

student about the nature of science than a scientist using a quotation from Shakespeare informs him about the nature of literature, the structure of a Shakespeare play, or even the literary meaning of that particular quotation. Still further, the authors fail to even refer to the values of literature or its multiple structures and omit entirely any distinctions between types of literature: expository (essays), narrative (short stories, novels), dramatic (plays, dialogues).

As well-intentioned as they are, the authors produce only a pretense at integration. The ways in which to integrate literature and science are undoubtedly diverse; but it does not seem unreasonable to suggest that both literature and science be studied each for its own sake, its own values, its own methodologies before one imposes such levels of integration as extracted passages, the probing of literature as an accumulation of facts, the reduction of chapters and their complex conflicts to chemical properties.

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Dolores Silva comments:

I enthusiastically endorse Ryan's suggestion that literature and science each be studied for its own sake. Our article supports the teaching of propositional knowledge where the focus is on hypothesis formation as a means of advancing investigation into selected areas of study. However, if the "study of illusions," the "nature of literary studies," the "distinction between types of literature," a "dictionary of familiar quotations," and the "study of multiple structures of literary studies," are appropriate content for high schoolers, I am alarmed. I doubt that piecemeal analysis and linguistic clarifications are applauded by adolescents. Our orientation is problem-sensing, problem-posing, and problem-solving not taxonomies or methodologies based on the great unanswered question of schooling: the origin and ground of values.

"If," wrote Suzanne Langer, "we want to have new knowledge, we need a whole host of new questions." Ryan simply does not understand that the hardest part of research is finding the right questions to ask. In the broadest sense, Ryan's problem is an educational one—or, more precisely, one of re-education.

STUDENT ATTITUDES

In his editorial on the value of scientific inquiry entitled "Science→Disruption→Change" (*ABT* 36[4]: 194) outgoing editor Carter appropriately reminds us that as science teachers we have an opportunity to develop scientific attitudes in our students. The way we conduct our classes can contribute to the evolution of a society that is not afraid of change.

It occurs to me that science teachers are not alone in this regard. Teachers of other subjects are also able to stress the same ideas involving (i) an open minded approach; (ii) a desire to gather all relevant data; (iii) a readiness to consider another point of view; and (iv) a willingness to change one's mind. English teachers can find ample examples in literature to delve into human experiences; social studies teachers can analyze all sides of an issue, especially a controversial one; teachers who direct student activities can emphasize that the simple skill of communication includes not only talking but also listening and thinking about what someone else has said.

In short, a key objective of education is to think clearly. Science teaching—indeed all teaching—can and should contribute to the realization of these goals. However, while it is true that it can be caught [sic], I believe it must also be consciously taught.

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THE LACEY ACT

I was disturbed to see the speech of Nathaniel Reed (*ABT* 36[4]:212) in this journal. NABT has rightly opposed the ban on living animals in high-school biology, and yet Reed is a major spokesman for the groups that support such bans. Under the new laws he proposes, any teacher who has ever kept a boa in the classroom could never get another one. He proposes to use the Lacey Act, originally intended to protect the environment from certain undesirable species, as a weapon for the antizoo people to keep out practically all mammals, birds, reptiles, and amphibians from overseas.

Granted that there are abuses in handling animals in the pet trade, the importers are the first ones to welcome government aid that would truly counter such inhumane treatment. After all, an animal that is sick, dead, or dying on arrival is money out of the pocket of the importer. If Mr. Reed was truly interested in humane treatment of animals, he would work with the importers for specific regulations that would benefit all. Instead, Mr. Reed pursues a course of half-truths and falsehoods to support his total ban. The *ABT* introduction says he is an amateur ichthyologist. As a trained ichthyologist, I would have to say he is a rank amateur from the statements he makes about fish in his speech. (i) Moray eels of the 1-3 foot size imported to this country are not really dangerous to humans. They can bite, but their bite is no worse than that of the garter snake. Moreover, after a brief period in captivity they become quite tame and will take food from the owner's fingers, without biting the hand that feeds them! (ii) The lionfish imported here must always be handled with care, and all tropical fish dealers I know of warn customers that their dorsal spines can sting. Each spine can deliver a sting equal to that of a honey bee; but we do not ban observation hives or honey

bees. (iii) Piranhas may present an ecological danger in southern states having waters warm enough for their survival, but not in the North. Furthermore, their danger to humans has been wildly exaggerated. Single fish can nip, but unless you plan to fill your swimming pool with them, the danger is no greater than keeping laboratory rats which also nip fingers.

There is much more I would like to say about Reed's proposed regulations under the Lacey Act, but I hope the NABT board will study them, and the damage they will do to education. If they are adopted, of all the wildlife children will ever be exposed to will be on TV films. And worst of all, Reed's proposals will really do nothing toward improving conditions in the exporting countries who will continue their old ways in exporting to Europe and Japan.

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Nathaniel P. Reed comments:

I wish De Lisle had given as much attention to the content of my speech as he apparently has to the widespread and grossly erroneous information being circulated throughout the commercial animal trade and the pet industry. Had he done so, he would have found that the proposal at issue does *not* involve a ban on the importation of *any* species—regardless of how injurious that species may be. The proposed regulations would insure that any vertebrate, mollusk or crustacean which poses a threat of injury to “. . . human beings, the interests of agriculture, horticulture, forestry, wildlife or the wildlife resources of the United States . . .” is imported only by responsible persons for justifiable purposes. Animals deemed to be “injurious” could still be imported into the U.S. under permits which can be issued for scientific, educational, medical, or zoological purposes.

These regulations would not prevent persons from possessing or moving their animals across state lines as long as such activities are not contrary to state (or other federal) law and would not prevent the teachers to whom he refers from using nor from importing boas for use in their classrooms (assuming the activities involved could be construed as “educational” in nature). The other examples he sets forth are equally irrelevant.

The proposed “Injurious Animal” regulations *will* have an impact on certain aspects of the live animal industry and, as noted earlier, have been grossly distorted by widespread rumors. For this reason we have prepared a “Fact Sheet” which any interested person can obtain from the Director, U.S. Fish and Wildlife Service, Washington, D. C. 20240.

RELIGION OR SCIENCE: WHICH IS IT?

ABT's publishing of Nicholas J. T. LoCascio and Sister Jean Dominici DeMaria's article “Ethics in the Control of Man” (*ABT* 36[3]:180) seems to me to

be continuing the confusion of religious with scientific viewpoints begun with the debate over creationism (to the utter detriment of both religion and science). Lest some of the statements the authors make be given an aura of scientific validity that even they would not wish to imply, some response is needed.

First, in an article which contains the word “ethics” in its title, it seems to me absolutely incredible that the authors could so completely misrepresent Garrett Hardin by such gross out-of-context lifting of the Beethoven fable. As the *ABT* reviewer of the Hardin book (*Stalking the Wild Taboo*, 1973: William Kaufmann, Inc.) out of which LoCascio and DeMaria took the passage, I do think *ABT* readers are entitled to see the *full* story from Hardin and not just the part the authors choose to show us:

Two physicians are talking shop. “Doctor,” says one, “I'd like your professional opinion. The question is, should the pregnancy have been terminated or not? The father was syphilitic. The mother was tuberculous. They had already had four children: the first was blind, the second died, the third was deaf and dumb, and the fourth was tuberculous. The woman was pregnant for the fifth time. As the attending physician, what would you have done?”

“I would have terminated the pregnancy.”

“Then you would have murdered Beethoven.”

The story has a terrific impact. Yet there's something wrong with it. Somehow logic has slipped a cog. Perhaps the most important counterpoint is this: after suitably altering the earlier details of the anecdote, one can quite legitimately substitute for the name “Beethoven,” the name “Hitler,” or “Caligula,” or “Genghis Khan.” To deny that these are legitimate substitutions is to imply that there is something inherently excellent about syphilitic, tuberculous parenthood, that such parents should be actually encouraged to have many children in order that many Beethovens may be born. I have yet to hear an abortion-prohibitionist urge this.

I think we are disturbed by this story because it makes us realize that if Beethoven had never been born we would never have known the difference. We would never have missed him. “What a loss!”—or is it? Can we have a loss of which we are unaware? Beethoven's mother, like all women no doubt, started life with about 30,000 immature eggs in her ovaries. She produced only seven children. Therefore 29,993 eggs, all potential human beings, must have perished. Should we weep for this “loss?” And what about the 100,000,000 sperm his father produced every day of his mature years—say, some 1,000,000,000,000 in all. If certain technical problems had been solved, Mr. Beethoven senior could have populated the world 1,200 times over all by himself. Does the fact that his million, million sperm did not meet and fertilize an equal number of eggs constitute a loss in any meaningful sense? Considering our population problem it would be hard to defend this thesis.

There is a bit more that Hardin has to say about the fallacy of the Beethoven fable, but that's enough to give *ABT* readers the *true* flavor of what he was saying. I think the authors might agree with me that it would have been fairer for them to at least acknowledge Hardin's true feelings in a footnote.

LoCascio and DeMaria ask, “How much biology will be necessary to replace (if it were possible) the