Midterm - INTD262

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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. There was a higher error rate in the results that were withheld.
b. About 96% of the errors were in the scientists/author's favor.

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. This is the case because groups can offer different perspectives that analyze and solve problems differently. Groups can also analyze and correct each other's mistakes.
b. An example of the wisdom of crowds in Latin American science is the creation of science journals and schools in which scholars could collaborate and review their work to reach a firm conclusion.

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. Three facets of the peer review process that went wrong include that they published their 'research' on cold fusion without peer review and with negative peer reviews, they did not share their data with other researchers, and overall they could not achieve the results they had stated they could produce.
b. It took less than two months for the scientific community to sort out the errors in the cold fusion research.

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 R´ıo de la Plata and Per´u? (b) What is the primary profession of modern US leaders, for example, elected to The United States Congress?

a. Some examples are mercury mining, cartography or geography, and sailing.
b. The primary professions of modern U.S leaders elected to the U.S Congress includes lawyers, finance, and politicians.

5. Jos´e Mariano Moci˜no 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!)

a. The purpose of his expedition to Nookta Island was to study the natural wealth in Russia.

6. In Per´u, we must take note of the work of Hip´olito Un´anue. (a) What are some of his other scientific contributions? (b) In Nueva Granada, we must take note of the work of Jos´e Celestino Mutis. What are some of his main contributions?

a. Some of Unanue's contributions include botany and the study of the coca plant and the modernization of medicine.
b. Some of Mutis' contributions include the expedicion botanica, the categorization of linnaean classification and advancements in physics and mathematics.

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. The Latin American wars of independence began around 1810.
b. Francisco Jose de Caldas was one of the scientists who died for his country. He had previously worked with Jose mutis but during the time of the war, he joined in the efforts to begin a rebellion. Another example is a graduate from the Seminario de Mineria, Casimiro Ramon Chovel.

1. How long after Semmelweis's solution to childbed fever was germ theory introduced?
    a. It took about 15 to 20 years after Semmelweis's solution to childbed fever for germ theory to be introduced.

2. Where did the practice of autopsies begin? In what way does performing an autopsy fit with the scientific attitude?
    a. The practice of autopsies began in Paris, France.
    b. Performing an autopsy fits with the scientific attitude because autopsies are a way of corroborating with a bedside diagnosis. They confirm the initial findings.

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 the discovery of cinchona as accidental or scientific?
    a. I think that the beginning of the process was an accident in a way because Fleming was not aiming to solve a particular problem at that moment. But, the experiments that followed once he realized what was happening with the petri dish and the mold is a display of the scientific attitude. Fleming studied and observed the changes in the petri dish and created something out of it.
    b. In this quote Pasteur means that it is likely for something to happen by chance to the people who can analyze and interpret the evidence and turn it into something useful. If you are capable of interpreting the observations then it is likely that a success seems that it is a result of chance.

4. What event catalyzed the formation of the Establecimiento de Ciencias de M´edicas in 1833?
    a. The formation of the Establecimiento de Ciencias de Medicas was catalyzed by the Mexican wars for independence.

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 Espa˜na. (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. Some of the reasons the authors give for the slow medical reforms in Nueva Granada include low education and a low population density compared to Nueva Espana.
b. The medical reform process in Nueva Granada was led by Jose Celestino Mutis.
c. The Facultad de Medicina reestablished in Nueva Granada in 1802 at the Colegio del Rosario in the Kingdom of Nueva Granada, but it closed down during the war. It was later reopened after the war in 1819.

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. In the 18th century there were 0 medical schools in Brazil. Eventually, there was one.
b. In 1807, the crown ran from Napoleon from Portugal to Brazil. This led to an increase in Medical reforms and schools.

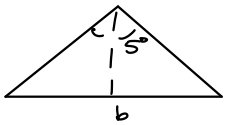
7. As the generation of doctors in Columbia returned from France in the late 19th century, what three cultural institutions did they establish to enhance medical practice?

a. The three cultural institutions they established to enhance medical practice were medical journals, professional associations and 'standard', and medical schools.

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?

$\boxed{d = \frac{b}{\phi}}$

d = DISTANCE
b = BASELINE
ϕ = RADIANS



$d = \frac{1\text{km}}{5^\circ} \rightarrow \frac{1000\text{ m}}{0.0873 \text{ RADIANS}}$ $\quad 5^\circ \times \frac{\pi \text{ RAD}}{180^\circ} = 0.0873 \text{ (RADIANS)}$

$\downarrow$

$\frac{11454.75 \text{ METERS}}{1000} \rightarrow 11.45 \text{ KM}$

THE MOUNTAIN IS 11.45 KM AWAY.

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?

a) $s = R\theta$ s = DIST. ALONG SURFACE

R = R OF EARTH

θ = Δ IN LAT

$s = 1^\circ \times (0.5^\circ)$

$\downarrow$

111 km

$s = 111\text{ km}\ (0.5^\circ)$

$s = 55.5$ km → THEY ARE 55.5 KM APART.

b) $\frac{s}{R\cos\theta} = \frac{\phi R\cos\theta}{R\cos\theta}$ ϕ = Δ LONG θ = CONST. LAT. → $\phi = \frac{s}{R\cos\theta} \rightarrow \frac{600\text{ km}}{(6371\text{ km})(\cos 45^\circ)} \rightarrow \frac{600\text{ km}}{(6371)(0.7071)(\pi/180)}$

$\downarrow$

$\phi = 9.5^\circ$ THE LONGITUDE CHANGE IS 9.5 DEGREES.

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. The first medical journals opened in Columbia were the Lanceta (1852) and La Gazeta (1864)
b. These journals came almost 100 years after the first journals began to be published in Mexico in the late 1700s.
c. The journals in Mexico were connected to the medical schools in Columbia because they influenced the establishment of proper standards that encouraged scholarly collaboration in standardized medicine.

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

a. The three institutions were the Facultad de medicina, the Real escuela de Cirugia and the Establecimiento de ciencias médicas.

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?

a. Kinesiology and nutrition of science can be considered medicine because it follows a clinical mentality and focuses on anatomical studies. These studies require anatomical training to connect the body to their studies, and they follow a method of science that analyses and interprets the symptoms.
b. Other holistic forms of medical developments in Latin American studies includes herbal medicine to treat ailments.

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 transfer of the Portuguese court to Rio de Janeiro led to the creation of the first medical and surgical schools in Brazil.
b. Brazil declared independence from Portugal in 1822.
c. Brazil introduced modern reforms into the medical schools 7 years after independence.

5. In Columbia, 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, staring in the 1950s, is defined by the introduction of Flexnerian reforms from North American technological medicine.” What does the quote mean by Flexnerian? Think back to our reading in The Scientific Attitude.

a. By Flexnererian, the quote is referring to the reforms that standardized medical schools. This term refers to Abraham Flexner’s report in which he stated that medical schools must meet specific requirements and standards in order to be considered a proper medical

school. Flexnarian reforms are reforms that improve the quality of medical schools by implementing standards.

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. The increasing rise of a public health crisis due to disease in Brazil led to the drive of modern epidemiology in the 19th century.
b. The Tropicalist School of Medicine was established to study health problems that were specific to tropical regions of the world. The school wanted to address health issues that arose in warm and humid climates.
c. The bubonic plague entered Brazil in 1899. Brazil responded by creating a vaccine that stopped the spread of the plague.