

## **Human Cloning in a Thai Novel: Wimon Sainimnuan's *Amata* and Thai Cultural Attitude Toward Biotechnology**

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*Soraj Hongladarom*  
*Department of Philosophy*  
*Faculty of Arts*  
*Chulalongkorn University*  
*Bangkok 10330, Thailand*

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In 2000, a new novel appeared on the Thai literary scene. Its author, Wimon Sainimnuan, was a rather minor figure in the literary circle, having published only a few novels and collections of short stories, all of which went on quite quietly. Only a few readers knew and appreciated the work of this young author. However, the young author's new novel in 2000, entitled *Amata*, which is Pali for 'immortal', gained the author nationwide fame when it was awarded the SEA Write Award, the country's most prestigious literary prize. Shortly afterwards, sale of the novel skyrocketed, its author rose from relative obscurity to become one of the celebrities. The novel was much talked about and discussed not only among the inner circle of the elite Thai literati, but also among the general public.

The citation for the SEA Write Award in front of the second edition of the novel says: "*Amata* is an imaginary novel about the future. It concerns the search for immortal life and is focused on the conflict between consumerism and religious belief of the East. The plot of the novel concerns cloning of human beings and organ transplantation, which leads to ethical and humanitarian problems. The outstanding point of this novel is that the author tackles the issues that could post problems in the future and takes these issues as the main plot. The conflict is expressed through two groups of characters. The tone is critical of the current condition of society, and its way of telling the story has a strong emotional impact. The novel asks us to become aware of one of the common problems facing humanity and it challenges us to think further what is the real meaning of humanity and immortality" (Wimon 2000: i-ii).

There was much in the novel that differentiated it from other Thai novels. Most Thai novels have always dealt with such subjects as love, betrayal, competition among women for favor of her man, jealousy, and the lives of the rich and the famous. In short, most novels have been escapist, offering the readers a way to forget about the actual condition of the world. In fact there have been a number of novels that deal with more serious issues. Many novels discussed the problem of social inequality and injustice and were instrumental in raising the consciousness of the Thai readers concerning the pressing social issues Thai society was facing. However, this new novel was different. Instead of treating the traditional subject matter of love and jealousy, or the more recent subject of struggle for social justice, *Amata* deals with a very new topic, the emergence of

biotechnology as a force in society. To my knowledge, *Amata* is the first novel in Thai language that takes this emergence as its topic.

Such a task is a daunting one. Thai reading public have not been accustomed to reading fictional works dealing with biotechnology. The level of basic scientific understanding of the public still lags behind those of other comparable countries, and a very large proportion of Thais still believe in superstitions. One popular pastime for many Thais is interpreting what they take to be auspicious signs in natural matter for clues so that they can win in the national lottery. National newspapers often report the existence of such signs in plants, animals, or in natural phenomena. The result is that the plants or animals in question immediately become center of attention of thousands of hopefuls who try in their various ways to interpret the plants or animals for their 'lucky' lottery numbers. This is hardly a fertile place for a healthy interest in works of fiction dealing with biotechnology. Thus the awarding of *Amata* and its subsequent rise to fame is a very interesting phenomenon that deserves a close look.

What I would like to do in this paper is to search for the underlying meanings of the rapid acceptance and fame of the novel. The novel is a clear case of the Thai cultural attitude toward modern biotechnology. I plan to analyze the novel in order to see how the typical Thai, which is reflected in the tone of the novel, views the current advances in biotechnology, not only concerning human cloning, which is the explicit subject matter of the novel, but also other aspects of biotechnology which are in the public's concern, such as genetically modified organisms and the use of biotechnology in medicine. I will also discuss how Thai culture and modern science and technology interact. Since Wimon's novel here is imbued with the Buddhist values, which he set against those coming with the modern technologies, we can also see from the analysis of the novel how Theravada Buddhism, which is an integral part of Thai culture, is related to the issue at hand. Thus looking at the novel reveals several aspects of the interrelationship between Thai culture, Buddhism, and modern biotechnology.

## I

The story line of the novel is simple enough. Prommin, 55, a global business tycoon owning a huge corporation, realizes that he is getting old and needs to have some of his bodily tissues replaced in order that he continue to live and remain at this age. This great technical feat is aided by Professor Spencer, who works at Prommin's hospital and is head of the cloning team. This is so that he could continue managing his corporation and expanding his empire. He has a 'son', Cheevan, 22, whom he has earlier cloned from himself, and whom he and his wife have raised as their own child. The novel begins at the time when Prommin is about to harvest Cheevan's body for tissues or organs for his own body. It also turns out that Prommin has cloned several copies of himself, but all died or were aborted, leaving only two 22-year-old copies, Cheevan and his 'half-brother' Arjun, whose 'mother' escaped from Prommin's hospital to avoid being harvested. (Note that the numbers in this novel are mostly double-digit with repeating numbers—perhaps symbolizing the 'doubleness' and 'sameness' which characterize cloning.) When Cheevan learns about his fate, his mother arranges that he meets Arjun. Arjun and Cheevan then conspires to fight against their 'father' and in the end, instead of replacing bodily organs on a piece by piece basis, Professor Spencer decides to exchange

Prommin's brain for Arjun's, believing that he can put Prommin into Arjun's body. However, there is an ambiguity at the end of the novel. Arjun and Cheevan apparently believe that the seat of personal identity is not the brain, but the heart. So the two manages to deceive Prommin and Spencer into the brain-exchange surgery. And since the hearts are not exchanged, the identities of the two persons remain the same. There is a scene toward the end of the novel where 'Prommin' takes a podium in front of a large gathering declaring the success of the brain exchange surgery, whereas in fact it is Arjun who is talking.

Actually the novel itself is not a really good one in terms of literary arts. The work shows many signs of having been incompletely conceived. Characters and methods of telling the story are not well developed. But the main point in the novel is not its literary value. What should be interesting in the novel is that it is the first time that a Thai novelist tackles a serious issue arising from the advent of advanced technology. Thus the novel is an important document which allows us a glimpse into how a typical Thai who has some basic knowledge of these advances think about the issue.

Characters in the novel, as I have said, are divided into two groups. Prommin, Prof. Spencer, and Prommin's jet set daughter belong to the first one. For them the main purpose in life is to maximize profit, to expand the conglomerate and conquer the world, or, in the case of Spencer, to advance knowledge and technical know how. Spencer belongs to the first group because he works with Prommin's company, and more importantly he is the head of the scientific team who has already performed cloning for Prommin and it is also Spencer who performs the brain exchange operation on Prommin and Arjun. It is clear that Spencer, a world renowned scientist, stands for the fact that science now serves the interests of big, globalized business rather than remains true to the ideal of disinterested pursuit of knowledge and truth. The third member of this group, Prommin's daughter, is an interesting case. Since she is a woman, she obviously cannot be Prommin's clone. Thus she represents a normal relation between father and child. Cheevan has been raised as Prommin's son, and if the incident did not happen he would have remained his son. However, the relation between Prommin and Cheevan cannot be the same as that between Prommin and his daughter, because Prommin himself believes that Cheevan is not actually his son, but a spare part storehouse to be harvested when he feels ready. His daughter, on the other hand, refers to her father as 'daddy', which in Thai language conveys the meaning that she is a sophisticated, foreign educated professional. She also works as her father's secretary and assumes a high position in her father's corporation. The fact that her 'brother' is about to be killed and harvested does not bother her in the least.

The second group consists of the clones, Arjun and Cheevan, Cheevan's girlfriend, and his 'mother' (who obviously does not have blood relation with him, but carried him in her womb). These represent a counterforce, a rebel group against the seemingly all powerful force of globalization and technical progress. As the one who carried Cheevan in her womb, Sasiprabha cannot bear to witness Prommin's killing of her own son. She is the one who first told Cheevan of the terrible truth and arranges for him to escape. However, she is powerless against her husband. Her voice is that of conscience, a feeble voice raised against the torrent of technical progress and selfish desire of her husband. The 'brothers' Cheevan and Arjun are needless to say the protagonists of the story. It is interesting to see that the novel has two protagonists who

share roughly the same amount of importance in the story. We shall see that images and references to duality and perhaps duplicity pervade the entire novel. Cheevan and Arjun are strictly speaking not brothers; more correctly they are both clones of Prommin. Nonetheless their characters differ markedly, conveying the sense that clones are real human beings and their characters are formed through nurture. These two groups of characters neatly specify the current global conflict between the forces of globalization and those opposing it.

The two groups of characters neatly represent the opposing sides in the debate on globalization and the benefits of science and technology today. Prommin and Spencer believe in that there is nothing that science and technology cannot do, no problem that science and technology cannot solve, and if there is any opposition, Prommin sarcastically says that those opposing what he regards as progress and development are bound to make use of it anyway. Before he goes on with his killing of Cheevan in order to harvest his organs, he consults his Vice-President, who is an expert in public relation and political lobbying. He told Prommin that there are still pockets of resistance, mostly from the NGOs and the religious groups. Prommin tells him that the price to pay for the first group to become more 'reasonable' is around a billion baht. As for the second group, he would like to emphasize that they should be interfere with worldly matters. They should go on meditating and practicing their religious teachings, and leave the matter of curing diseases and prolonging life, to him (Wimon 2000: 31-33). He says that before the religious groups say anything against human cloning, they should wipe the fat out of their mouths, for they keep on eating meat, thus keeping his company in business while they take a moral high ground: "Tell them not to worry about sinners like us. Cloning and organ transplantation are our business. If it is a sin, then the sin is on us, not on them. We are happy to get the sin. It is like when they eat meat. They only eat it, but it is us that prepare the meat for them from the beginning. We take care of all the preceding stages.... Tell them also that, before they talk about morality or sins, they should wipe their fat-laden mouth first" (Wimon 2000: 32).

According to Prommin, a law should be passed allowing unrestricted use of human cloning technology to help a lot of people who are suffering from various kinds of illness. Moreover, forbidding human cloning for therapeutic purposes has generated huge economic losses (All the translations of the Thai text are mine):

"...Now the mortality rate of the population in our country is at 66 years old. But the illness rate is very alarming. I won't tell you that and will let only Khun Samphop [the Minister of Public Health] have his own nightmare alone. I will only tell you that the number of people suffering from diseases caused by infection and accidents, resulting in a need for organ transplantation, is as high as one million and one hundred thousand. However, we can only transplant the organs of less than half of these people. It must be a national tragedy that we have to let the other half who cannot receive organ transplantation die without any guilt. I take it as the guilt of our nation that we elect not to save their lives, even though we can do it. Why? Twenty-two years ago, I campaigned for the public to accept human cloning for organ transplantation, and requested that the government passed a law allowing that. Unfortunately, few people accepted it. Many were imprisoned by the bounds of morality." ... "I feel sorry for those

people who have to die; I am sorry for their lovers, relatives and friends, and I am sorry for myself for not being able to do anything even though we could have done it. All because of your morality which blocked the proposed legislation” (Wimon 2000: 43-45).

Prommin gives this speech in the context of his imminent killing of his clone Cheevan, and it is obvious that he is gathering public support for the action. Prommin continues:

“.... In the near future, we might use cloned people as soldiers, policemen, workers in factories and farms, and many others. This will free us from the burden of work, so we will have more time for leisure activities.... I would like to implore that the public accept human cloning and organ transplantation. It is not a matter of life and death, and it is no different from killing animals for food or for sport that we are doing now. What is different is that the clones won't suffer pain like the animals we kill. Our acceptance would save countless, millions and millions of lives which would be lost. I feel that the 22 years that this law has not been passed is a total loss. I do not want to lose any more time, so I want the public to support the government in their effort to pass this legislation.” Prommin then smiled lightly, his eyes sparkling: “What is the most serious loss is that if the government passed this law 22 years ago, today I will present as gifts to each of you beautiful, young clones to take home.” Prommin nodded his head amid laughter and applause (Wimon 2000: 45-47).

In the novel we know that the real reason Prommin gives this speech is that he has a plan for harvesting clones not only for their bodily organs, but for many other purposes such as creating clones of beautiful girls to work in sex industry, and so on. As for those who oppose his argument, he has the following to say:

“However, I would like elaborate a little further. I may not have made myself clear enough. The first point is: Some people say that this proposed law will benefit me. I accept this point wholeheartedly. I am an entrepreneur, a merchant. Thus I naturally look for profit. Or other merchants such as those who sell fried bananas or khanom krok [a kind of Thai sweet] do not want profit? I am no different from these merchants. If there is a difference it's only that my enterprise is larger and is of a different kind. But I don't think the mindset of an entrepreneur is any different. But this is not different from the mindset of people in other professions too. Employees or civil servants may not be selling things as I do, but they also sell something, your labor, your intelligence.... I only want to say that I look for profit, but please look at what I use the profit for. Of course part of the profit is for expanding and improving my business. This amount of money does not benefit me alone, but it creates jobs for millions of workers.... I pay millions of baht in tax every year.”

Then:

“Another point. My critics say that cloning and organ transplantation will benefit

only the rich. This is only partly true, and is so only for a period of time at first. It is normal for a new business to have a high expenditure. This will make the price high because the investment needs to be recouped. And the goods can be produced only in a small number. But the price cannot be too high to be affordable, because then nobody would buy the product. But I am confident that in two years' time the price will go down because more goods will have been produced.... This law will open up golden opportunities for everybody. How many millions of years that we human beings have dreamed of immortality. They have searched for the elixir of life. Now I am making this a reality. So why don't you support it? Don't you want to live indefinitely? What do you live for if your life is full of sickness and hopelessness. Now you have the opportunity to have perfect life and can enjoy it as long as you want."

One thing should be clear. Prommin believes that human clones are not real human beings, but are in his words 'artificial humans' (Wimon 2000: 122). Thus they do not lie within the realm of ethics. Ethics applies only to real humans, but since these clones are merely 'artificial' they do not need to be protected by ethical laws. Cloning sexy girls for work in the sex industry so that they do not or may not require the same sort of consideration of rights that real sex workers enjoy would be an ideal, if utterly tasteless, example. Moreover, Prommin seems here to believe that reproductive human cloning is the only way to produce tissues or even whole organs for therapeutic purposes. But of course one can have therapeutic cloning where a whole human being is not produced, if a collection of a small number of cells does not have the status of a 'whole human being'. In any case, it is possible, and much more economical, to produce totipotent stem cells which can develop into any kind of tissues or organs one pleases. However, Prommin himself recognizes this fact. Asked whether his proposed legislation allowing cloning would be valid for reproduction or only for breeding cells for therapeutic purposes, he says he would like to clone himself, for it may be the case that he will exchange all parts of one of his clones for himself (Wimon 2000: 122). At any rate, Wimon would perhaps argue that the existence of therapeutic cloning does not change the situation. One can have therapeutic cloning for stem cells, so instead of producing walking, breathing human beings like Cheevan and Arjun, one can only produce stem cells. It would seem to Wimon that nothing does change. What is different is only that in Prommin's case the 'cells' in question are whole human beings, whereas in the therapeutic cloning case it is only tiny groups of cells. But what is to him more important is that these collection of cells—whether as totipotent stem cells or as breathing human beings—are harvested according to self-centered desire. Prommin presents his speech above to the Thai public in order to get their support for the cloning legislation. Deep down we know that he wants the law passed so that he could harvest Cheevan's organs. The self-centered desire is plain for all to see.

Furthermore, the ironic tone of Prommin's speech is unmistakable. While his argument may sound crass, simplistic and over exaggerated (as is obviously the intention of the author), one has a sense that Prommin does have a point. Moreover, the point he is making is often heard from proponents of the technology as well as from representatives of corporations that push forth its products to the public. Technology does have its benefits, and its coupling with the capitalist world system is just a necessity since this is

the best means to bring out the fruits of technology to the widest possible public. The coupling of science and technology with capitalism and entrepreneurship is just the best way available at this day and age to enhance the effectiveness of the former in order to alleviate or eliminate whatever it is that afflicts human lives. His sarcasm regarding the leaders of the religious groups indeed echo many in the real world today who profess religious belief but seem to do so only by words and hardly by action. Prommin's making fun of the Buddhist leaders, that the monks and the devout lay persons should wipe animal fat out of their mouths first before preaching against killing clones, is clearly designed to instigate the Thai Buddhists to begin to think seriously about their religion and the relationship of Buddhism to modern society. When Prommin makes fun of the Buddhist leaders, he is making fun of the readers of the novel also, since the majority of this novel's readers are obviously Buddhists.

We will save the question regarding the relation between Buddhism and modern biotechnology for the next section of this essay. Now, however, we should now be clear about the basic intention or interpretation of this novel. What Wimon is trying his reader to grasp is that modern biotechnology is a monster bent on creating horrors after horrors. In Spencer's laboratory where the brain exchange operation is to take place, there are a large number of clones of all types of human beings lying to be used and harvested. All of them have to be suppressed by medication and do not have a speck of liveliness in themselves. Cheevan and Arjun, as we have seen, are only two survivors of countless clone victims who are either aborted spontaneously or are deliberated killed for a variety of reasons. Chief among the horrors is the coupling of science and technology with big business. Prommin, the prime representative of big, globalized business, is served by Spencer, the epitome of modern science and technology. Spencer, we are told, admires Prommin so much that he is willing to work for him very loyally. This is due to Spencer's perception in Prommin of certain quality that he finds would be ideal for him to work with, such as determination, and an unreflecting dedication to the power of science and technology to solve any problems.

## II

While Prommin rumbles on about the bright prospects of technology and globalization, Cheevan and Arjun are looking for ways to save themselves and too avenge Prommin. The fight is on between the cloner and the cloned. Arjun is well versed in Buddhist teachings, having studied intensively after his mother took him away from Prommin's grasp. And it is Buddhist teachings that provide a powerful tool in the clones' struggle. According to Arjun, "life is nothing but a series of memories, and one clings to life because one wants to taste new experiences" (Wimon 2000: 110). In fact there is nothing to life, and what one want to remain when one does not want to die is nothing but an unconnected series of matter and consciousness (Wimon 2000: 110). These are straightforward Buddhist teachings. "We only imagine that death is precisely at the point where breathing stops. So we are afraid of the end point there. But the truth is that nothing dies, nothing is born. There are only those which we call birth or death. If you see this point, you won't be suffering" (Wimon 2000: 110).

The novel is full of these direct Buddhist teachings through Arjun's mouth. The teachings of Theravada Buddhism are put in direct opposition to whatever that Prommin

is pushing for. Arjun, a devout and very knowledgeable Buddhist, is devising ways to foil his original's plan, and his original, Prommin, believes that Buddhist teachers should 'wipe their mouths' clean before criticizing anything worldly. The different could not be greater. Prommin does not believe in Buddhism; he has only material benefit as the supreme good. What he does is nothing other than satisfying his ego. He desires to live indefinitely and to keep expanding his empire. For him, as for Spencer, the seat of identity lies in the brain, for it is the brain that carries thoughts and desires. Thus, reason Prommin and Spencer, if Spencer puts Prommin's brain into one of his clones' body then the result would be Prommin himself in a brand new body, for the identity of the person goes with the brain. This would be the ultimate *therapeutic* cloning, for one does not have to replace one tissues or organs on a piece by piece basis; one can replace the totality of one's material body for another while retaining one's personality, memories and desires.

Remember that we are now dealing with science fiction, and that the author of the novel is not an expert in biology or biotechnology. Nonetheless, since the author is a layman who takes interest in such matter, we could then regard him as representative of the public who are of course not experts but who have to decide, in a democratic society, what course the society should take regarding these very rapid advances in science and technology. Hence there is a sense in which we can take what is going on in a novel for what is going on in the real world in which the novel is read. The novel can be a powerful social commentary. One is reminded of *Uncle Tom's Cabin*, a romance which contributed a good deal to the awareness of racial inequality in the middle nineteenth century in the US, a force which led to the American Civil War. In the same vein, Wimon's putting Buddhism on a loggerhead with modern biotechnology appears to be a commentary on the contemporary situation where biotechnology is employed as a servant of big business interests, pandering to egoistic, megalomaniac desire rather than serving the need of the majority of humanity.

That Buddhism is seen as the antithesis to the force of globalization is itself a very interesting phenomenon. Arjun argues with Spencer and Prommin that it would be more beneficial to them not to replace organs on a piece by piece basis, but to exchange the brains, putting Arjun's brain into Prommin's body and vice versa. The result, Arjun would later convince the scientist and the megalomaniac, is that Prommin would get his new body, just like it when one is bored with one's old home, having decided to have a new one, moves into it. Prommin and Spencer believe that, if the brain is put into a new body, this would be just like moving into a new home. Arjun believes that after Prommin's brain is put into his body, he would not become Prommin because he believes that the seat of identity is not located in the brain, but in the heart. Thus the reason why he is so eager to have Prommin's brain put into his body is that he would still be the same person, whereas Prommin would still be the same one he was before, since the hearts are not exchanged.

All this sound very far fetched and almost unbelievable. But the point is not that this scenario can or cannot happen. The point is that the story here is an allegory meant to tell us something about the current condition of science and technology and their opposition to Buddhism. It may be or may not be correct for Arjun to say that the seat of personality and identity is at the heart, not the brain. However, the fact that Buddhism wins in the end—Arjun, under the guise of Prommin, finally takes over his original's



enterprise whereas Prommin, after Arjun's brain was put into him, becomes forgotten since everybody else believes that this body is a useless one. The victory is bitter, cruel, and utterly complete. Prommin, who owns a global corporation and is an epitome of egotistical desire, now lies waste in Spencer's laboratory, where Arjun, whom everyone in the company believes to be the new Prommin because everybody believes that the brain is the seat of identity, controls the company. We are asked to believe that, after the brain exchange operation, everybody stays the same, for it is the heart that the real person, if there is ever one in the tenet of Theravada Buddhism, resides.

The conflict between Buddhism and modern science here is fraught with moral questions. Prommin and Spencer conspire to extend their egoistic lives indefinitely, but their attempts are frustrated because, according to Wimon, they do not realize that the seat of personhood is in the heart and not the brain. Perceiving an encroachment of advances in science and technology into the fabric of Thai lives and consciousness, Wimon turns toward Buddhism for a defense. Hence the advances of science and technology are here seen as a threat, not only to the moral fabric of the Buddhist society like Thailand, but to its very identity. For Wimon the identity of the Thai culture is inseparable from the belief in Buddhism, and if the belief system endemic of modern science and technology is allowed to go unchecked into Thai society, then Thais would lose an essential part of their identity. Trying to resist the encroachment of science and technology and to protect the Thai cultural identity, Wimon uses Buddhism as a shield. He tries to show that Buddhism offers a far superior system of belief in that it alone offers the means toward complete release from the cycle of suffering, the ultimate Buddhist goal and the ultimate truth, which modern science is in no position to offer. Since science and technology appear to cater only to desires and greed centered around the belief in the existence of the individual ego, science cannot provide the real truth.

Resisting scientific and technological advances through Buddhism is thus a way to assert cultural identity of the Thai people amidst the tide of globalization. Thai people should be proud, argues Wimon in the novel, that they have such a system of belief that is already superior to anything offered by modern science and technology. It is not surprising that the novel came out in 2000, three years after the economic collapse in July 1997, which triggered a worldwide downturn. Thais look at the event as a turning point in their history. A result of the collapse was that Thais began to question the direction and the policy their country had been pursuing until then. More specifically they began to question the policy of completely merging the country into the current of globalization at every point. After the collapse, the King presented his famous birthday speech in December 1997 urging Thais to become 'self sufficient', meaning not relying on foreign money but turning back to their roots and producing things for domestic consumption and not just for export. The speech found sympathetic ears, and it signaled a large number of discourses on the need for Thailand to reassert her identity if not her sovereignty in the wake of the country's request for the help from the International Monetary Fund.

Showing that Buddhism has a lot more to offer than do science and technology is part of this reassertion of identity that is going on in Thai society today. The resistance is not only against economic globalization, but perhaps more importantly it is directed against *cultural* globalization too. Wimon sees science and technology to be inseparable from selfish interests and the market system, which to him destroys the moral fabric of the society and which he perceives to be a direct threat to Buddhism also. So the novel

could also be seen as a defense of Buddhism against modern science; or more accurately the novel shows to the Thai readers that they still have an invaluable treasure in Buddhism and it is no use to follow modern or western science and technology blindly. Arjun exchanges words with Spencer. He propounds the truths of Buddhism for the skeptical Spencer. Ultimate truth in Buddhism, says Arjun, is not obtainable by observation nor ratiocination, but by the insight obtained solely through deep meditation. Spencer argues that science and its technologies have done countless benefits to humankind; however, Arjun replies that these benefits are only material and physical, and they do not begin to address the most serious problems that have been afflicting human beings since their beginning, namely that they still suffer resulting from their clinging to greed, anger and delusion.

### III

Why put science and technology in such a bad light? And what does this tell us about Asian genomics? I don't think Wimon is so naïve as to believe that science and technology do not have any benefits at all. After all, Arjun and Cheevan themselves take some technologies for granted, and Arjun himself relies on the very technology that created him in his subversive act against his creator. Hence the reason why Wimon sounds so pessimistic against science and technology is that they are used so as to run counter to the basic Buddhist tenets of eliminating greed, anger and delusion. This, I believe, is what underlies the typical Buddhist and Thai attitude toward science and technology. The path toward *nirvana* starts with elimination of greed, anger and delusion and thus anything that contributes to the elimination would for the Buddhist be of positive ethical value. Hence it seems that the intrinsic nature of an act, such as human cloning, is neither positively and negatively valued according to Buddhism; it is whether the act contributes to the Buddhist supreme good that decides whether the act is good or bad.

This does not, however, mean that Buddhism teaches that there is no intrinsic value at all. Some acts will lead one astray from the path toward Enlightenment no matter what, such as killing, stealing, performing wrongful sexual conduct, and so on. However, since human reproductive cloning by itself does not necessarily consist of killing anybody (providing that there are no aborted embryos and there is no harm done to any organisms), it does not seem to be intrinsically bad. If this is so, then the main reason why Arjun is so opposed to human reproductive cloning is that it is done for the purpose of farming human bodies for their organs, with the ultimate aim of creating a business. To the Buddhists' eyes, this is intolerable, for the act would certainly involve killing and would mean that human beings are created solely for the purposes of others. (Here we have an affinity between Buddhism and Kantian ethics in the West.)

So what this story tells us about Asian genomics is that (1) the Thai attitude toward recent advances in science and technology, as exemplified in *Amata*, is highly negative. The reason is that these technologies are perceived to be subservient to business interests and more poignantly to egoistic desires to prolong one's life indefinitely. However, an examination of basic Buddhist tenets reveal that (2) Thai Buddhists do not view the processes and products of the advanced technologies as a necessarily bad thing. The technologies are bad only when they are applied with a frame of mind which leads

one away from the path toward Enlightenment. That is, when they are applied for the purpose of fulfilling one's egoistic desires. Thus, if human reproductive cloning is performed with a frame of mind that furthers the movement toward Enlightenment, such as when it is performed with loving-kindness or compassion, then the act is not necessarily bad. Furthermore, (3) since Theravada Buddhism largely informs the Thai indigenous knowledge system, we see in *Amata* a concrete example of the interplay between the indigenous and the system of knowledge that originates from the West. What we see is that Buddhism is still the superior mode of knowledge in that it integrates the epistemic and the ethical dimensions of knowledge systems. Knowledge is not to be divorced from ethical considerations. Prommin's dissecting a dog in order to learn where its soul resides is a typical example of how modern western science is perceived to be alienated from ethical considerations. And it is precisely this reason that modern science has to be reined in by the Buddhist teachings.

In my recent book, *Science in Thai Society and Culture* (forthcoming), I discuss that the way out of the problems arising from negative attitudes toward science and technology is that science and technology need to be part of the people's lives. A way needs to be found in order that science and technology become integrated into the cultural fabric of Thai lives. I proposed many ways to do that, chief among which is that the direction of scientific research should be geared toward solving local problems and catering to local needs rather than toward serving the globalized corporate interests. In short, science and technology should be 'localized'. Besides, not only do the objectives of research and development geared toward local needs, but the activities that constitute science and technology themselves also need to be founded upon the indigenous resources. This will, I argue, go a long way toward diminishing the feeling of alienation that the locals feel toward science and technology. What is clear from reading Wimon's book is that his attitude toward science and technology is highly alienated. This is perhaps not a healthy attitude to have in this day and age. Asians should find a way by themselves how to integrate science and technology into their cultural fabric without destroying the identity of their culture. For Thai people, this means they should find a way such that Buddhism and science and technology can live together without one destroying the other. Actually how to accomplish that is a highly complex task which cannot be discussed in any detail in this paper. Nonetheless, at least what we have learned from this paper, and from reading *Amata*, is that such a way cannot even begin to be found if science and technology are part of the globalized business interests, and do not answer to the needs of local lives.

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