

Understanding the Roots of the Scientific Revolution

Name _____

Period _____

Pre – Activity:

- A. Define *claim*:

- B. Define *evidence*:

- C. Define *reasoning*:

Part I. Read the following excerpt and determine the author's claim.

*It is common to date the beginning of the **scientific revolution** to 1543, when two pivotal texts appeared. The first of these was Nicolaus Copernicus' *De revolutionibus orbium coelestium* (On the **Revolutions** of the Heavenly Spheres), which shook up astronomy by proposing a Sun-centered universe to replace the long-held, Earth-centered model advocated by Ptolemy (Claudius Ptolemaeus), the respected astronomer of second-century Alexandria. The second was Andreas Vesalius' *De humani corporis fabrica* (On the Fabric of the Human Body), which challenged several established views of human anatomy that derived from Galen, a second-century Greek physician. For instance, Vesalius' observations led him to suggest that, contrary to Galen's view, blood could not pass from one side of the heart to the other through the septum--the wall between the left and right sides.*

These two texts radically changed the ways by which astronomy and anatomy were done. But Copernicus and Vesalius may have scarcely considered themselves revolutionaries. In fact, each was acting as a good humanist scholar, responding to severe problems in his discipline by seeking help in the pure and uncorrupted texts of antiquity.






What is the author's SUPER claim? Rewrite it in your OWN words. Remember that even changing a few words is still considered plagiarism!

Claim:

Part II. Read the following excerpt and determine what evidence and reasoning the author gives to support his previous claim.

As Copernicus [see sidebar] reflected on the growing disparities between observed solar and planetary positions and those calculated using Ptolemaic theory, he searched the ancient literature and discovered that some writers, including Cicero, had assumed that Earth moved around the Sun rather than vice versa.⁽ⁿ⁴⁾ Even more important from a technical standpoint, he found that the early Greek astronomer Hipparchus had measured the constant year in terms of successive passages of the Sun past a given star--what we would call the sidereal year. On the other hand, Ptolemy had measured the constant year as the interval between one vernal equinox (the first day of spring, when day and night are equally long) and the next--a period we call the solar year. Copernicus' great work was, in effect, a reworking of Ptolemaic astronomy using Hipparchus' assumption regarding the constant year; one major consequence of that reworking was the necessity of viewing Earth as revolving around the Sun.⁽ⁿ⁵⁾

*The case of Vesalius' **revolution** in anatomy was only slightly different. Galen's work, *De Anatomicis Administrationibus* (On Anatomical Procedures), had emphasized the importance of direct observation of the structure of the human body rather than acceptance of any textual authority. But this text was unknown to the West until it was recovered and translated from the Greek by Vesalius' teacher, Gunther von Andernach, in 1539. Vesalius then began to study it and to uncover Galen's errors, many of which had occurred because Galen used apes for dissection when human cadavers were difficult to get. In his great work of 1543, Vesalius followed Galen's text chapter by chapter, correcting its errors while reemphasizing Galen's original admonition to learn anatomy by direct observation of the body.*

Evidence	Reasoning
	
	
	
	
	

Name _____

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How the Scientific Revolution Transformed Society

Directions: Read and annotate the following article. Use three different colored pencils to underline the claim(s), evidence, and reasoning. After you have finished the article answer the final question.

*One major consequence of the **scientific revolution** was the transformation of almost all premodern, commonsense notions about the character of the natural world. For example:*

*Before the **scientific revolution**, people believed that Earth was at the center or bottom of the universe, at the maximum distance from God, Who resided in the empyrean above the stars. Afterward, they understood they lived on one planet among others circling the Sun, which was one star among an uncountable number.*

*Before the **scientific revolution**, all living things were thought to have souls that allowed them to be self-moving. Afterward, the bodies of living things were considered by many scientists as complicated mechanical devices that moved only in response to external stimuli.*

*Before the **scientific revolution**, people naturally thought that the speed of an object was proportional to the force acting on it. Afterward, they understood that it was the acceleration of an object that was proportional to the force.*

*A second consequence of the **scientific revolution** was a dramatic transformation in the material conditions of the lives of nearly every person in the Western world. When Butterfield wrote about it in 1949, scholars generally held the opinion that **scientific** knowledge did not lead to significant changes in medical care, agriculture, and industrial productivity until well into the nineteenth century. But this view has been radically revised within the past 10 years. It now seems clear that **scientific** attitudes, practices, and knowledge greatly stimulated agricultural and commercial growth as early as the seventeenth century. They certainly fueled the Industrial **Revolution** of the late eighteenth century,⁽ⁿ⁸⁾ and that **revolution** provided the foundation for the unprecedented wealth of modern western Europe and North America.*

*Finally, the **scientific revolution** was immensely important in transforming Western views of the character of society and the human individual. Methods of observation, analysis, and quantification developed in connection with natural knowledge were almost immediately and consciously transferred to the domains of society and individual human behavior. Thus in 1644, Hobbes produced a major transformation in political philosophy, claiming that he was doing for "civil philosophy" nothing but what Galileo had done for natural philosophy and Harvey had done for the science of man's body.⁽ⁿ⁹⁾ Drawing heavily on rational mechanical philosophy, Hobbes initiated a tradition of liberal, individualistic, secular, and sociopolitical theory that has dominated Anglo-American ideology ever since.*

A few decades later, John Locke began to apply the conceptual apparatus developed in connection with experimental mechanical philosophy to issues in what we now call psychology and moral philosophy as well. William Petty and his British and French followers drew from mechanical and mathematical concepts in creating "political arithmetic"--the foundation of modern economics--and grounded it in the assumption that each of us acts in such a way as to maximize our rationally calculated self-interest. And James Harrington responded to Hobbes' political theory by initiating social analyses that began to identify political authority with economic power.

*While these ideas, for better or worse, continue to underpin much of the Western view of self and society, our twentieth century has brought extraordinary revisions to established **scientific** concepts about nature, challenging the foundations of mechanical philosophies. From the work of such scientists as Max Planck, Albert Einstein, Louis de Broglie, and Erwin Schrödinger emerged radical views: that energy does not flow like a continuous wave but takes the form of discrete units (quanta), that waves can behave like particles, and that particles can have the properties of waves. From Einstein's famous equation, $E = mc^2$, came the realization that matter and energy are interconvertible, and his General Theory of Relativity explained the phenomenon of gravity as a manifestation of the curvature of space. These concepts run contrary to the notions consolidated at the time of the **scientific revolution**, but acceptance of the new theories is grounded in the argument that they provide the best known explanations for experimental observations. Thus, the formula of establishing theory based on careful experimentation, which was so central to the **scientific revolution**, continues to guide **scientific** research in the modern world.*

What is the **SUPER-claim** of this article? Write this in your own words.

THE SHAME OF COLLEGE SPORTS

TAYLOR BRANCH

<http://www.theatlantic.com/magazine/archive/2011/10/the-shame-of-college-sports/308643/>

*From Angela Orr, WCSD

PASSAGE FROM ARTICLE

The United States is the only country in the world that hosts big-time sports at institutions of higher learning. This should not, in and of itself, be controversial. College athletics are rooted in the classical ideal of *Mens sana in corpore sano*—a sound mind in a sound body—and who would argue with that? College sports are deeply inscribed in the culture of our nation. Half a million young men and women play competitive intercollegiate sports each year. Millions of spectators flock into football stadiums each Saturday in the fall, and tens of millions more watch on television. The March Madness basketball tournament each spring has become a major national event, with upwards of 80 million watching it on television and talking about the games around the office water cooler. ESPN has spawned ESPNU, a channel dedicated to college sports, and Fox Sports and other cable outlets are developing channels exclusively to cover sports from specific regions or divisions.

With so many people paying for tickets and watching on television, college sports has become Very Big Business. According to various reports, the football teams at Texas, Florida, Georgia, Michigan, and Penn State—to name just a few big-revenue football schools—each earn between \$40 million and \$80 million in profits a year, even after paying coaches multimillion-dollar salaries. When you combine so much money with such high, almost tribal, stakes—football boosters are famously rabid in their zeal to have their alma mater win—corruption is likely to follow.

WRITING ACTIVITY

Based upon the claim, “college sports has become Very Big Business,” determine the two pieces of textual evidence that provide support. Quote one piece and paraphrase the other.

QUOTE

- Consider: What words or phrases should the author be noted for because they are unique or written in a way that paraphrasing could not appropriately capture?
- Introduce your quote.
- Do not quote more than 10 words.

PARAPHRASE

- What is the best information to support this claim?
- First, change the structure of the sentence(s) – start and end in a different way.
- Then, change the actual words to ensure that your thought is your own.
- Check – do you have any groupings of words that match the original that could be changed and keep the meaning the same?

PASSAGE FROM ARTICLE

WRITING ACTIVITY

The debates and commissions about reforming college sports nibble around the edges—trying to reduce corruption, to prevent the “contamination” of athletes by lucre, and to maintain at least a pretense of concern for academic integrity. Everything stands on the implicit presumption that preserving amateurism is necessary for the well-being of college athletes. But while amateurism—and the free labor it provides—may be necessary to the preservation of the NCAA, and perhaps to the profit margins of various interested corporations and educational institutions, what if it doesn’t benefit the athletes? What if it hurts them?

PARAPHRASE THE PARAGRAPH:

- What is the most important idea/information in this paragraph? Start a sentence with your own words to describe that idea, and then elaborate or explain with one more detail.

“The Plantation Mentality”

“Ninety percent of the NCAA revenue is produced by 1 percent of the athletes,” Sonny Vaccaro says. “Go to the skill positions”—the stars. “Ninety percent African Americans.” The NCAA made its money off those kids, and so did he. They were not all bad people, the NCAA officials, but they were blind, Vaccaro believes. “Their organization is a fraud.”

...
“Scholarship athletes are already paid,” declared the Knight Commission members, “in the most meaningful way possible: with a free education.” This evasion by prominent educators severed my last reluctant, emotional tie with imposed amateurism. I found it worse than self-serving. It echoes masters who once claimed that heavenly salvation would outweigh earthly injustice to slaves. In the era when our college sports first arose, colonial powers were turning the whole world upside down to define their own interests as all-inclusive and benevolent. Just so, the NCAA calls it heinous exploitation to pay college athletes a fair portion of what they earn.

Explain the “plantation mentality” in your own words in the space below (no statistics...just a basic description).

Write out the entire quote from Sonny Vaccaro, without the textual interruptions of the author.

Now quote Vaccaro in your own sentence with an introduction and ending. Use only the “meat,” the most important part of the quote, in your sentence.

*lucre: monetary gain

