

琉球大学学術リポジトリ

Science and Literature/ Nature and Culture

メタデータ	言語: 出版者: The American Studies Center of the University of the Ryukyus 公開日: 2008-08-06 キーワード (Ja): キーワード (En): 作成者: Robertson, David メールアドレス: 所属:
URL	http://hdl.handle.net/20.500.12000/6892

Lecture presented by ASCUR

Science and Literature/ Nature and Culture

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*How is art different from spin? It tells the truth.
How is science different from spin? It tells the truth.*

Art and Science are two things equal to the same thing and therefore equal to each other. $3 + 3 = 6$ and $2 + 4 = 6$, therefore, $3 + 3 = 2 + 4$.

What is the worse comment you can make about a scientific theory: it does not tell the truth, it does not fit the facts, that is, evidence gathered over a period of time does not fit the theory. So the steady-state origin theory gradually gave way to the big bang theory.

What is the worse comment you can make about a novel: it does not tell the truth, that is, it does not fit the facts of our lives, it does not ring true, that is, evidence gathered over a period of time by lots of people living their lives suggests that its characters and plot and setting are false.

I understand art and science to be two aspects of a fundamental human endeavor: to find out what is out there and in here, that is, inside of ourselves.

In the Nature and Culture Program at the University of California, Davis, two core courses are crucial for the success of the program's educational endeavors. One is Nature and Culture 1. In a typical offering of the course, we ask how does a literary critic look at biology. Take evolution, for example. We see that it has a plot (evolutionary history), characters (genes, individuals, groups), and an

explanatory mechanism (natural selection in its various guises).

We also ask how a biologist looks at literature. Let's assume for the moment that at the human level, natural selection takes place at the group level as well as at the level of the individual and perhaps at the level of the gene. This is, of course, a topic hotly debated among theorists of evolution. In Nature and Culture 1 we ask, how might literature be viewed by an evolutionary biologist if selection at the human level is, at least partly, by the group.

The biologist might conclude that literature is a way of passing the culture on to following generations. So, literature would promote group cohesiveness as well teach the young what the elders have already learned. Perhaps one of the traits that allowed modern humans to win out in competition with Neanderthals was the ability to tell more complicated stories about a complicated world and to repeat them over the span of generations.

Biologist might also ask how literature functions in the present, long after homo sapiens has won the struggle of survival over competing hominids. If I am right about the truth-telling function of literature, then one might formulate the following hypothesis: groups that keep literature alive and vigilantly insist that literature tell the truth

might have an advantage over the groups that let their storytellers make up narratives that drastically simplify, and so, falsify the world we live in. Of course, it would be hard to collect evidence to support or reject such a hypothesis, but in a college class one can stimulate some hard thinking by posing such questions.

The biologist might ask one more question of literature. We humans are extraordinarily complex beings. Each of us is one person with many aspects, like the physical, the mental, the emotional, and the spiritual. Literature (and all art) seems to address all aspects of ourselves, as few other human activities do. Therefore, a robust literature might make for robust individuals, which in turn might make for robust groups. Once again, it would be very hard to devise an experiment that would demonstrate a correlation between literature and differential survival rates. To begin with, how would one know a robust literature from a not so robust one? But still, you can do "thought experiments" with students.

These are the sorts of issues discussed in Nature and Culture 1, which is a class for first year college students. Nature and Culture 180 is a fieldwork class for seniors. In the 10 years the class has been taught we have used three field sites, but I want to focus on only one: the McLaughlin Gold Mine. The McLaughlin Mine is about 60 miles from Davis in the Coastal Mountains of Northern California. The gold is extracted by the cyanide leach process, and yet it is one of the most environmentally friendly gold mines in the world.

Because of the low price of gold, the company stopped mining in 2003. It was no longer practical to extract microscopic flecks of gold from tons and tons of ore dug up out of the pit, as the big hole in the ground is called. But even before 2003 the company had agreed to turn the mine over to the University of California as a Natural Reserve. From

1998 until 2001, Nature and Culture held its fieldwork class there.

The students were set a number of scientific projects, but I will mention only two. One had to do with chemistry. In order to receive permits the mining company had to agree not to let any of the toxic side effects of the mining reach the water supply of the surrounding area. This meant an extensive monitoring process. Every stream had to be checked to make sure they were not carrying potentially dangerous chemicals away from the mine into the faucets of local residents. So, one of the scientific tasks we set the students was to evaluate the monitoring process on the basis of the data collected by the mine.

The other scientific project had to do with geology. The students were asked to solve the problem, why was so much gold concentrated at this particular spot, which is no larger than a few square kilometers. The answer had to do with the San Andreas system of faults. The pinching action caused by the junction of the Pacific plate and the North American plate made the water underground hot enough and put it under sufficient pressure that gold dissolved in the liquid and was carried to the surface wherever there were cracks in the earth's crust.

Geology made a nice transition to art and literature. The same system of faults that concentrated the gold also produced a fairly large volcano about 30 miles from the mine, called Mt. Konocti. First of all, we took the class to the local historical museum where they read about various myths that were told about the mountain. For example, that it was hollow inside, and that a group of small people lived in there an idyllic life and had great powers of healing. It was said that these people came and went from their home inside the mountain by means of a hole in the top.

So, then we got the students in cars and drove about half way up the 4,000 foot mountain, climbed the rest of the way and took them to see this hole. There is indeed a hole there but it goes down no more than 10-15 feet. Once we returned to the mine, we asked the students to make up a mythological narrative about the mine, how the gold got there, how the company found out about it, about the mining itself, and the closing down of the mine. We were trying to bring science and literature together by going from the geology of the mine to the geology of the mountain to historical myths

about the mountain to the creative process of making up your own myths.

In summary, then, I believe that art and science are two sides of the same cultural coin, the coin that humans use to find out about and make up stories about the world we live in. The Program in Nature and Culture at the University of California Davis tries to promote an ongoing conversation between art and science, to see how they are different, but also how they are alike.