

Midterm - INTD262

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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?

The rates of error in the studies in which the author's did not share the data were higher because when information gets left out, there is more room for biases into the findings. These errors were in favor of the psychologists hypotheses and expected outcomes.

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?

Groups tend to be better than individuals at finding errors in reasoning because there are more people that are looking at the issue than just the one person. With more people tackling the problem, there is a better chance that it turns out more accurate. In our study of Latin American science we are able to see that multiple working towards the same issue provides better and more accurate results. For example, when scientists were trying to figure out how the universe worked, it took more than just one scientist to figure out how the Earth and Sun orbited. Several scientists had their own theories and we were finally able to land on the one we know today only because of several trial and error.

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?

The three issues in the peer review process were rushed publication, the experiment was not able to be replicated, and they never checked their work diligently.

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?

Professions that involved modern technical skill were Engineering, Cartography, and Mining. The primary profession of most modern US Leaders is law.

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!)

The purpose of this expedition was to gain further knowledge about the region. Not only that, this expedition would strengthen the Spanish territories and it also benefited their scientific endeavors.

6. In Perú, we must take note of the work of Hipólito Unzué. (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?

One of his major scientific contribution was the development of medicine in Perú. He had made significant contributions towards public health. He was also an expert in botany and with his knowledge he collected and documented local flowers to improve medical knowledge. Mutis's contributions consisted of scientific drawings, astronomy, and cultural influence.

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.

The wars began roughly around 1810. Some scientists and engineers that fought and died for their countries were Jose de San Martin, Antonio Narino, etc.

Unit 4

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

Germ theory was introduced 20 years after Semmelweis's discovery.

2. Where did the practice of autopsies begin? In what way does performing an autopsy fit with the scientific attitude?

The practice of autopsies began in Ancient Greece. Performing an autopsy fits with the scientific attitude because it requires a certain amount of precision and dedication to understanding the body. There is a bunch of meticulous work that takes place such as observing, critical thinking, testing hypotheses, etc.

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?

The discovery of penicillin was not an accident but rather an unexpected observation. Fleming was researching bacteria and while looking at the bacteria, he found a mold that had killed the bacteria near it. Louis means that if someone is prepared and has full knowledge on a certain topic, then there is a better chance they benefit from getting lucky. The discovery of cinchona can be seen as both an accident and scientific. Although, I think this discovery is more of an accident because they stumbled across the medicinal benefits by just practicing it anyways.

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

The reformist policies of Juan Manuel De Rosas is what catalyzed the formation of the Establecimiento de Ciencias de Medicas. The influence of European medical advancements also played a part in this.

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?

Some reasons are political instability, limited financial resources, the Church's reluctance, and the lack of support for scientific education. The leader of the medical reform process was Francisco Jose De Caldas. The Facultad de Medicina was reestablished in 1826 in Bogota. This became an important piece in medical education and helped train many of their professionals.

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?

There were two main medical schools that were there in Brazil in the eighteenth century. In 1807 the Portuguese Crown had fled to Brazil. Their fleeing led to the establishment of the Royal Court in Rio De Janeiro. This had positively influenced medical reforms in Brazil as this is what eventually caused the creation of 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?

1.) The National Academy of Medicine

2.) The Faculty of Medicine at the Universidad Nacional de Colombia

3.) The Colombian Society of Public Health

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?

The mountain would be 11.46 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.) The cities are $111 \times 0.5 = 55.5$ km apart.

b.) The change in longitude between the two cities is approximately 7.64 degrees

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?

Revista de Medicina y Cirugia was established in 1842 and Revista Médica de Bogotá was established in 1882. In Mexico, the first mining, chemistry, and physics journals were established in the early 19th century. These journals were connected to medical schools through faculty involvement. Professors and researchers played a huge role in founding and contributing to these journals.

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

The three institutions were:

1.) Real y Pontificia Universidad de Mexico

2.) Colegio de San Ildefonso

3.) Escuela de Cirugia

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?

If modern germ theory was to not exist then the KNS medicine would be considered a holistic medicine. There were other holistic practices in Latin America such as herbal medicine. Nutritional studies were also considered as a holistic medicine.

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?

When the Portuguese Royal Family fled to Brazil is when surgical schools were created. Brazil had declared its independence from Portugal in 1822. Modern reforms were introduced into the medical schools about 10-20 years following their 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, 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.

Flexnerian refers to the reforms that were introduced to the Medical Schools by Abraham Flexner. The quote talks about how the slow development of laboratory-based medicine had finally transformed because of the Flexnerian reforms.

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 major driver of modern epidemiology in the 19th Century Brazil was the very quick and rapid growth of urban centers, especially in Rio De Janeiro. Yellow fever showed the importance of scientific approaches for disease control. The purpose of the Tropicalist School was to address the health challenges that were specific to the tropical regions. This school had focused mainly on tropical diseases. The bubonic plague had entered Brazil in 1899 and the way they had responded was by using quarantining measures, disinfecting the infected areas, and more sanitary measures were created in order to control the outbreak.