

Forum on Ethics and Technology series #3- Buddhism and Information Technology Built to Spread Gamification and Design Principles of High-growth Tech Companies

「科技與倫理」座談系列之三

佛教與用來傳播遊戲化 和高增長技術公司 設計原則的信息技術

Excerpts from John Vu's Talk at "Ethics and Technology"
Forum on September 22, 2015

Chinese Translation by Chin-Ben Ling and Chin-Xi Ma
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凌親本、馬親喜 中譯



Editor's Note: Professor John Vu is director of the Master of Science in Biotechnology, Innovation and Computation Program at Carnegie Mellon University. He was formerly a Senior Vice President, Software Chief Engineer and Technical Fellow of Boeing. He designed and developed the Boeing 777 commercial aircraft.

編按：武親道教授現任卡內基梅隆大學「生科創新與計算機」碩士班主任；曾任波音公司資深副總裁，軟體總工程師與技術院士，負責波音777商用飛機的設計與開發。

In the time of the Buddha, most of the training and teaching was limited to disciples who memorized the teaching from the Venerable Ananada. Very little was written down at that time. Later, King Ashoka, ordered people to carve the teachings on stone and pillars. In India in the Buddha's time, very few people knew how to read and write and anything recorded was written on palm leaves and bark. So, the disseminating of the Buddha teachings was still limited to monastics and a few other people.

Now we have semi-conducting technology and computers are getting better and better – smaller, faster and more powerful. Many of you have probably heard of Moore's Law which states that computer performance is doubling every 18 months. Technology is considered a key driving force in information, the social chain, productivity, and economic growth. It also contributes significantly to the flourishing of Buddhism in our current age. I used to tell my students that the Internet changed everything. Computers changed everything in the 60s and 70s and the Internet has changed everything since then.

在佛陀時代，大多數的訓練和教學只局限於一些弟子，他們就是背誦阿難所敘述的教義。當時，幾乎沒有什麼文字書寫。其後阿育王命人在石頭和柱子上刻寫教義。佛陀時代的印度，閱讀與書寫僅僅限於非常少數的人。而且，文字是寫在棕櫚葉和樹皮上。因此，佛教教義只在僧侶和極少數其他人之間傳播。

現在，半導體技術飛速發展，計算機越來越好——更小、更快、更強，你們當中很多人都可能聽說過摩爾定律——每18個月，電腦性能增強一倍。因此，科技被認為是信息傳播、社會鏈接、生產力發展和經濟增長的重要驅動力，同時，信息技術也大大促進了現時代佛教的興盛。我常常告訴我的學生：網際網路改變了一切。上世紀60、70年代，電腦改變了一切；此後是網際網路改變了一切。

如果你看一下今天的存儲技術，就會發現一兆字節（1TB）存儲器的價格是五十至七十美

If you look at storage technology today, 1 Terabyte (TB) costs about fifty to seventy dollars. 1TB can store about 500 movies. If everything doubles every five years, then five years from now, it will probably cost five to seven dollars.

You can store the entire collection of the US Library of Congress and also the entire collection of the printed Tripitaka including Sutras, the Vinyana and the Abhidharma in about 10TB. Imagine the cost of storage being measured by this kind of information. You can store on the hard drive of your computer. Something that we could not imagine a few years ago, it is a reality today.

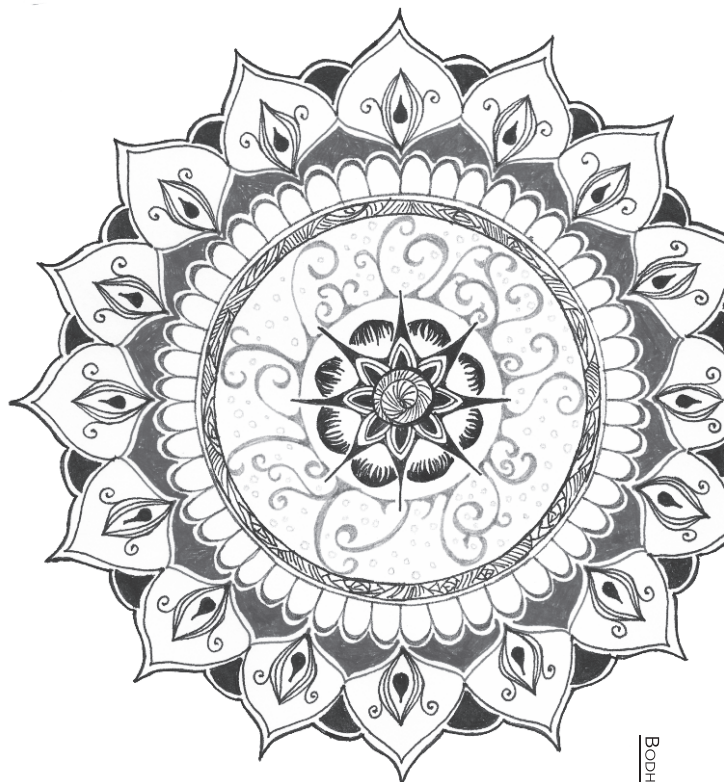
I did a quick search on the Internet and found about 10,000 websites about Buddhism and that number is still growing. So far I have found about six hundred Buddhist web radio stations in multiple languages all over the world; there are many webcasts streaming Dharma lectures. We do that at Berkeley Buddhist Monastery and at the International Translation Institute in Burlingame also.

In order to gather all of this information technology, Google is planning to digitize all the texts. There are online Buddhist dictionaries in many languages; and maps that show the location of all the Buddhist monasteries. Rare Buddhist artwork is also available for viewing on the internet. Web radio broadcasts lectures streaming and e-book format. Many ancient manuscripts have been digitized. I believe information technology is pushing the very limit of what is possible on the web today. As a consequence, Buddhist teachings are spreading all over the world.

Erik Davis, who is the author of Digital Dharma, a popular book about ten years ago, concludes in his book that “If Buddhist teachings are to survive and thrive in the 21st century, the Dharma must be reformatted for the future.”

Information technology also creates problems. It creates many opportunities for false gurus and self-proclaimed Dharma Masters to take advantage of people who are really interested in learning more about Buddhism. There are many websites, lectures and books from so called Dharma Masters who falsely interpret the Buddha's teachings. In the past it was very difficult to publish a book without certain credentials, but today especially on Facebook and other social media, there are all kinds of people making false claims. Some claim they have already become a Buddha and they start teaching all over the world. This is one aspect of technology that has serious negative consequences.

Even though in some ways technology has served Buddhism very well, it has hurt the Dharma in other ways. On the internet, there are many photographs of rich Dharma Masters who are driving luxury cars. There are even stories, some in well-respected magazines like Time, of Buddhist monks protesting on the streets and asking people



——恒解師插畫

—Illustrated by Bhikshuni Heng Jie

元。1TB可以存儲大約500部電影。如果每五年存儲器的存儲數量級增加一倍，那麼五年之後只要花費五至七美元就能買到1TB的存儲器。而10TB，則可以存儲美國國會圖書館的全部資料，也能存儲包括經、律、論在內的全部大藏經——真可謂10TB裏存儲一切。想像一下在這個信息時代的存儲成本，我們的電腦硬碟裏擁有一切。幾年前無法想像的事，今天已經落實。

我在網際網路上快速搜索了一下，發現全球大概有一萬個佛教網站，這個數字還在不斷增加。迄今為止，我已找到全球大約600個使用多種語言的佛教網路電台，大量的網路廣播傳播著佛法講座——我們在柏克萊寺、柏林根市的國際譯經學院也是這麼做的。

為了收集所有的信息技術，谷歌計劃把所有的文字典籍數碼化。網路上有多種語言的佛字典，有顯示全部寺廟的地圖。我們在網際網路上能看到大量珍貴的佛教藝術品。我們有網路電台廣播佛法講座和電子書。許多古代的手

to kill people from different religions. This gives people, especially westerners just being introduced to Buddhism a completely distorted picture.

In the rush to modernize and adapt to technology, we stand at a crossroads. Finding a genuine dharma master today is as difficult as finding a star in the daytime. There are so many false dharma masters and false gurus.

Technology causes things to change very fast. It reminds me of a story of a person who saw another person riding a horse that was running very fast. He asked, "What are you doing? Why are you riding so fast?" And the other person turned around and said, "I don't know, go ask the horse." Today we have many modern devices - cell phone, website, social media - and they seem convenient and cheap. We have to ask ourselves whether they are truly helpful or do they harm us in some way?

Many young people today walk around with a smart phone in their hands and they are so busy typing or reading that they do not pay attention to what's going on around them. I even have students who text their friends, watch movies or send emails during my lectures when the laptops are open or when I allow smart phones in the classroom. Because of technology, many people cannot pay attention for more than a couple minutes. They listen to a lecture for 5 minutes and then start texting and are completely distracted. The question right now is, "has technology begun to impact our life in such a way that we are completely distracted?"

I saw a news clip the other day that showed monastics texting each other during Sutra recitation ceremonies. These are the things that we have to address sooner or later. Information technology is making an impact on all of our lives - both monastic and lay disciples.

Many people don't communicate directly with each other anymore. People sit next to each other and send text messages and emails to each other instead of talking.

A huge number of workers burn out in the technology industry. Some of the companies have begun to take steps to help the people reduce stress. This is also the trend in the Silicon Valley and the trend in the technology industry.

Steve Jobs was a vegetarian and spent many years practicing meditation in Zen centers. Meditation, Buddhist philosophy and teaching are taught at

稿已被數碼化。我相信今天信息技術正通過網路把一切事情變為可能。而其結果則是佛教教義得以在全世界廣泛傳播。

埃里克·戴維斯 (Erik Davis) 的話，大約十年前有一本暢銷書「數碼佛法」 (*Digital Dharma*)，作者埃里克·戴維斯在書裏下結論說：如果佛教教義得以在21世紀繼續存在和興盛，那麼佛法必須為了未來而重定新的格式。

信息技術也導致許多問題，為許多假冒的大師和自稱法師的人創造了許多機會，來欺騙利用真心實意想多學些佛法的人們。這些所謂法師的許多網站、講座和書籍，解釋佛教教義真是錯誤百出。在過去，沒有達到特定的要求，要出版一本書是非常難的。而今天，特別是在「臉書」、社羣網站上，你可看到有各種各樣的人宣稱自己如何如何——有的宣稱他們已經成佛——於是到世界各地傳教。這是信息技術的發展帶來的問題之一，有著嚴重的負面後果。

儘管科學技術在某些方面能為佛教更好地服務，但我們也在網路上看到了非常富有的法師駕駛著豪華轎車的大量圖片。還有一些新聞，甚至連時代雜誌這樣備受推崇的刊物都報導過，就是佛教僧侶走出寺廟，到大街上去抗議遊行，要求人們去殺死其他宗教的信徒。這一事件對人們、特別是剛接觸佛教的西方人，給他們留下完全扭曲的觀感。

在快速現代化和對技術變化的適應中，我們正站在十字路口。要找到真正的明眼善知識，猶如在白天找一顆星星那樣困難，因為假法師、假大師太多了。

技術帶來非常快的變化，這使我想起一個故事。一個人看到另一人騎著馬跑得很快，他就問道：「你在趕什麼？為什麼騎這麼快？」騎馬人轉過身來說：「我不知道，你問馬去。」今天我們有許多現代化的設備——手機、網站、社群媒體——這些東西看起來十分好使和便宜。我們必須自問：這些信息技術是否真的對我們有用？或者也會造成某些傷害？

今天在街上行走的年輕人，大都手中都拿著一部智能手機，他們目不轉睛地盯著手機屏幕，不停地輸入、不停地閱讀，對周圍環境毫不關心。我在課堂教學中經常遇到這個問題，如果我允許打開手提電腦，或者允許智能手機帶到課堂上來，那麼上課期間，學生中的許多人都在給朋友發簡訊、看電影或者發送電子郵件。科技使得許多人無法集中幾分鐘的注意力，他們聽課聽了五分鐘，然後就去發簡訊，注意力完全分散。現在的問題是，科技是否已經衝擊我們的生活，使我們完全無法集中注意力？

有一天，我看到一則新聞，有些僧侶、尼眾甚至在誦經的時候互發簡訊。這些都是我們遲早要正視的問題。信息技術正在影響著我們的生活——不管是僧侶還是信徒。

如今很多人不再直接交流了。他們並坐在一起，卻互相發

Facebook, Google and Apple and many other companies. According to some sources at the San Jose Mercury News, there are over 10,000 technology workers that practice meditation on a daily basis. Google has monthly mindful lunches – people eat in complete silence and are conscious of the food they eat. Google has a place for people to do walking meditation also there is a trend in Silicon Valley to use mediation and Buddhist teaching as ways to relieve stress. Some of my students in those companies told me that if they want to enroll in a meditation class, they have to wait for several months because there's a long waiting list. One of the most popular classes is called "Search inside yourself". That class has a six-month waiting list at Google and at Facebook.

My question is, as Buddhists what can we do to preserve the purity of proper Buddhadharma in this information age? We must think about it right now.

Artificial intelligence is something else we are going to have to think about. With some sophisticated algorithms, we can train robots to be much smarter. In my lab, I have two robots that play chess. I have seen robots that have learned how to cheat and I see robots can collaborate with each other to teach humans. This means that sooner or later there will be robots that can think and understand much more. Here are some interesting questions that my students ask me: "Is it possible for a robot to be smarter than a person?" I don't have the answer at this time. ❀

簡訊和電子郵件，而不是說話交談。大量的員工失去工作熱忱，這在高技術產業中十分普遍。一些公司開始採取措施來緩解員工的壓力。這也是矽谷趨勢、高技術產業發展的趨勢。

史蒂夫喬布斯（蘋果公司共同創辦人）生前是一個素食主義者，而且在禪宗中心練習打坐許多年。現在臉書、谷歌、蘋果等許多公司都在教授打坐、佛教哲學和佛教教義。據聖荷西水星報報導，有一萬多個高科技員工每天都會打坐。谷歌每月一次在午餐時進行專注用餐（Mindful Eating）——人們完全在靜默中用餐並專注於所吃的食物。谷歌還開設了一個場所供大家步行冥想。現在矽谷有一個新趨勢：許多科技公司在尋找如何利用打坐和佛教教義來緩解員工的壓力。我的一些學生在這些公司工作，他們告訴我，如果他們想報名參加一個打坐班，要等上好幾個月，因為等待名單很長。一個流行的學習班名為「探索自己的內心（Search inside Yourself）」，報名這類課程在谷歌和臉書都要等上六個月。

我的問題是，在信息時代身為佛教徒該如何來維持正法的清淨？這是我們當下必須思考的事情。

人工智慧是另一件需要思考的事。今天已有一些複雜的演算法，我們可以訓練機器人變得更聰明。我的實驗室裏有兩個會下西洋棋的機器人，我已看到機器人學會如何欺騙對方，我也看到機器人可以互相合作去訓練人類。這意味著遲早會有能夠作更多思考的機器人，它們也能瞭解得更多。我的學生問我的有趣問題包括：「是否可能造出一個比人更聰明的機器人？」這個問題我目前還沒有答案。 ❀



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