RELIGION AND SCIENCE IN TAIWAN: RETHINKING THE CONNECTION

by Frank E. Budenholzer

Abstract. The author draws upon his experience in teaching courses in religion and science in Taiwan, as well as more traditional sources in the history of Chinese religions and the history of science in China, to discuss the relationship of religion and science in contemporary Taiwan. Various aspects of Chinese and Taiwanese understandings of both science and religion are discussed. It is suggested that the nexus for the science-religion dialogue does not lie in a doctrine of creation, which is noticeably absent in Buddhism and most Chinese religions, but rather in the human person who seeks personal health and wholeness, right relations with fellow human beings, and harmony with the cosmos. The author notes that many of these ideas are not unique to China and Taiwan and that in considering other cultures, our understanding of our own culture is enriched.

Keywords: Chinese religions; creation; history of Chinese science; science and religion; superstition.

The cross-disciplinary study of science and religion has attained a significant degree of maturity and acceptance. Its impact has probably been felt most strongly in the academic study of theology. However, students of the social sciences, the life sciences, and the physical sciences also have felt its impact. To simplify a very complex reality, it seems fair to say that there are two main streams of thought on the contemporary horizon. The first is the dialogue between science and Christian theology where two distinct sources of knowledge are recognized—the Christian tradition and contemporary empirical science—and the challenge is to bring these two into

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some kind of coherence. This line of thought has a long tradition in Christian life and theology beginning already with the Fathers of the Church. The tradition is probably best exemplified in the tradition of the two books—"The Book of Scripture and the Book of Nature" (Pederson 1992).

The second current is that of "religious naturalism." Again it has a long pedigree, but in more recent times may be identified with thinkers such as Henry Nelson Wieman (1971) and Ralph Wendell Burhoe (Breed 1992; Burhoe 1972; 1975; 1979). To the credit of those involved in both streams, there has been and continues to be a fruitful interchange between the two.

However, both currents share many common assumptions, coming as they do from a specific cultural matrix. This is true both of the understanding of what is science and what constitutes religion. What I would like to do in this paper is to "rethink the connection" by reflecting on the science-religion dialogue in an Asian, specifically Chinese/Taiwanese, context. I have taught physical chemistry in Taiwan for almost twenty years. During the 1999-2000 academic year, I taught a course in science and religion first in the general curriculum program of the College of Science and Engineering of Fu Jen Catholic University in Taipei and then in the graduate program of the department of religious studies. How are science, religion, and the interaction between the two understood in Taiwan's cultural environment? How can a reflection on religion and science in Taiwan help us to better understand the relation between religion and science in other cultural situations?

Science

To the vast majority of the people in Taiwan, science (*kexue* in Chinese) means pretty well what it would mean to most Europeans and North Americans. It refers primarily to the physical sciences (physics and chemistry), the biological sciences, and the earth sciences. The roots of contemporary empirical science clearly lie in Europe. Thus science has in the past been referred to as "Western science." However, the adjective "Western" is rarely used. People of Asia point proudly to centers of scientific excellence in Tokyo, Taipei, Beijing, and New Delhi, to name just a few. In the College of Science and Engineering it would seem strange to speak of "Western science." Even in the humanities departments the term is used sparingly. In my own classes when I want to speak of contemporary science, as opposed to other systematic efforts to understand natural phenomena, I will talk of "empirical science" or "modern empirical science." Science has long been an international phenomenon transcending East and West.

However, having said this, it is still necessary to recognize that the understanding of science is very much influenced by the local cultural matrix. Western scientific understandings were first brought to China by the Jesuit missionaries at the end of the Ming Dynasty (1368–1644) and the

beginning of the Qing (1644–1911). While this laid an important foundation, especially in mathematics and calendar studies, its influence was relatively circumscribed. It was only at the end of the Qing Dynasty and the beginning of the Republican era (1911) that science really entered the mainstream of Chinese culture. By the 1930s both the "New Life Movement" of the Nationalists under Chiang Kai-Shek and the philosophers of the rising tide of Marxist thought were in tacit agreement on the basic validity of "Western" science. There was no contest between competing paradigms. Western physics, chemistry, and biology simply took the center stage (Elman 1998; Reardon-Anderson 1991).

Interestingly, one area where there was and still is a distinction is in medicine. Western and (traditional) Chinese medicine have existed side by side in Taiwan and in Mainland China since the introduction of Western medicine. Their relationship has been stormy at times, and traditional Chinese medicine has been very much influenced by Western empirical medicine (Zhao 1991). However, both have continued to flourish. Taiwan's government-sponsored insurance program will pay for both. For acute conditions (a broken bone or a heart attack) Western medicine is the clear option. However, for chronic illness or difficult-to-diagnose conditions, traditional Chinese medicine may be the option of choice. There is also a large body of literature where empirical scientists use analytical techniques and statistical methods to study traditional drugs and healing techniques (e.g., acupuncture) for their effectiveness. However, beyond the pragmatic recognition by practitioners of all persuasions of the concrete benefits of both traditions, at base the two rely on different understandings of human physiology.

At the end of the Qing Dynasty and the early Republican period science was primarily sought for the purpose of nation building. Thus much of the earliest and most influential translation of Western scientific texts into Chinese was done at the Kiangnan arsenal and the Foochow shipyard (Bennett 1967). The famous phrase of the thinker Chang Chih-tung captures the sentiment "Chinese learning as the substance, Western learning for application" (quoted in Kwok 1971, 4). At least in Taiwan, every college student knows the phrase. After humiliations at the hands of the Europeans and the Japanese, China's hope was that through science and technology the nation's rightful place on the world stage could be restored.

This very pragmatic view of science and technology has a long history in China (Reynolds 1991) and has continued to this day. Particularly in Taiwan, science is seen as the engine of continued economic development. Taiwan feels it must move from being an importer of turn-key technology to an originator of processes and products. Only then can national security and economic prosperity be ensured.

However, having said all this, I do not want to leave the impression that questions of truth have simply been cast aside in the name of technology.

A dichotomy that is continually raised both in Taiwan and in Mainland China is that of "science versus superstition." The word we translate as superstition is *mixin*, literally deluded or misguided faith. Science is generally recognized as a very powerful tool to help individuals, especially the less educated masses, to avoid the trap of superstition. Chinese folk religion is replete with practices that many more educated persons are repelled by (at least in public). Such practices would include fortune telling (*suan ming*) in many forms, belief in ghosts and spirits, calculation of good and bad days for various activities, burning of ghost money to appease ancestors, and geomancy. The catalogue of which practices constitute superstition and which may have a core of truth will vary from individual to individual. Science serves an important function in distinguishing truth from misguided, superstitious belief.

These two streams, science and technology as the basis of nation building and science as a way to dispel superstition, coalesced with the more agnostic elements of Confucian thought to bring about a strong scientism among many intellectuals of the early twentieth century (Kwok 1971). In Marxism such scientism found its logical outcome. In the Marxist orthodoxy of Mainland China all religion is essentially defined as feudal superstition (*fengjian mixin*).

Thus when all is said and done, at least in Taiwan, science has not become a philosophy of life. It is highly valued for its problem-solving ability and its contribution to rooting out the grosser forms of superstition. Thus it takes its place with other elements of life in making its contribution to the good life.

Religion

Just this year, the Institute of Sociology of Taiwan's main government research organization, the Academia Sinica, published the results of a detailed survey of Social Change in Taiwan (Chang Ying-hua 2000). The survey included detailed information on the religious beliefs and attitudes of Taiwan's population. Some results of the survey are given in Table 1.

To most international readers what may be most striking is the variety of religious faiths in Taiwan. However, this can be misleading. Those questioned were simply asked their religious faith. In a follow-up question, it was asked if they had taken part in any religious rite such as to become members of the religion they had indicated. Over 70 percent said they had not or that their particular religion lacked such a practice. For example, 23.6 percent said their faith was Buddhist, but only 5.5 percent had participated in the traditional Buddhist conversion ceremony. In fact the boundaries between the various categories are very fluid. Many earlier studies combined Taoism with popular religion. Taoist temples often contain icons of Buddhist deities and vice versa. One time in my religion-

and-science class I asked my students about their religious faith. The reply of one student was instructive: "Most of us are just the usual Taiwan mixture of Taoism, Buddhism, and traditional folk religion."

The word that translates religion, *zongjiao*, is of rather recent origin. Literally the characters would refer to the teachings of the ancestors or clan. For most people of Taiwan religion is not so much a faith stance, though that is present too, but a set of activities and understandings that have been handed on from their ancestors and help them to deal with the various situations that arise in life.

The students of Fu Jen University come to the university through the government-sponsored joint entrance examination. Every year in July all Taiwan students wishing college placement, for both private and public institutions, sit for a joint entrance examination. Having completed the exam and seen their scores, students select the school and department of their choice. Those with the highest scores will be placed in the school and department of their choice. Students with lower scores will receive the choice that is still available. Thus with the exception of some departments particularly related to Fu Jen's Catholic character (e.g. philosophy, religious studies), the religious beliefs of Fu Jen's students will pretty well mirror that of the overall college population. Table 1 also gives the results of a survey of Fu Jen's students analogous to the Taiwan-wide study discussed above. The most noticeable difference is the larger number of students who say they have no religious faith. While they may occasionally accompany a family member to a temple, they themselves do not have a feeling of belonging to a religious tradition. Students have told me that while

TABLE 1

Religious Faith of the General Taiwan Population[a] and students of Fu Jen[b]

Religious Faith	General Population	Fu Jen Students
No religious faith	13.6 %	38.4 %
Folk religion	33.6%	27.4 %
Buddhism	26.3%	15.3 %
Taoism	12.7%	11.3 %
Catholicism	2.4%	1.7 %
Protestantism	4.8%	2.4 %
Other religions of Chinese origin	2.7%	1.3 %
Other religions of Japanese connection	0.2%	0.3 %
Islam and other foreign religions	0.2%	0.2 %
Other	3.5%	1.4 %

[a]Academia Sinica, Survey of Taiwan Social Change (Chang Ying-hua 2000)
[b]Fu Jen Catholic University, Department of Statistics, Public Opinion Survey Center (Shia Ben-Chang 2000)

they checked the "no religious faith" box, they do not mean that they necessarily deny meaning to religious assertions or have no religious belief.

How then does religion function for the individuals and for society? In one sense, this is a question that can only be answered for specific religious traditions. Yet I believe some more general suggestions can be made, with the risk of grossly oversimplifying a very complex reality. In an invited lecture Professor Sung Kuang-yu of the Academia Sinica sketched the four levels of the human person: the material body, physical energy, physiological and psychological information, and finally mind and wisdom.[1] I asked what this had to do with religion. "The upper strata," he replied, "are what they in the West refer to as God." This is not so much a metaphysical or philosophical statement as an important insight into Chinese religiosity. Religion springs from the continuum that is the human person, both as an individual and as a member of society. Religion is not primarily the person facing god, whether the personal God of the monotheistic traditions or the creative universe of the naturalistic traditions.

Buddhist enlightenment relates to the hope that we might participate in the Buddha nature. Yet the Buddha nature is not something outside of us or beyond us. In some sense we already possess the Buddha nature. I remember one student asking me in a puzzled way about Christianity. "Your god seems so distant and far away," he said. "Buddhism teaches that we already possess the Buddha nature."

Religious Taoism is perhaps the most difficult to get a clear handle on.[2] It's a vast panoply of rituals, practices and beliefs. Students when they wish to describe religious Taoism invariably quote a Taoist aphorism, "Live forever, avoid death (*chang sheng bu si*)" (Welch 1957). This is usually followed by a slight chuckle. While the religious studies scholar might argue about the completeness of the students' "definition," it surely tells us something important about the Taoist tradition. Religion has to do with living a full and complete life.

When I have taught the religion-and-science course, both as a general curriculum offering in the college of science and engineering and in the graduate program in religious studies, invariably a student or group of students has selected (traditional) Chinese medicine and Taoism as a topic for their report. The report is typically quite straightforward, describing the theory and practice of traditional Chinese medicine as catalogued in the Taoist canon. Coming from my background, I have sometimes asked what this has to do with religion. Students don't know quite how to reply. They realize that one can make use of traditional Chinese medicine without believing or making any personal investment in Taoist religion. Going back to Professor Sung's levels of being human, Chinese medicine primarily deals with the first and second levels. Traditional Chinese medicine can be detached from the higher levels, just as is (Western) empirical medicine. However, the tradition is one of continuity. The various levels flow into

each other and are not to be easily separated. Similar statements can be made about the various exercises and practices known collectively as *qigong*. They can be detached from the worldview in which they originated and practiced much as one would practice any other set of exercises. However, for many adherents they involve a way of life that can be called religious. This is why such movements are often seen by the Chinese government as threatening the stability of the state.

Normally Confucianism is not considered a religion. Thus in the surveys discussed above there is no question about one's belief in Confucianism. In fact, Confucius is one figure with whom adherents of all China's religious faiths, including Christianity, feel very comfortable. Yet there is a sense in which Confucianism functions as a religion. The Confucian canon provides a way of life, which is arguably the largest single influence on Chinese and East Asian culture. Orthodox Confucianism has its temples and very limited rituals. Confucius is also venerated as a deity in the folk tradition of Taiwan and has been adopted into the Taoist pantheon.

The first book of the Chung Yung (*Zhongyong*, often translated as "The Doctrine of the Mean"), traditionally attributed to Confucius, states clearly that human nature is imparted to the human person from heaven (*Tian*). However, at least in Neo-Confucianism and according to most contemporary commentators, this does not imply some sort of creation as in the monotheistic traditions. Rather it suggests a grounding of the moral life in the larger cosmic reality, what Tu Wei-Ming (1989, 69) describes as a "transcendent anchorage." We live out our lives in the web of human relations, usually codified in terms of five basic relations: ruler and minister, father and son, husband and wife, elder and younger brothers, intercourse between friends (*Zhongyong*, trans. Tu Wei-Ming 1989, 54). Through a process of education and self-cultivation the person comes to fulfillment. There is a harmony between the individual, the society of which he or she is a part, and the cosmos.

These are, of course, broad strokes, which probably should not be taken too seriously. They are best taken as metaphors from the traditional Chinese religions that may be helpful in understanding the syncretic and fluid amalgam of beliefs and practices that characterize contemporary religiosity in Taiwan. Religion has to do with the individual in his or her concrete reality, whether searching for physical well-being and harmony in society or, as in Buddhism, looking to leave the world of suffering and unreality.

As I was writing this article, I was discussing with one of my Christian colleagues these notions of Taiwanese religiosity. "Doesn't this point to something beyond?" she asked. My answer was to quote the beginning lines of Tao De Ching, the foundational work of philosophical Taoism.

> The way (*Tao*) that can be spoken of
> Is not the constant way;
> The name that can be named

> Is not the constant name.
> The nameless was the beginning of heaven and earth;
> The named was the Mother of the Myriad creatures
> (Lao Tzu i:1–2).

The source, the beginning, the ultimate, the Tao would seem to be unknowable. Or perhaps it is better to say that we can obtain only finite glimpses in the concrete realities of everyday life.

Religion and Science

By reflecting on the understandings of science and religion in Taiwan, I have attempted to tease out the boundaries and parameters of the science-religion dialogue, at least as I have experienced it in teaching courses in science and religion and in interacting with my colleagues in the university. It is now time to consider some specifics of the dialogue. In what follows I will on occasion refer to reports my students prepared for the courses in religion and science. Table 2 lists these reports.

In the vast majority of North American and European writing on religion and science, creation is the point of nexus. I believe this is true in both the traditional theistic stream and in the more naturalistic stream of writers such as Burhoe (1972; 1975; 1979) or Goodenough (1998). In most Chinese religions there is simply no talk of creation. Virtually all scholars would agree that Buddhism lacks such a doctrine (Dumoulin 1974, 174ff.). Tu Wei-Ming observes (1989, 69) that "the lack of a creation myth is not only a prominent feature of Confucian symbolism but also a defining characteristic of Chinese cosmology." Taoism is more complicated (Shipper 1993, 33–40), with a number of cosmological myths describing the origins of the universe in the Taoist canon. However, Taoism clearly does not speak of a creator in the sense of the monotheistic traditions. Some of the folk traditions have cosmological stories, but these are very mythological accounts and relatively circumscribed in their influence (Jordan and Overmeyer 1986, 58ff.). Religion is not primarily about explaining the origins of the universe or the origins of life. So it is not surprising that, in all the student reports, I cannot once remember the word *creation* being mentioned, let alone being the subject of a report.[3] The nexus for the science-religion dialogue is not going to be found in competing or complementary myths of origination.[4]

What then is the nexus for the science-religion dialogue? First, I believe that for most of the students religion has something to say about the limits of science. In a student report on paranormal phenomena, I asked what this really had to do with religion. The reply was that in considering paranormal phenomena that cannot be explained scientifically, scientists are forced to realize that their science is limited. There is much that is not yet known or that may never be known scientifically.

TABLE 2A

Science and Religion: General Curriculum Offering, Fall 1999
Synopsis of student group reports

Group	Topic
1	Virtual Temple (7 engineering students) Students reported on a virtual temple, which can be accessed on the World Wide Web: http://www.god.com.tw. On entering the temple site, one can choose the religion and deity one wishes to reverence. One can also make petitions and manipulate "divining blocks" in a way analogous to that in an actual temple. The students also carried out a small survey (20 persons) about whether they knew of the virtual temple (7 yes, 13 no) and whether it could in some sense take the place of the physical temple (1 completely, 3 partially, 16 cannot take the place of the physical temple).
2	Paranormal Phenomena and Science (6 students: math, law, nursing, physics) Students reported on the proceedings of a meeting on Buddhism and Science that discussed paranormal phenomena such as "hearing" words printed on paper, passing solids through a wall, etc. They described various experiments being carried out in Mainland China on these phenomena. The aim is that continued scientific study can separate superstition from actual phenomena.
3	Science and Superstition (6 students: physics, chemistry, statistics) The students presented a rambling discussion of science, religion, and superstition. Science is ultimately based on observation. Superstition lacks such a sure basis; however, because much is still unknown by science, superstition is given a foothold. True religion is oriented toward the good and toward self-cultivation.
4	Taoism and Medicine (7 math students) The students discussed traditional Chinese medicine from the perspective of the Taoist religious tradition. They suggested that religion at its best brings together empirical (Western) medicine and traditional Chinese medicine in a synthesis for the good of humanity.
5	Soul and Body (7 math students) The students discussed soul and body primarily from a Western philosophical perspective, with Plato and Aristotle as examples. Like scientific concepts, the concept of soul cannot be directly proved from the data. The existence of the soul remains a mystery.
6	Religion and Science: Impact on Society (6 engineering students) Religion has brought both benefits and harm to society. The same can be said for science. In the environmental crisis we can see both the strengths and weaknesses of religion. Chinese tradition has stressed the ethical component of religion, something very much needed today.
7	Buddhism and Environmental Protection (9 students: chemistry, physics, math, landscape architecture, biology) The students argued that Buddhism can support a strong environmental ethic. The environmental activities of the Tzuchi Buddhist movement are discussed (http://www.tzuchi.org.tw). The group questioned forty persons, mostly students, about their attitudes on religion and the environment. Thirty-three of the respondents said they had no religious faith. Of those who had religious faith, most still saw little connection between religion and environmental concerns.

There is, however, a reverse side to this. Science helps us to see the limits of religion. In the relatively unfettered world of Taiwanese religion, superstition is always a threat. It can lead people to substitute devotional practices or magic for concrete steps to deal with problems in their business, family, or personal life. People can be trapped by fortune tellers or the fear of angry ghosts. Science can put much of this in its place.

When all is said and done, I believe the nexus of the science-religion dialogue will be the human person at one or more of the levels of his or her humanity. It can be at the most basic physical level, as in the discussions about Taoism and traditional Chinese medicine. At the higher levels one seeks harmony with one's fellow human beings and ultimately with the cosmos. However, this harmony is not sought as a gift from outside one's self but is seen as flowing from one's own inner self. Both science and religion will have their roles in this process.

Finally, both science and religion are viewed quite pragmatically. I believe Chinese thought is more agnostic than Western thought about the possibility of some kind of complete or ultimate knowledge, whether scientific or religious (Hu Shih 1934). Even at its height, the Chinese brand of "scientism" seemed primarily concerned with enshrining science for the goal of nation building (Kwok 1971; Budenholzer 1999). Science "worked" where many of the traditional religions and philosophies had not. Science

TABLE 2B

Science and Religion: Department of Religious Studies, Graduate Offering
Synopsis of student reports

1. Sociobiology and cultural construction of sexual characteristics and roles (2 students)
   A. The concept of the two sexes in sociobiology.
      A summary of sociobiological concepts with particular attention to sexuality.
   B. The cultural construction of sex and gender.
      Examples of the social construction of gender, primarily from American authors: education, puberty, home, motherhood, work, sexuality. The paper closed with a call to end stereotyped understandings of gender.
   C. The concept of the feminine in early Catholic and Buddhist texts.
      A listing of texts from the gospels and the sutras.

2. Buddhism and science.
   A discussion of death as seen from a Buddhist perspective. Discussion of nirvana and the concept of the soul—Buddhism denies the concept of an immortal soul. The report concluded with material from the Tibetan *Book of the Dead*.

3. Taoism and Chinese medicine.
   A discussion of some of the basic tenets of traditional Chinese medicine and their relation to (Western) empirical medicine.

4. Taoism and chemistry.
   The pill of immortality and other elements of traditional alchemy and their relationship to modern chemistry.

was seen not so much as a worldview that could provide meaning and orientation but as a means to self-improvement.

Conclusion

In bringing this discussion to an end I am reminded of the perhaps somewhat overused quotation from the last of T. S. Eliot's Four Quartets:

> We shall not cease from exploration
> And the end of all our exploring
> Will be to arrive where we started
> And know the place for the first time.
> (Eliot 1971)

The more pragmatic understanding of "science" that I have suggested surely is not unique to China and Taiwan. The doing of good science and a belief in the "orthodox" Western scientific worldview are two quite different things.

Similarly, while many of the elements of Chinese religiosity are arguably unique to Asia, the underlying sentiments that I have discussed find resonances in the monotheistic, particularly Christian, traditions. Sometimes in passing over to other traditions and cultures, we are not only enriched but also helped to understand more deeply elements of our own tradition.[5]

There are, of course, questions of truth. Perhaps some religious traditions are more compatible with empirical science than others. Perhaps also some religious traditions are more in touch with both cosmic and human realities. But, given the long history of the various religious traditions, it is important to listen very carefully. It seems best not to rush to judgment.

Notes

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1. This phrasing is attributed to Prof. Chen Kuo-Chen, a physicist of Soochow University in Taiwan, who has worked closely with Dr. Sung. See the *China Times* (Zhongguo Shibau), 13 August 2000, 33.
2. Probably the best introduction in English to Taoist religion is Schipper 1993. An older but still very useful little book is Welch 1957.
3. Buddhism does have a rich cosmology, as opposed to a creation myth, which has been the subject of considerable speculation on the relationship between Buddhism and science (Ma Sun 1997, 149ff.).
4. Stanley Jaki argues that it is precisely this lack of a doctrine of creation that prevented an exact, empirical science from developing in China. See Chapter 2 of Jaki's *Science and Creation*, "The Lull of Yin and Yang" (Jaki 1990, 25–48).
5. The concept of "passing over" from one tradition to another and then returning to one's own tradition is probably best described by John Dunne. See the author's *The Way of All the Earth* (Dunne 1972).

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