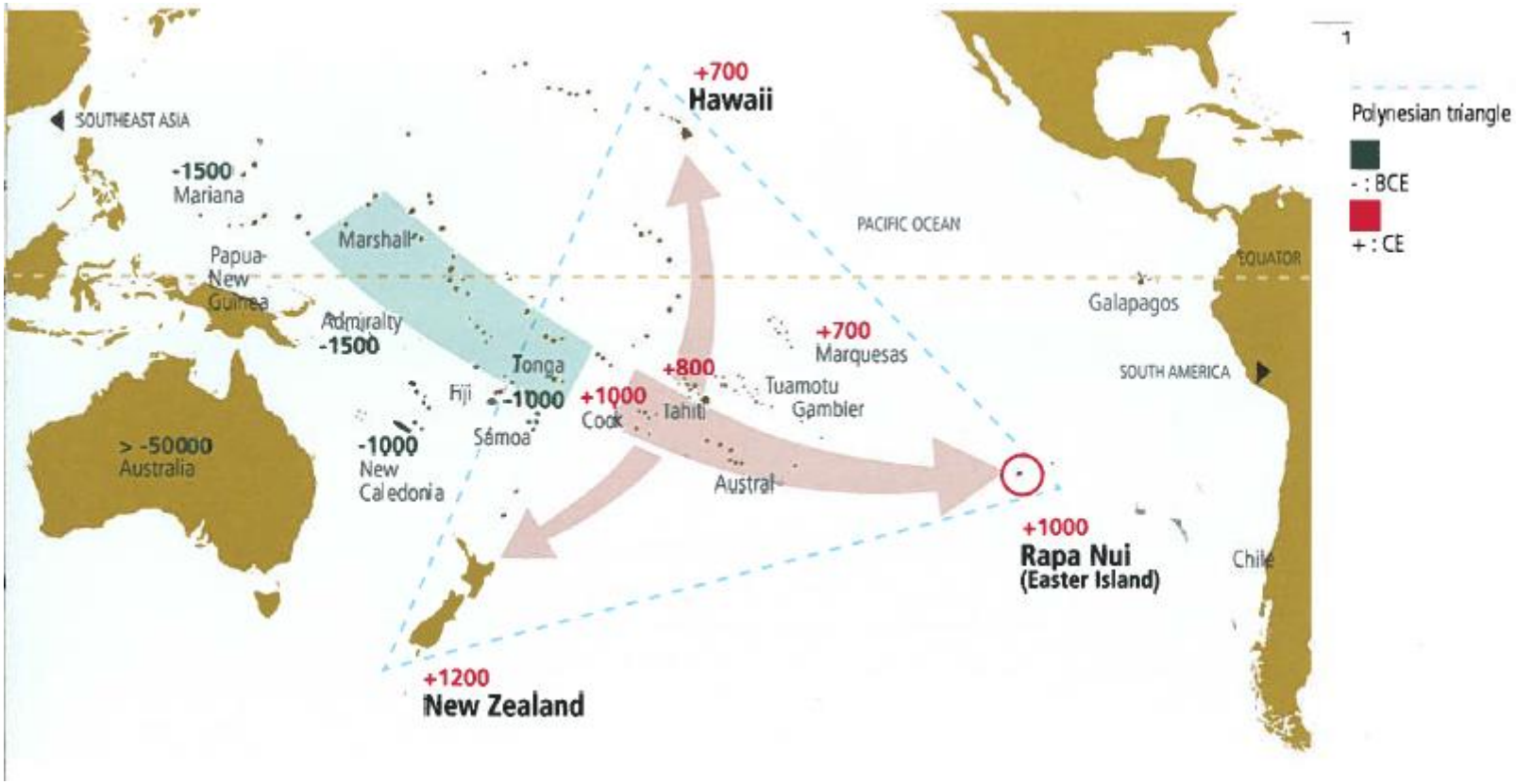




Location – absolute – measure

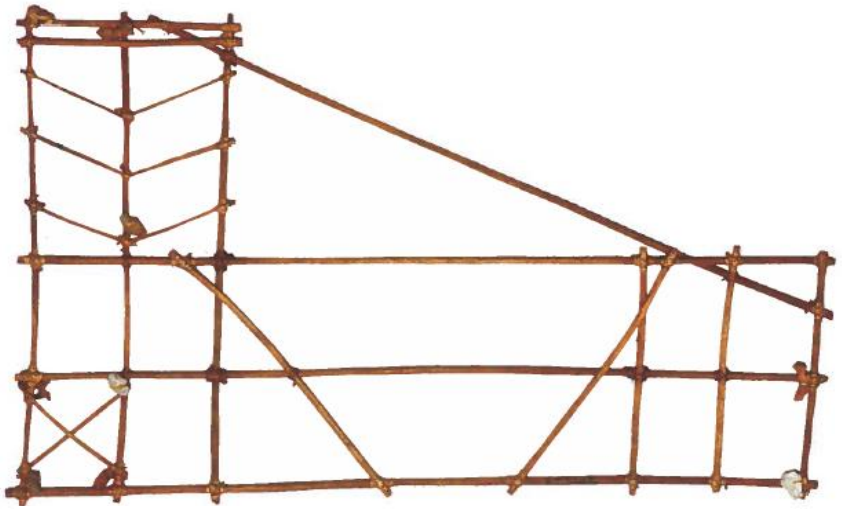
- “To learn one’s longitude at sea, one needs to know what time it is aboard ship, and also at the home port … at that same moment”… “The two clock times enable the navigator to convert the hour difference into a geographical separation”. Dava Sobel, Longitude (London: Penguin Books 1995)

Star navigation: also an "absolute" method of location



Star navigation: nearest distances to Hawaii

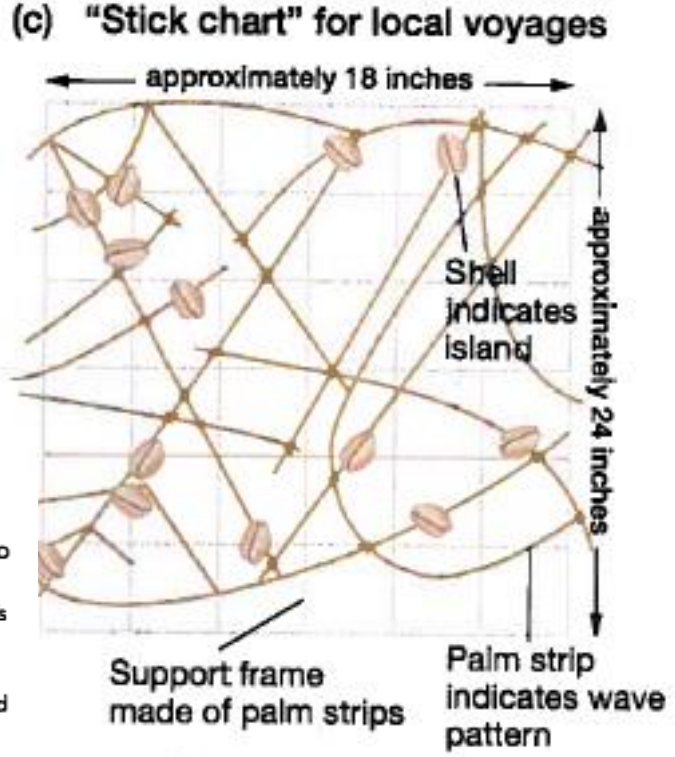
“Stick charts” provided more local information



Nautical chart from the Marshall Islands. The sticks on the canvas show the directions, of ocean currents, for example. Where they intersect, the coral represents an island or an archipelago. Unlike a geographic map, it is not to scale. It is a dynamic map, showing nautical references that could be read by the initiated – and must have been used to pass on this knowledge.

Palm ribs, coral, fibres
43 x 27 x 2 cm
Royal Museums of Art and History, Brussels, ET.3903
© RMAH

procedure. For local navigation—around familiar groups of islands—“stick charts” (Figure 1.4c) were used to record wind patterns and island locations. (*Sources:* for (a) and (b): Author’s summary based on Bishop Museum Planetarium, Hawaii; for (c): Adapted from Norman Thrower, *Maps and Man*. Englewood Cliffs, NJ: Prentice-Hall, 1972, p. 6.)



ABOVE A modern replica of a Polynesian double-hulled sailing canoe. One such replica, the *Hokule'a,* sailed from Hawaii to Tahiti in 1976, demonstrating the skills of traditional Pacific seafarers.

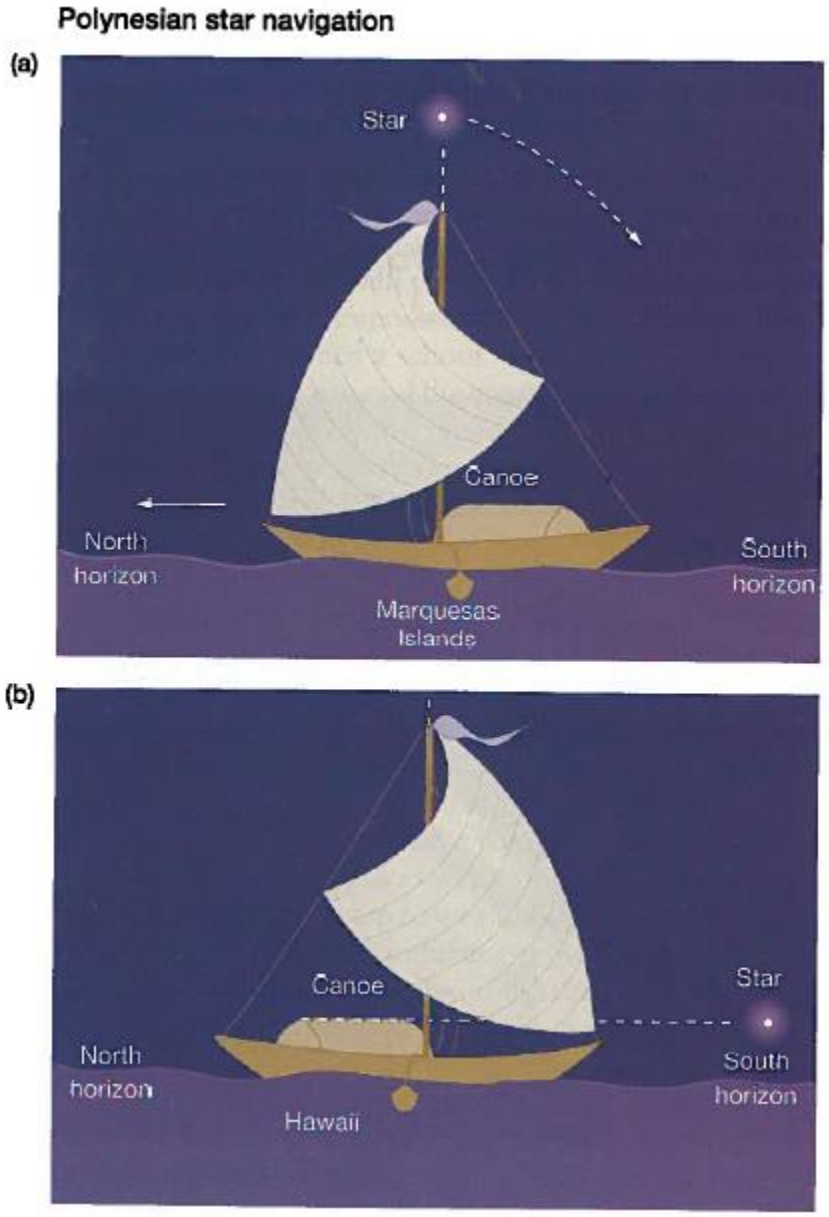
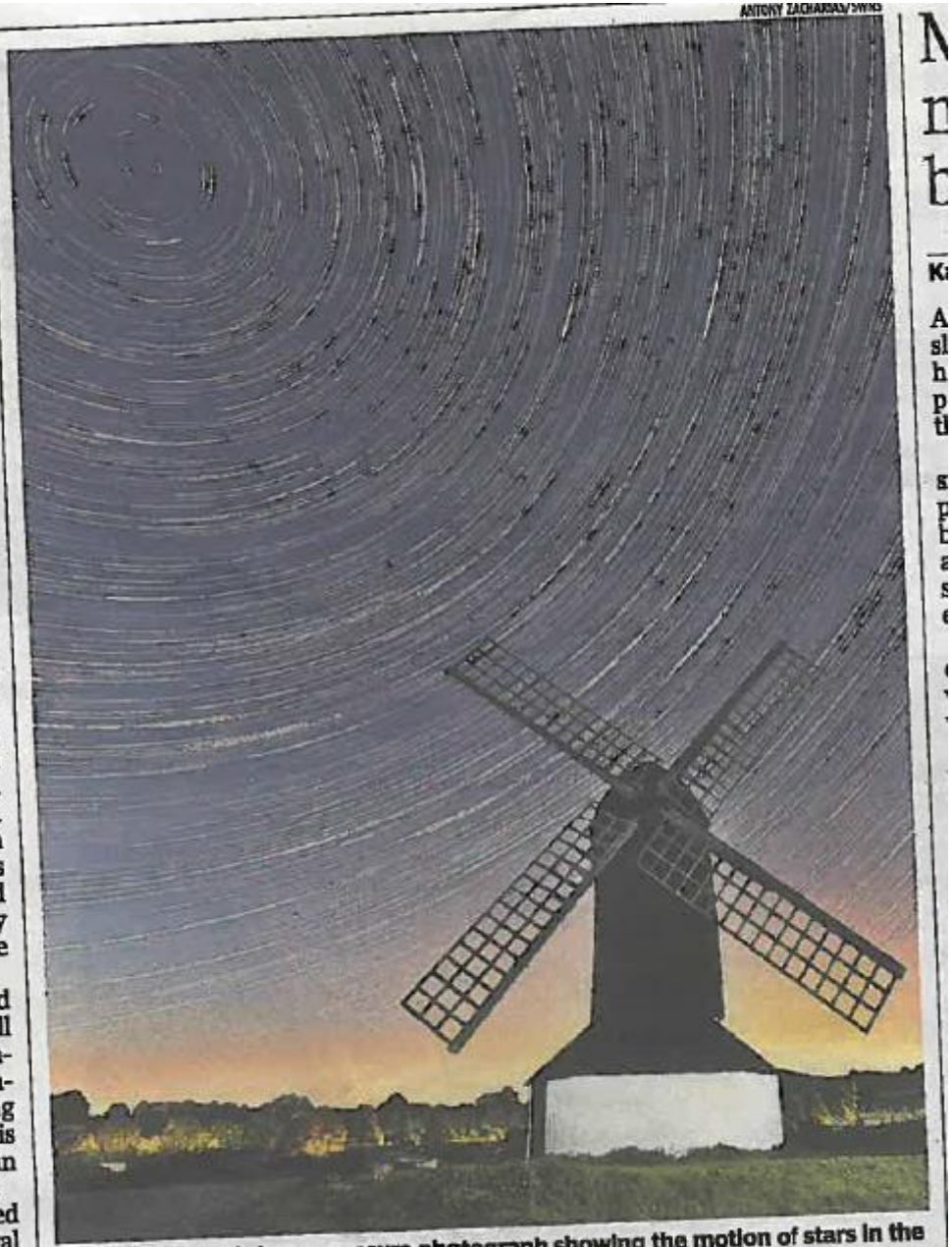


Figure 1.4 Polynesian star navigation Polynesian star navigation depends on an intimate knowledge of the night sky. In particular, it is important to know the relative location of stars that do not appear to move in the sky during the course of a night. These provide key reference points for navigators. As an illustration here, we consider a simple version of how Hawaii was first settled. The Polynesians, on setting out from the Marquesas Islands, took note of the stars that appeared immediately above them (Figure 1.4a). We can call these *reference stars* (in the illustration, only one is shown here for clarity). As the Polynesians sailed north, they observed that the reference stars appeared to shift their relative position in the sky, every night moving gradually farther southward. Once land was reached (in this case, Hawaii), the relative locations of the stars were memorized for the return voyage (in Figure 1.4b, note that the reference star now appears just above the horizon). To return to the Marquesas, the Polynesians had only to reverse the procedure. For local navigation—

ANTONY ZACHARIAS/SWNS



Circle of light This long-exposure photograph showing the motion of stars in the sky due to Earth's rotation was taken at Pitstone windmill in Buckinghamshire

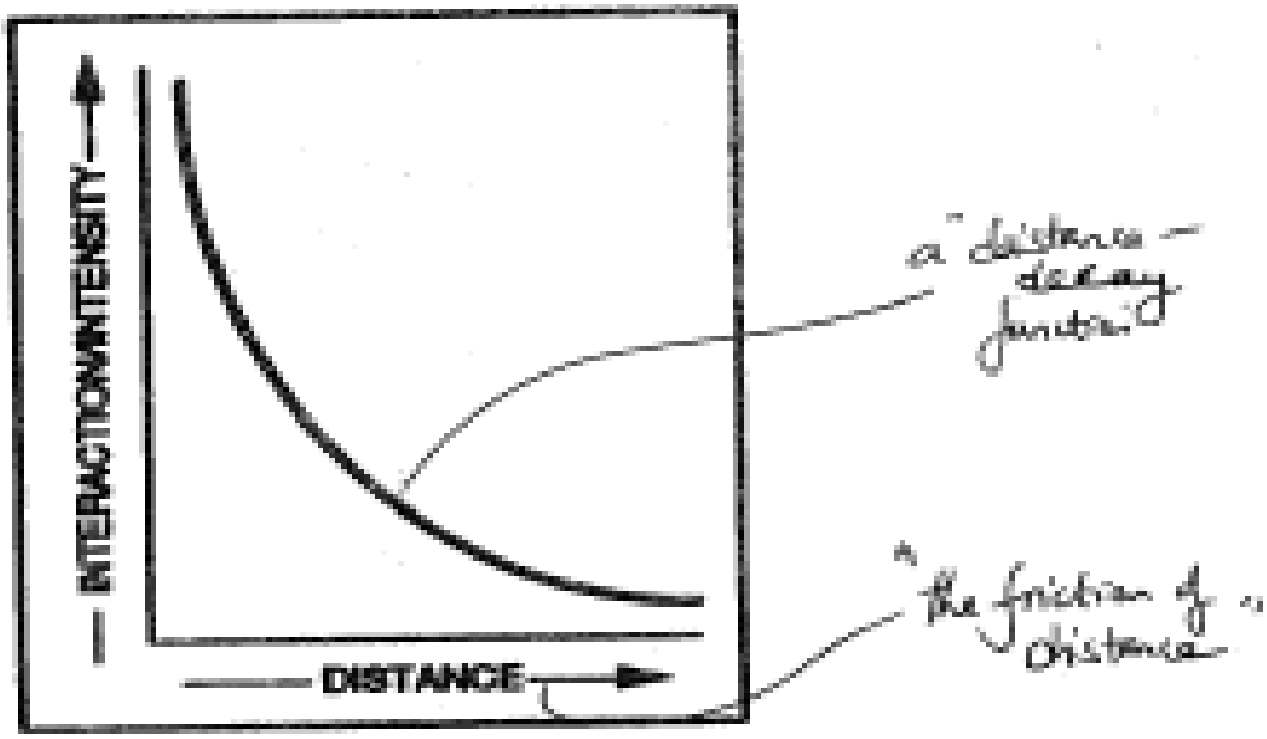
2. Distance

- (a) Absolute distance (i.e. measured in kms)
- (b) Relative distance (measured in time)
- (c) Cognitive distance (how far it seems)

2. Distance (continued)

- For geographers, the most important thing to note is that the effects of distance almost always mean that the influence (or importance) of a centre diminishes as we get further away from it.
- And – usually – that influence will diminish rapidly at first, and then more slowly the further we get away from the centre of influence

3. Distance (continued): a graphic illustration



2. Distance (continued)

- The importance of distance in geography was once described by Waldo Tobler as “the first law of geography” which he stated as
  - “Everything is related to everything else, but near things are more related than distant things”

Are the effects of distance weakening?

- A question to think about:
  - Do we care more about people who live near us than those who are far away from us?
  - How would we measure “care”?

3. Space

- Three aspects to this:
  - (a) Absolute space
  - (b) Relative space
  - (c) Cognitive space

(a) Absolute a view that sees space as a "geometric container", mathematically defined: i.e an area defined by longitude and latitude

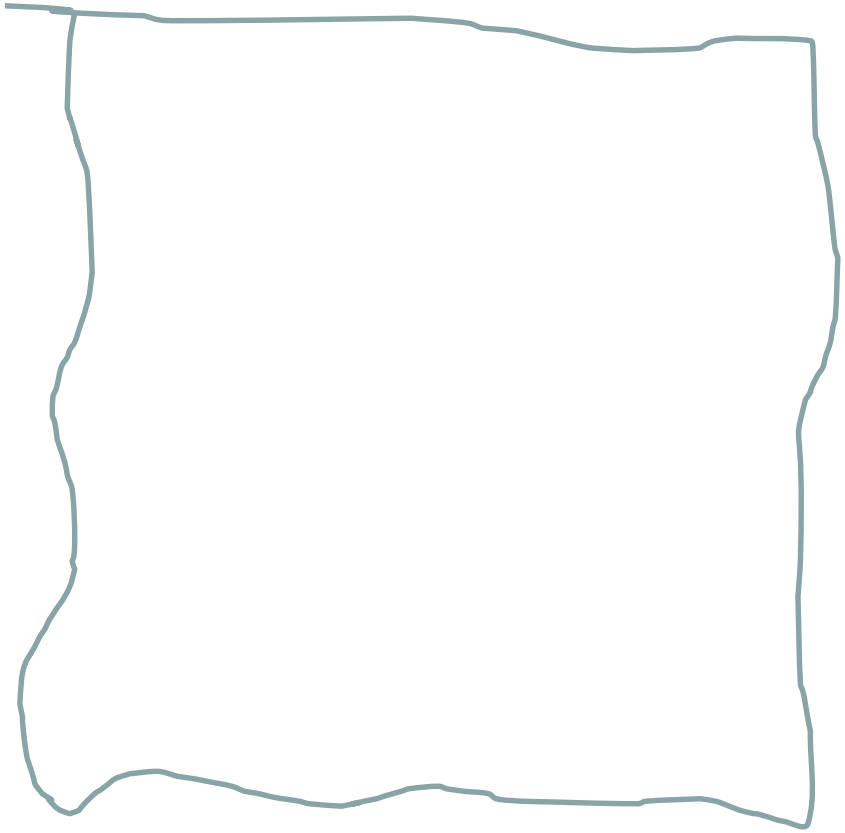
3. Space (continued)

- (b). Relative (a view that sees space as malleable, changeable) –
  - i.e. in socio-cultural space, the countries of the “West” are all found close together, irrespective of their absolute location;
  - in economic space, the “North-South” divide serves as another relative measure of where a country is)

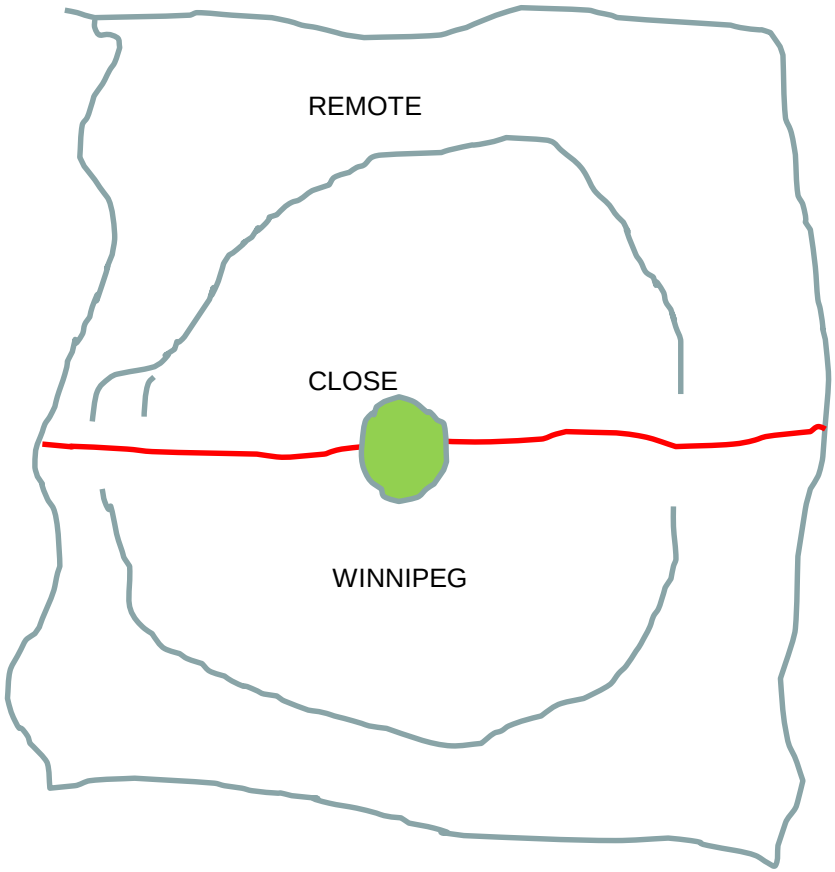
3. Space (continued)

- Henri Lefebvre (1901-1991) in *The Production of Space* (1971; 1991) states there are 3 main processes by which space is "socially constructed". He describes these as
  - 1. Spatial practice: Different economic systems construct space differently – so, capitalism (through private ownership) creates a market in land that create geographic inequalities across countries/cities.
  - 2. Representations of Space: how power is inscribed in space i.e. municipal zoning regulations
  - 3. Representational spaces: the role of spatial allusions in art or language.

BEFORE- the prairies before European railroad



AFTER



HOW A MARKET ECONOMY CAN “MAKE” SPACE – SUDDENLY YOU CAN BE BECOME REMOTE, OR CLOSE

BEFORE – in a hunter-gatherer economy, space is experienced differently and, for example, it would be difficult for human groups on the “edge” to Experience remoteness – since there was nothing to be remote from!
AFTER – the creation of a railhead, a city with a market, suddenly changes space – now you can be a long way from the centre of the action

An example of “representations of space”

{photo: *Montreal Gazette*}

Ownership creates space—in this case, private space

In New York City


THIS IS A PRIVATELY OWNED SPACE
THAT IS DESIGNED AND INTENDED FOR
USE AND ENJOYMENT BY THE GENERAL PUBLIC
FOR PASSIVE RECREATION.
FOR THE SAFETY AND ENJOYMENT OF EVERYONE,
THE FOLLOWING TYPES OF BEHAVIOR ARE PROHIBITED:
· CAMPING AND/OR ERECTION OF TENTS
OR OTHER STRUCTURES LYING DOWN ON THE GROUND,
OR LYING DOWN ON BENCHES, SITTING AREAS OR WALKWAYS
WHICH UNREASONABLY INTERFERES WITH THE USE OF
BENCHES, SITTING AREAS OR WALKWAYS BY OTHERS.
· THE PLACEMENT OF TARPS OR SLEEPING BAGS OR
ANY OTHER COVERING ON THE PROPERTY.
· STORAGE OR PLACEMENT OF PERSONAL PROPERTY
ON THE GROUND, BENCHES, SITTING AREAS OR WALKWAYS
WHICH UNREASONABLY INTERPHERES WITH THE USE
OF SUCH AREAS BY OTHERS.
· THE USE OF BICYCLES, SKATEBOARDS, AND ROLLERBLADES.
· REMOVAL OF OBJECTS FROM THE TRASH RECEPTACLES.
PRIVATE PROPERTY
THE PLAZA IS CLOSED
FROM 1AM TO 6 AM
• No Smoking
• No Sleeping
• No Loitering
• No Panhandling


THIS IS A PRIVATELY OWNED SPACE
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Personal space

- Another example would be “personal space”
  - With COVID we have learned about the idea of social distancing
  - More generally, perhaps, How do we feel about intrusions into our own ‘personal space’ and the space of others?

Personal space

- Do note the university's resources:
  - Sexual Assault Resource Centre
    - sarc@concordia.ca
    - Phone 514 848 2424 extn 3353
  - Office of rights and responsibilities
    - rights@concordia.ca
    - Phone 514 848 2424 extn 8659

3. Space (Continued)

- (c). Cognitive space a view that sees space in terms of people's beliefs, values or perceptions.
- One example of this is a mental map which shows people's likes and dislikes:
  - i.e. where would you most/least like to go on holiday?
  - i.e. where would you most/least like to retire?
- Always note that we are trying to use an individual's own subjective experience to try and make some more general statements about a group's perceptions.

A “Mental Map” from Alabama

[*Mental Maps* by Peter Gould and Rodney White (Harmondsworth: Penguin Books, 1974); also available as an electronic book through Concordia’s Library]

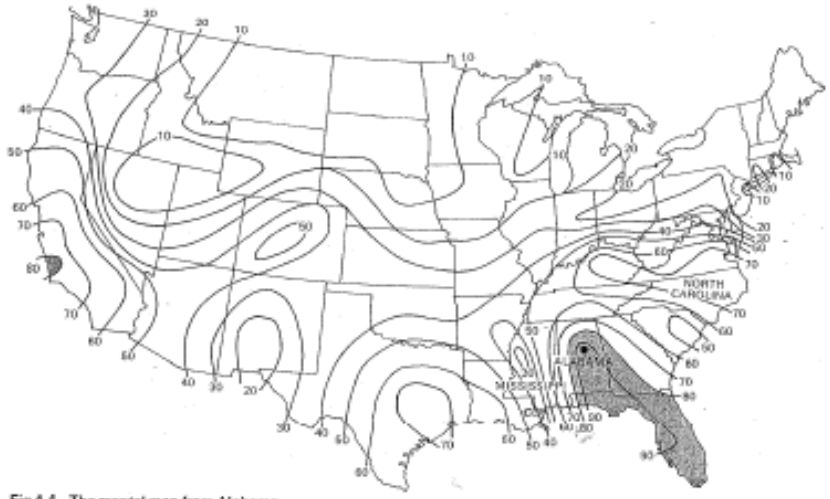


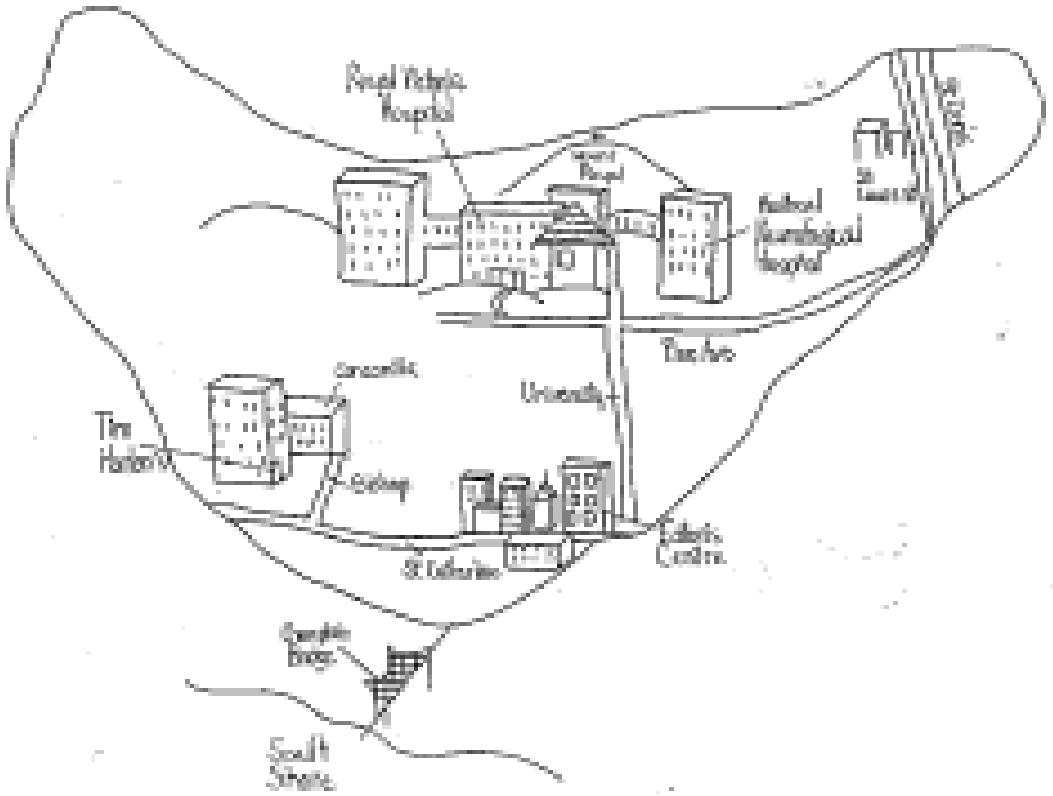
Fig 4.4 The mental map from Alabama

Province	Most liked	Least liked
BC		
Alberta		
Saskatchewan		
Manitoba		
Ontario		
Quebec		
New Brunswick		
Nova Scotia		
PEI		
Newfld & Lab		
Nunavut		
NWT & Yukon		

Province	Most liked	Least liked
BC	29	0
Alberta	4	1
Saskatchewan	0	11
Manitoba	0	9
Ontario	12	9
Quebec	30	1
New Brunswick	0	1
Nova Scotia	5	0
PEI	2	0
Newfld & Lab	1	6
Nunavut	0	33
NWT & Yukon	1	11

One person's mental map of Montreal

Figure 1.13 One person's cognitive image of Montreal This "mental map" was drawn by a geography student at Concordia University in Montreal as part of a class exercise. The student has included some (but not all) of Montreal's prominent landmarks, particularly "the mountain" in the city's centre. In addition, the shape of Montreal's island is distorted, emphasizing areas most familiar to the student.



4. Accessibility

- Defined in the textbooks as “the opportunity for contact or interaction from a given point or location in relation to other locations”.
- Effective accessibility is a product of not only distance, but also the connectivity of networks of communication and transport.

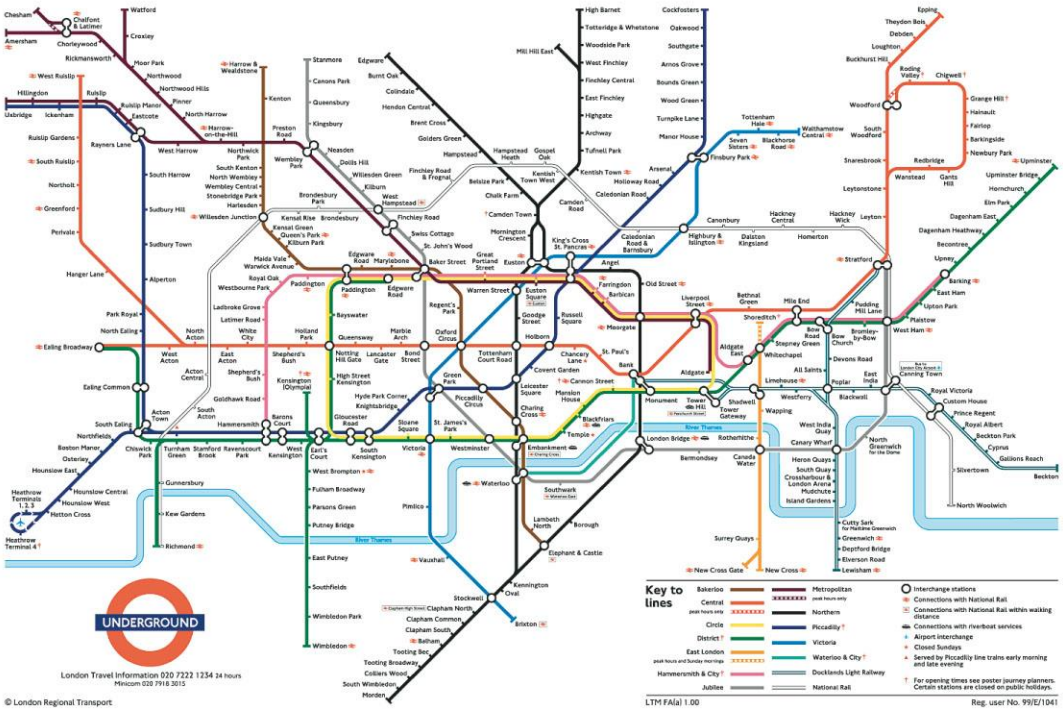


Figure 1.20 Topological space The map of the London Underground is a topological map, showing how specific points are joined within a particular network. The most important aspects of networks of any kind, from the geographer's viewpoint, are their connectivity attributes. These attributes determine the flow of people and things (goods, information) and the centrality of places. As most Londoners know, the Underground system gives Paddington a very high degree of connectivity because trains on the District, Circle, Bakerloo, and Hammersmith & City lines all stop there. Paddington is therefore relatively central within the "space of flows" of passenger traffic in central London. Edgeware Road—nearby in absolute terms—is much less central, however, and much less the focus of passenger flows. (*Source:* London Regional Transport, where updates and more information are available at **www.thetube.com**.)

5. Spatial Interaction

- "Geographers use the term *spatial interaction* as a shorthand for all kinds of movement and flows involving human activity"
- Many Textbooks divide this term into 4 subcategories:
  - *Complementarity*
    - i.e Can we meet the needs of one place with the products of another?
  - *Transferability*
    - i.e. Can we move that product?
  - *Intervening opportunities*
    - i.e. Can we sell that product to an intervening place?
  - *Diffusion* – the most important part!

5 Spatial Interaction - Diffusion

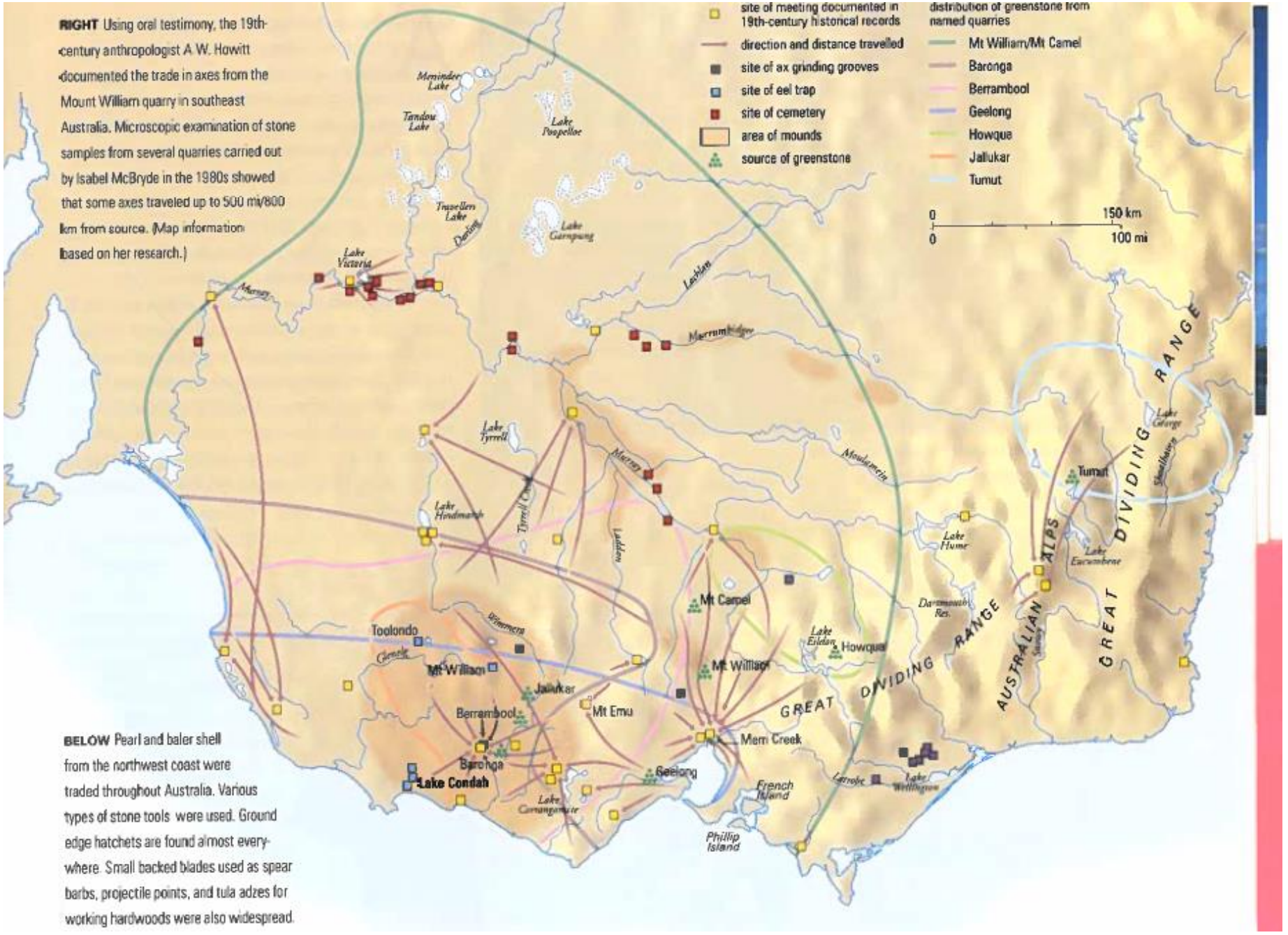
- Spatial diffusion: defined as “the way that things spread through time and over space”
  - The “things” that spread can be objects, both visible (plants, people) and invisible (viruses) or intangibles such as ideas, innovations, fashions, news.
  - As these ‘things” (phenomena) spread, so they alter the places they spread to, and are themselves altered as they move.

5. Spatial Interaction: “Diffusion”

- The key point here is to emphasize geography’s concern with the *spread* of *phenomena* (things: i.e. people, ideas, diseases) over *space* from region to region, place to place – which is what geographers call *DIFFUSION* – and the study of that spread’s consequences (as examples of cultural diffusion, disease diffusion etc).

5. Spatial Interaction - Diffusion

- There are 3 or 4 main types of spatial diffusion:
  - Relocation diffusion
    - i.e. the simple spread of a physical object from place to place
      - Such as a special type of rock or shell in the prehistoric period
        - » The Spondylus shell (thorny oyster) highly valued by the Incas
        - » Greenstone rock used for blades in early Australia
    - Could be something highly valued such as a spice in the Middle Ages traded all the way from the Far East to Europe.
      - No one in Europe might know where it originally came from because it would have passed through so many hands, but often preserved some indication of its original name (example: pepper ... from the original indo-European *pipr*
    - Could even be people themselves (migration is a special case)



RIGHT Using oral testimony, the 19th-century anthropologist A.W. Howitt documented the trade in axes from the Mount William quarry in southeast Australia. Microscopic examination of stone samples from several quarries carried out by Isabel McBryde in the 1980s showed that some axes traveled up to 500 mi/800 km from source. (Map information based on her research.)

BELOW Pearl and baler shell from the northwest coast were traded throughout Australia. Various types of stone tools were used. Ground edge hatchets are found almost everywhere. Small backed blades used as spear barbs, projectile points, and tula adzes for working hardwoods were also widespread.

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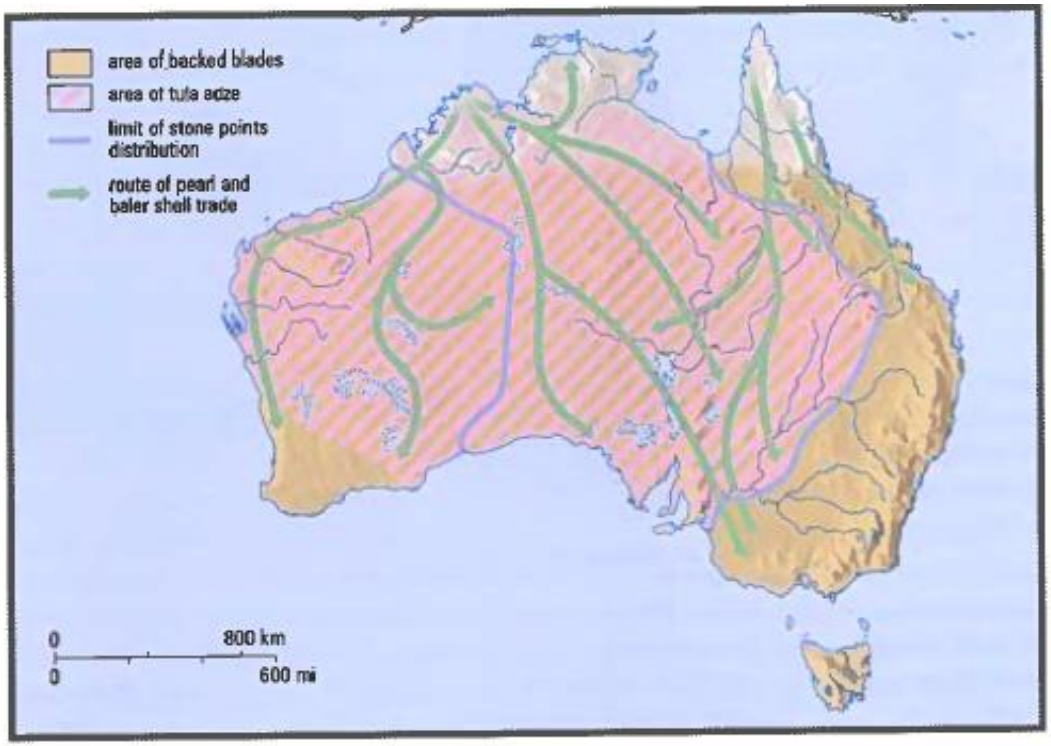
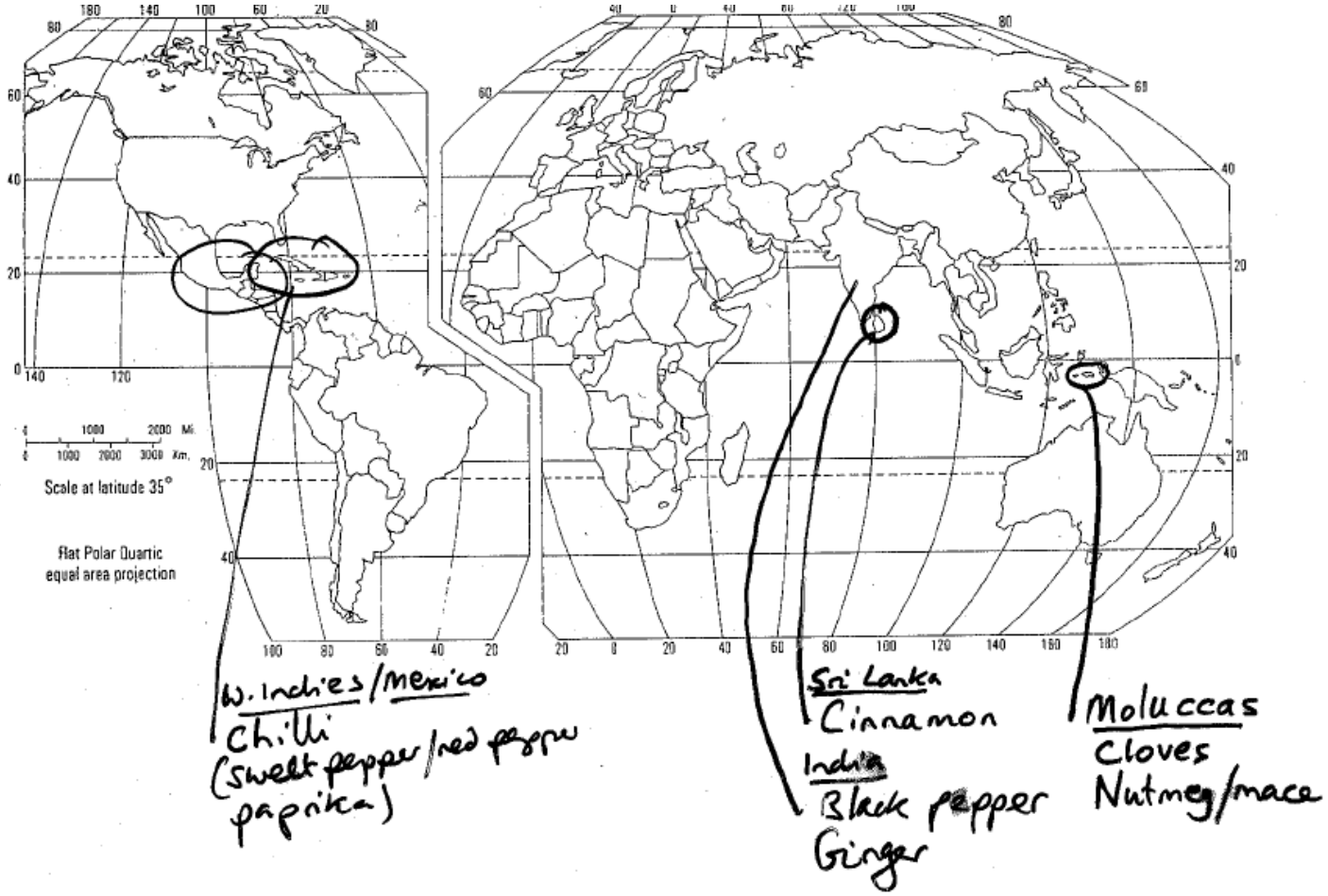


Spices – an “exotic” commodity



Ginger

Etymology:

Srngaveram: Sanskrit [‘of horned appearance’]

Dzungebir: Persian

Dziggibris: Greek

Zingiber: Latin

Gingibre: French (12thC)

Gingembre: French (14th C)

Gingiber: Old English

Ginger: Modern English

Ingewer: Old German

Ingwer: Modern German

[Toussaint-Samat p. 496]

- From India
- 5thC Persian trade missions are responsible for bringing ginger westwards
- It is the rhizome of the plant, *Zingiber officinale*
- As with many spices, first used in Europe as a medicine, then a dietetic remedy, then in cuisine
- Portuguese take ginger to W. Africa, and now grown successfully in Madagascar, Africa and Americas
- Combined with tumeric (another Indian rhizome) and cardamom to form curry.

- Expansion diffusion

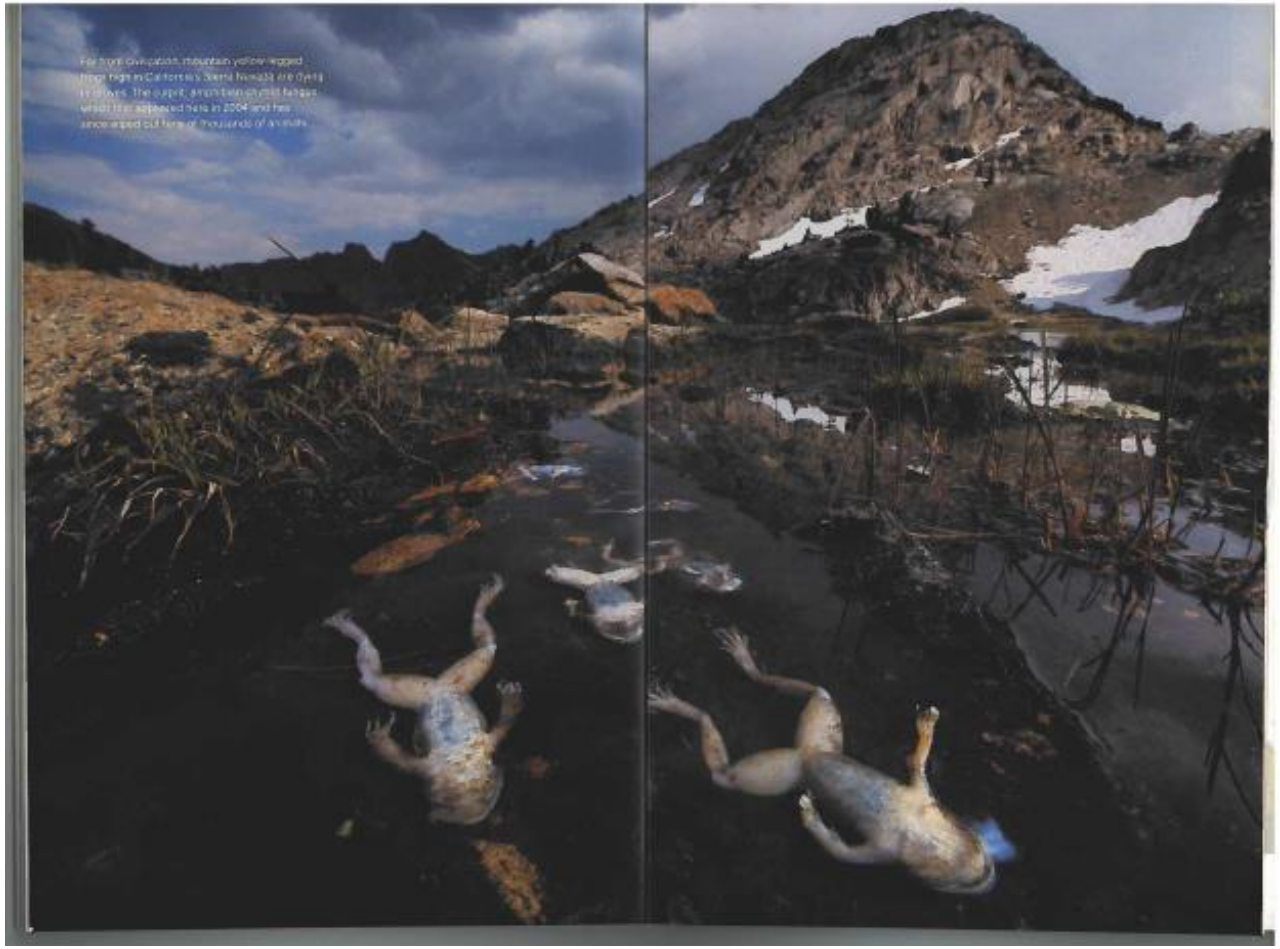
- (sometimes called “contagious diffusion, sometimes called “spread”, sometimes even “simple spatial diffusion”)

  - Most phenomena in a rural society spread this way.

  - We are looking at something that spreads out from a place, while leaving a trace of itself in that original place (so, in a sense, it moves out like a wave across space)

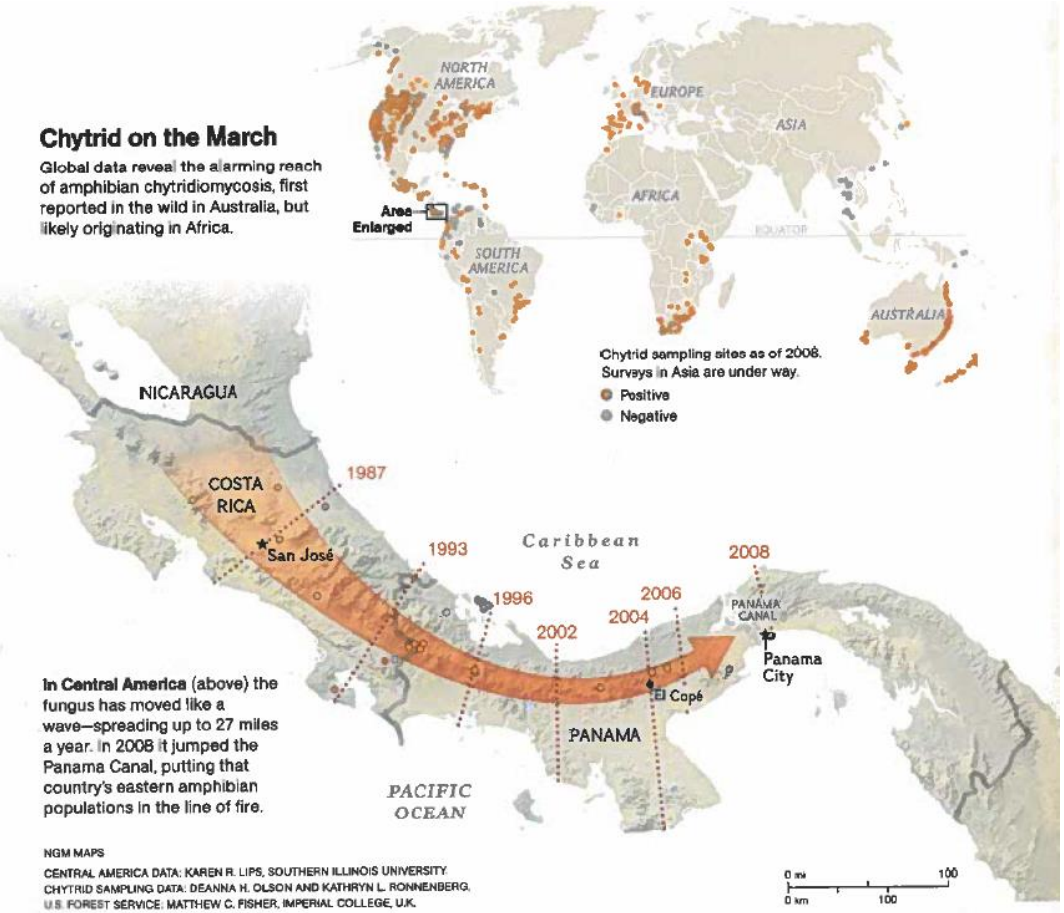
    - i.e the spread of a disease that depends on face-to-face contact. It will spread slowly across space

A case study of diffusion – frog death in Central America



Chytrid on the March

Global data reveal the alarming reach of amphibian chytridiomycosis, first reported in the wild in Australia, but likely originating in Africa.

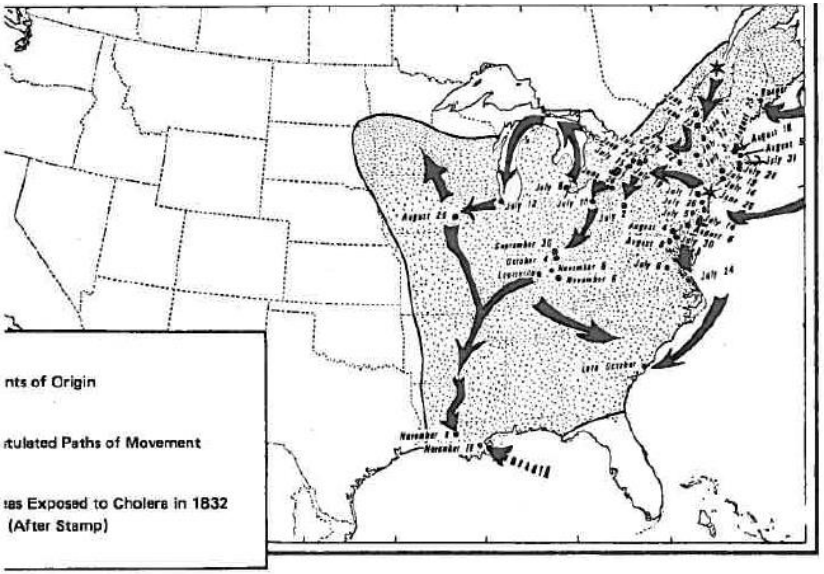


In Central America (above) the fungus has moved like a wave—spreading up to 27 miles a year. In 2008 it jumped the Panama Canal, putting that country's eastern amphibian populations in the line of fire.

NGM MAPS

CENTRAL AMERICA DATA: KAREN R. LIPS, SOUTHERN ILLINOIS UNIVERSITY. CHYTRID SAMPLING DATA: DEANNA H. OLSON AND KATHRYN L. RONNENBERG, U.S. FOREST SERVICE; MATTHEW C. FISHER, IMPERIAL COLLEGE, U.K.

Example: diffusion of cholera in 19thC USA



The movement of cholera in 1832.

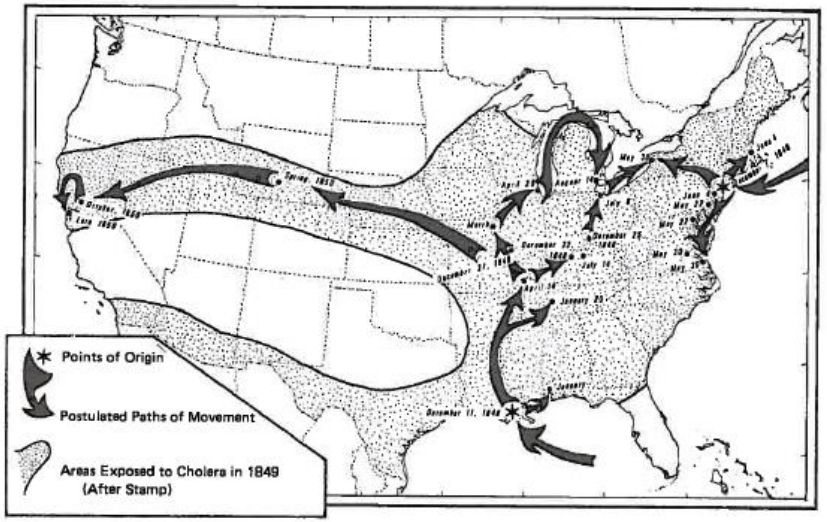


Figure 2. The movement of cholera in 1849.

Cholera diffusion

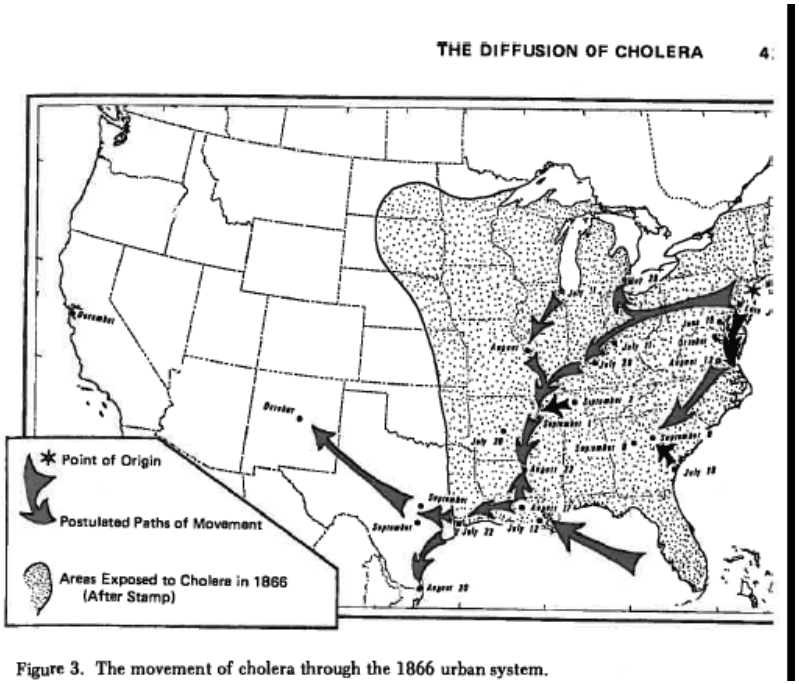


Figure 3. The movement of cholera through the 1866 urban system.

- These 3 maps show that cholera spread by simple contagious diffusion in 1832 & 1849 , but by 1866 it began to spread hierarchically
- Source: Gerald F Pyle, “The Diffusion of Cholera in the United States in the Nineteenth Century”, *Geographical Analysis* Vol 1 (1969)

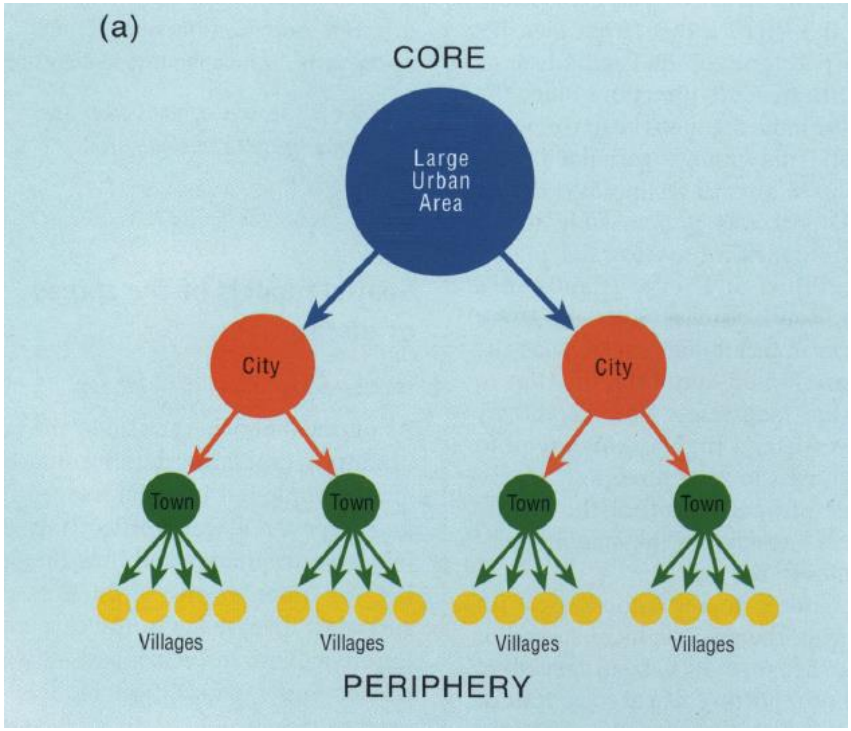
- Hierarchical diffusion (also known as “cascade diffusion”)
  - Most phenomena in a modern, urban society spread this way
  - i.e the flow of information “down” an urban hierarchy (city to town to village)
  - So, the important thing to note here is that diffusion can occur more quickly through the urban hierarchy than across simple space itself
    - i.e. An idea, innovation or disease will spread from New York directly to San Francisco – missing all of the places in between – because these two cities are very close in their rank in the US urban hierarchy.
    - Only subsequently does “infilling” of the territory between occur as diffusion spreads down the hierarchy (to places like Boulder, Atlanta etc) and across space

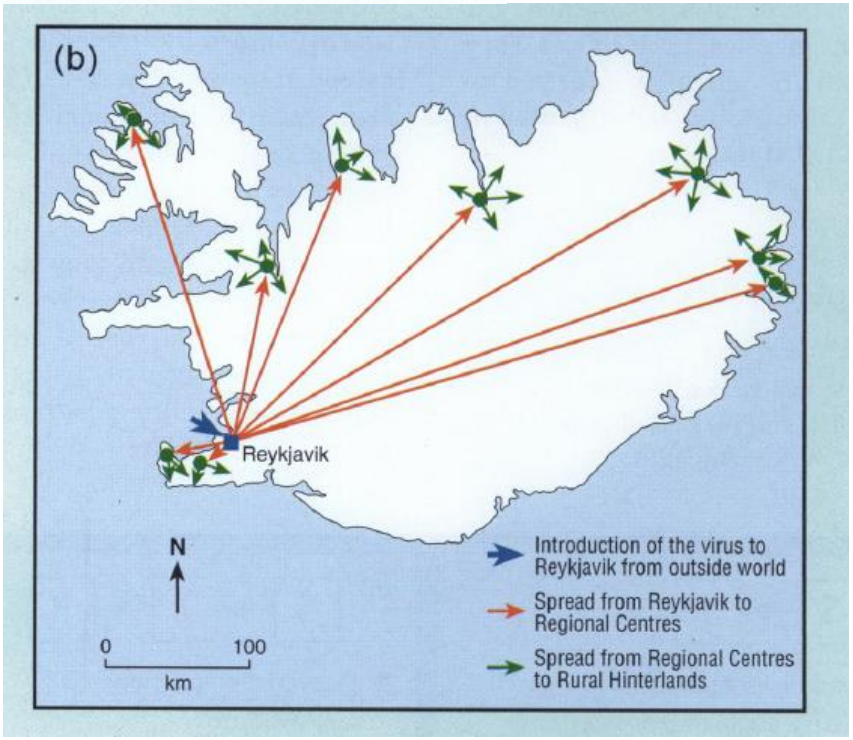
- A fourth type: as most diffusion in our society occurs as a mixture of spread and hierarchical diffusion = “mixed” diffusion (a *fourth* type, if you are still counting)

- As a case study of diffusion – some work I have been doing in Iceland recently on the spread of one particular gravestone design….

Simple model of hierarchical diffusion for Iceland

Figure 7: The theory of hierarchical spread: (a) from the core to the periphery, and (b) applied to the spread of measles in Iceland.





Source: Jenkins 1999

Any visitor to an Icelandic cemetery is likely to encounter gravestones that include Thorvaldsen's *Night* and *Day* – they are part of a changing deathscape that happens in later 19thC Iceland

Grindavík

NE of Borganes

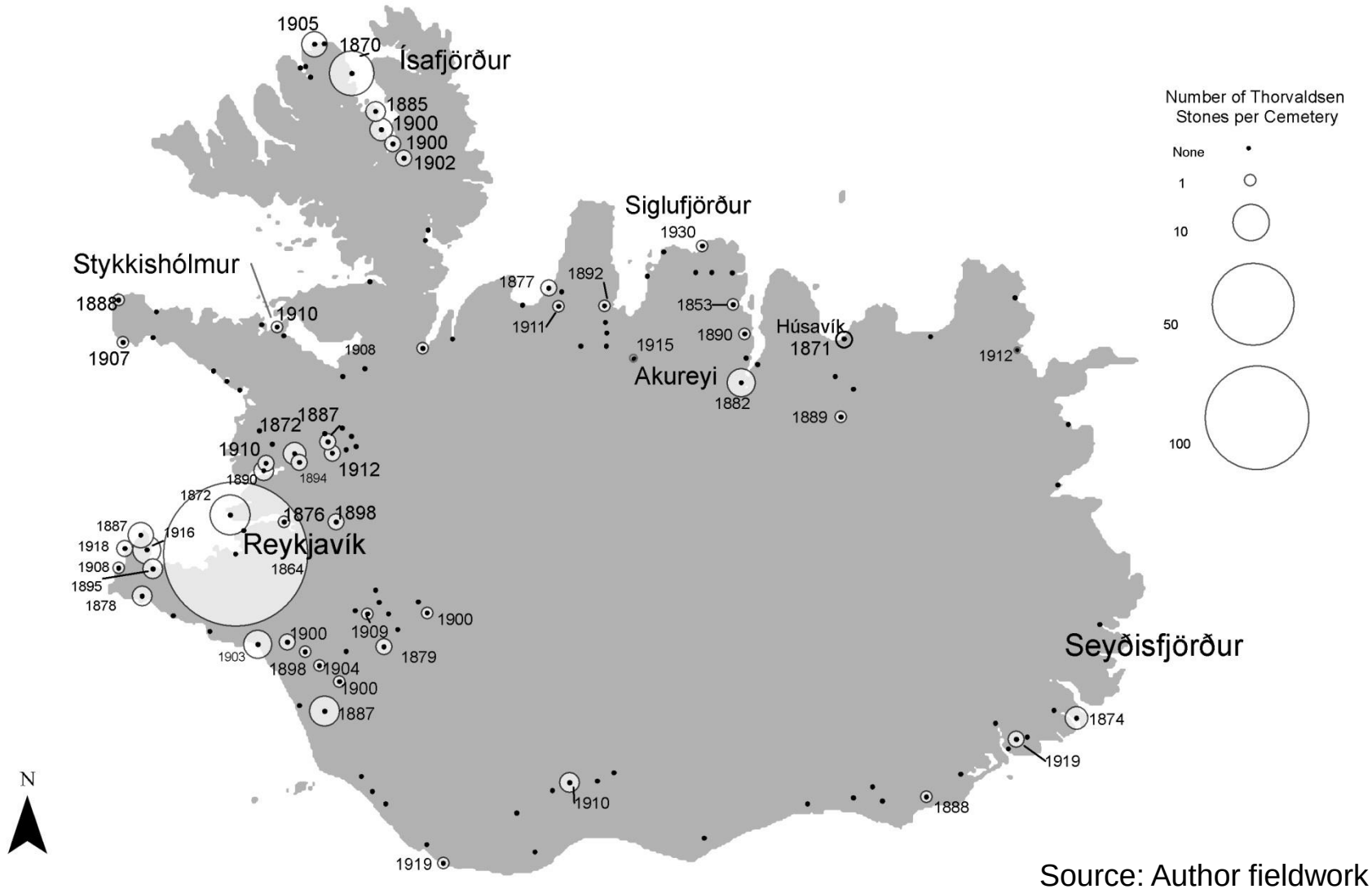
Vicinity of Ísafjörður, NW peninsula Iceland

These stones incorporate copies of the Danish sculptor Bertel Thorvaldsen's (1770-1844) most famous works originally carved in Rome in 1805

Morning

Night

Thorvaldsen's "Night" and "Morning" in Icelandic Cemeteries, by Date of First Occurrence



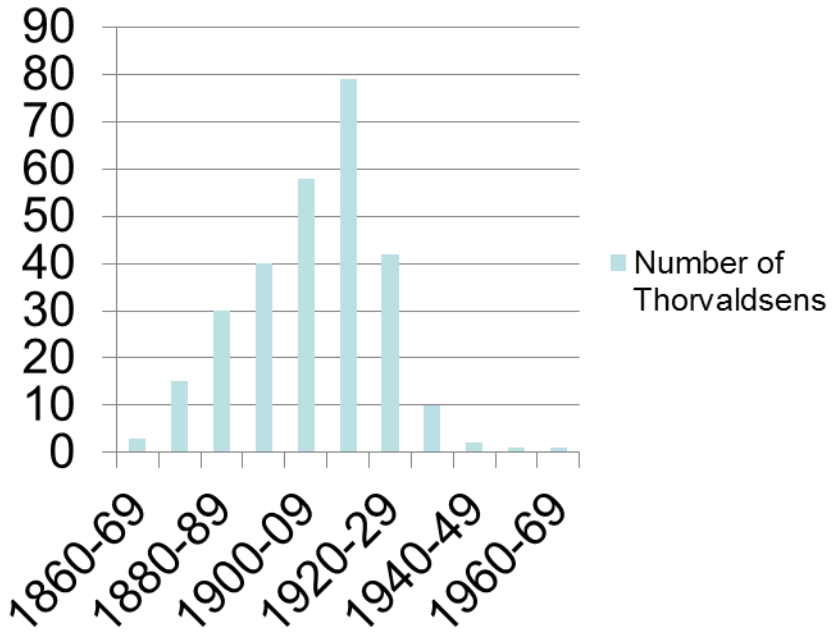
Source: Author fieldwork

European Environment Agency, 2009
Cemetery data from field survey 2007, 2009, 2012 and 2015
Projection: Lambert_Azimuthal_Equal_Area
Map compiled by Marco Burelli, Concordia University, Department of Geography, Planning and Environment.

The distribution of Thorvaldsens: Iceland 1860-1969 by region

1860-1969

(total: 281 stones]



By region