

## Midterm - INTD262

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December 6, 2024

## 1 Unit 3

1. Recall the fascinating story about psychological research, in which the author shares that 67 percent of psychologists who were asked to share their data did not share it. (a) Were the rates of error higher or lower in the studies for which the authors did not share data? (b) In whose favor were the errors?
  - a) The rates were higher (67%)
  - b) It was in favor of the authors 90% of the time, confirmed their hypothesis, confirmation bias
2. "Recent research in behavioral economics has shown that groups are often better than individuals at finding errors in reasoning." (a) Why do you think this is the case? (b) Can you give an example of the wisdom of crowds thus far in our study of Latin American science?
  - a) People have different perspectives & are able to notice different things; someone might miss their own error but if another person reviews it, there's more of a chance the error will be caught
  - b) One example is the cause of yellow fever. Carlos Finlay, a Cuban physician, thought it was from mosquitos, tested it, & found his hypothesis correct. It wasn't until it was replicated more times on a greater scale that this was published as true.
3. Recall the story of cold fusion. (a) List three facets of the peer review process that went wrong in this episode. (b) How long, from start to finish, did it take for the scientific community to sort out the errors in the cold fusion research?
  - a) The experiments were published even though there had not been enough peer review done & no replication. The experiments & research was not verified first. They were published in a press conference before any verification was done. They could not reproduce the results. They did not share their methods or data.
  - b) approximately 2 years
4. Note that we encountered several examples of viceregal engineers becoming Latin American leaders. (a) What are some examples of professions that involved modern technical skill in Río de la Plata and Perú? (b) What is the primary profession of modern US leaders, for example, elected to The United States Congress?
  - a) building roads, bridges, infrastructure, architects, & military engineers
  - b) the primary profession among US leaders concerns law such as lawyers, attorneys, or judges
5. José Mariano Mociño and others were ordered by the Mexican viceroy on an expedition to Nootka Island. What was the purpose of the expedition? (Take INTD255 to learn more!)
 

To explore & collect info on the Pacific coastline of North America. They wanted info on the environment, plants, animals, & the population there.
6. In Perú, we must take note of the work of Hipólito Unanue. (a) What are some of his other scientific contributions? (b) In Nueva Granada, we must take note of the work of José Celestino Mutis. What are some of his main contributions?
  - a) Studies of the natural flora & fauna, medicinal plants, helping create the National University of San Marcos in Lima, furthering scientific education.
  - b) He studied a diverse amount of plant species, helping create scientific institutions, contributed to scientific research, pushed scientific education, & led the Royal Botanical Expedition to the New Kingdom of Granada.
7. (a) When did Latin American wars of independence begin, approximately? (b) Give some examples of scientists and engineers who fought and died for their countries.
  - a) approximately in 1810
  - b) José Mariano Mociño, José Luis Montaña, & Manuel Cotoero  
natural science medicine & chemistry chemistry

## 2 Unit 4

1. How long after Semmelweis's solution to childbed fever was germ theory introduced?

about 15-20 years after

2. Where did the practice of autopsies begin? In what way does performing an autopsy fit with the scientific attitude? meant as confirmation, making sure the person died of what they were diagnosed with.

They began in Paris. It fits with the scientific attitude because they would have a hypothesis as to why the person died, & would use the autopsy as a way to test their hypothesis & prove it either correct or incorrect. It helps with gathering data on medical issues, why someone has died, & to better understand how to help the issue before death.

3. (a) Do you think the discovery of penicillin was an accident? Why or why not? (b) Louis Pasteur is quoted as saying "chance favors the prepared mind." What did he mean by this? (c) In light of (a) and (b) do you regard

c) scientific

because without scientific research

after finding it

we would not be sure of its medicinal properties.

4. What event catalyzed the formation of the Establecimiento de Ciencias de Médicas in 1833?

The cholera epidemic because it showed the need for medical knowledge, importance of public health & medical/scientific education.

5. (a) List some reasons the authors give to explain why medical reforms were slow to materialize in Nueva Granada, relative to the struggle for reform in Nueva España. (b) Who led the medical reform process in Nueva Granada in the 18th century? (c) When and where was the Facultad de Medicina reestablished in Nueva Granada, and what happened next?

a) Their institutions were weaker, had more political conflicts, resisted the more conservative elites & the church

b) José Celestino Mutis

c) In Bogotá, Colombia in 1826 after it's independence. The staff helped advance medical education & helped to further develop the medical field & the healthcare system.

6. (a) How many medical schools were there in Brazil in the eighteenth century? (b) What happened to the Portuguese Crown in 1807? What influence did this have on medical reform?

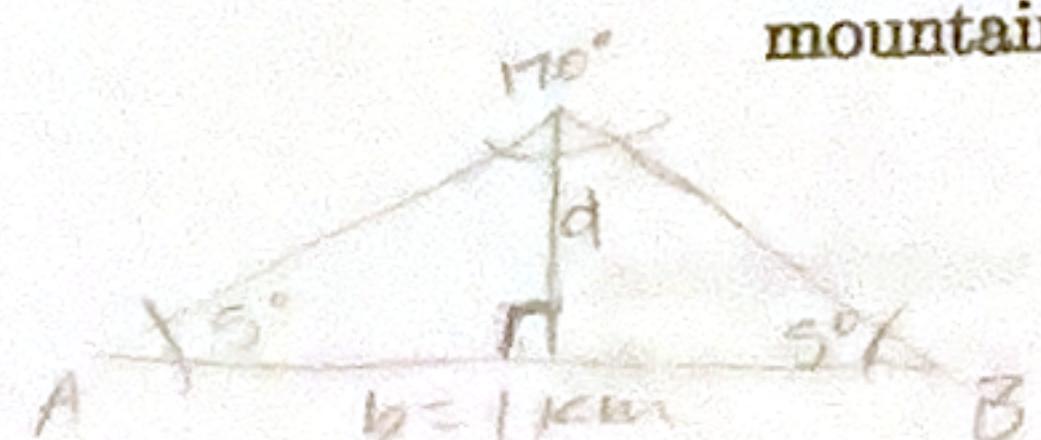
a) 2 → one in Bahia & another in Rio de Janeiro both founded in 1808.

b) The Napoleonic wars forced the Portuguese Crown to flee to Brazil. They brought medical reform to Brazil & created new medical schools.

7. As the generation of doctors in Columbia returned from France in the late 19th century, what three cultural institutions did they establish to enhance medical practice?

The Sociedad de Medicina de Bogotá, the Academia Nacional de Medicina, & the Facultad de Medicina de la Universidad Nacional de Colombia.

8. Triangulation Suppose you observe a distant mountain from a flat plain. Suppose you walk a baseline of 1 km, perpendicular to the direction towards the mountain. The difference between the compass headings to the mountain at either end of the baseline is 5 degrees. How far away is the mountain?



$$1^\circ = \frac{\pi}{180} \text{ radians}$$

$$5^\circ = 5 \times \frac{\pi}{180} = \frac{5\pi}{180} = \frac{\pi}{36} \text{ radians}$$

$$\approx 0.09 \text{ radians}$$

$$d = \frac{b}{\phi} = \frac{1 \text{ km}}{0.09} = 11.11 \text{ km}$$

9. Latitude and Longitude (a) Suppose two cities lie along a constant line of longitude. If we measure a change of 30 minutes (0.5 degree latitude) between them, how far apart are they, in km? (b) Suppose two cities lie along a constant latitude of 45 degrees North. If they are 600 km apart, what is the change in longitude between them?

change in latitude is  $0.5^\circ$  (30 mins)  
distance b/w 1° of latitude = ~ 111 km

The distance for a change of  $0.5^\circ$  =

$$0.5 \times 111 \text{ km} = 55.5 \text{ km}$$

Latitude =  $45^\circ$  N ; 600 km apart

$$\text{longitude} = \frac{\text{distance}}{111 \times \cos(\text{latitude})}$$

$$\cos(45^\circ) \approx 0.7071$$

$$\text{longitude} = \frac{600}{111 \times 0.7071} = \frac{600}{78.6} \approx 7.63^\circ$$

### 3 Unit 5

1. (a) When were the first medical journals published in Columbia? (Give a few examples). (b) Compare this time frame to the publication of the first mining, chemistry, and physics journals in Mexico. (c) How, or through whom, were these journals connected to medical schools in Columbia?

a) 1864 → La Gaceta Médica; 1862 → La Lanceta

b) The first mining, chemistry, & physics journals in Mexico were published later

c) Through Dr. Antonio Vargas Keyes who worked w/ the journals & taught the information to med. school students.

2. In 1833, two Enlightenment period institutions were merged into the beginnings of a modern medical school in Mexico. What were the three institutions?

Facultad de Medicina, Real Escuela de Cirugía, Establecimiento de Ciencias Medicina

3. Consider our major in kinesiology and nutrition science (KNS). To what extent would we consider this medicine, in the absence of modern germ theory? That is, are there other holistic forms of medical development we encountered in Latin American history besides vaccines and drugs that fight bacteria and viruses?

KNS is a body science and has benefits for physical pain like physical therapy, acupuncture, & cupping. Herbal medicine is an example of holistic medical development in Latin American history.

4. (a) What historical event in 1808 led to the creation of the first medical and surgical schools in Brazil (b) When did Brazil declare independence from Portugal? (c) How long after independence did the Brazilians introduce modern reforms into the medical schools in Bahia and Rio de Janeiro?

a) In 1808 the court of Portugal moved to Rio de Janeiro.

b) Brazil declared independence in 1822.

c) 7 years after. They finished in 1832. This was a transitional period for them.

5. In Colombia, the Escuela de Medicina was founded in 1865. It was centered on hospital-based anatomy and physiology. Consider the following quote from the text: "The second phase is notable for the slow progress of laboratory-based medicine, especially etiopathological procedures. Its final stage, starting in the 1950s, is defined by the introduction of Flexnerian reforms from North American technological medicine." What does quote mean by Flexnerian? Think back to our reading in The Scientific Attitude.

The report was showing that many medical schools were fake. Labs are very important for scientific research & growth in the field but many medical schools didn't have labs.

6. (a) What was a major driver of modern epidemiology in 19th Century Brazil? (b) What was the purpose of the Tropicalist School of medicine? (c) When did the bubonic plague enter Brazil, and how did the Brazilians respond?

a) A major driver was epidemics & the diseases that cause them. The tropical environment was a big factor in this & the dry, hot weather was used as treatment for tuberculosis.

b) They proved that tropical disease could be understood & fought in the same way as diseases of the cooler climates. The Tropicalist school thus developed an original theory & proposed a nonstandard knowledge set.

c) It entered Brazil in 1899. Dr. Oswaldo Cruz was an important figure who created an autochthonous cure to the plague, basically a vaccine for the plague.