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Fukushima: a wake-up call for our nuclear future 福島事故的警示：前瞻核能發電

With around 17 per cent of the world's electricity generated by nuclear power plants, the recent crisis in Fukushima has thrust our energy needs back into the spotlight. Questions of whether nuclear power is safe, whether we need it and how it should be managed have gained currency. In Hong Kong, around 25 per cent of our electricity is nuclear, with that figure rising to over 30 per cent on Kowloon side. Should we be concerned?

When asked about the broad consequences of the earthquake and tsunami hit reactors in Japan, Prof. Woo Chung-ho, a nuclear expert and Chair Professor with the Department of Electronic and Information Engineering at PolyU, said, "I think nuclear energy is very much needed and that is exactly why I am so concerned about the safety of it." What makes the situation so important is that by 2050, at least 70 per cent of fossil fuel use, which constitutes 80% of the world energy supply, will have to be re-directed at alternative forms of energy. That means the world's alternative forms of energy supply will rise from 20% to 80%. "And that is a huge amount", emphasized Prof. Woo.

世界上大約百分之十七的電力供應來自核電站。經過最近的福島危機，有關能源的需求問題重新獲得關注：如核電是否安全和必須？應該怎樣管理？核電供應香港大約百分之二十五的電力，單計算九龍區則超過百分之三十。對有關議題，我們能不關心嗎？

日本地震和海嘯令核反應堆損毀，影響深遠。理大電子及資訊工程學系講座教授、核子專家胡仲豪教授表示：「正因核能極度重要，所以核堆安全是我特別關注的問題。」到二零五零年，最少百分之七十（是全球八成能源供應）的化石燃料，將被非碳能源所替代。也就是說，全球的非碳能源供應將要由兩成增加到八成。「這是一個巨大的數量！」胡教授強調。



A twenty-year veteran with Atomic Energy of Canada and an active member of the international research community, Prof. Woo said that we should first consider the Fukushima crisis in its own context. The issue of a Level 7 disaster rating, which ranks Fukushima alongside the meltdown at Chernobyl, was an attempt to describe "a very complicated picture with one number."

In contrast to Chernobyl, where the main reactor blew sending radioactive material across Europe after the explosion and fire, the crisis in Fukushima had a relatively slow build up after the earthquake and tsunami hit the Daiichi plant, and the subsequent explosion and fire. But the number of reactors involved is not one, but four. The reaction to the partial meltdowns in units 1, 2 and 3 of the plant "appeared to be just chaotic", Prof. Woo remarked. Of particular concern was the seeming lack of a procedure to deal with the crisis. Without a procedure, immediate decisions are crucial, but the chain of decision making had to reach the senior management and as high as the prime minister. Hence the otherwise difficult to understand decision not to use seawater to cool units 2 and 3 immediately after unit 1 had failed.

At the corporate level, the crisis has drawn out the ramifications of applying concepts of 'acceptable risk' to nuclear power. Prof. Woo said that corporate profitability and other business-focused considerations could lead to less than

adequate considerations of public safety. In essence, corporate longevity and public safety can be antithetical, at least in crisis situations.

The consequences of any nuclear disaster, let alone those that might be abetted by corporate considerations, are sobering. Prof. Woo estimated that "it will take at least ten years to get to a stage where people may start to think about going back" to the 20 kilometre exclusion zone around the stricken Fukushima plant. That would be the minimum time for people to go back to their usual lives, but even then buildings might have to be specially constructed for protection against radiation from the contaminated soil, and agriculture would take still more time to revive. Psychological effects on the people and social effects on the society are even harder to assess.

Clean-up efforts will also be a lingering concern. Three options seem probable. One would be to bury radioactive material somewhere in Japan, which might not be feasible given the country's urban density. The second would be collaboration between Japan and Russia to dispose of the waste in the much larger country's unpopulated regions. The third would be the Chernobyl-style encasement. None of these options would be a particularly easy undertaking.

Given this context it would be all too easy to dismiss nuclear power as a viable energy option. Yet Prof. Woo maintained that fossil fuel usage is unsustainable

胡教授曾在加拿大原子能研究所工作二十年，在國際的研究界別是非常活躍的一員。他認為分析福島危機應從整體背景開始，雖然該事故被列為第七級，嚴重程度與切爾諾貝爾核電站反應堆芯熔化的事故相若，但這只是試圖以一個數字來形容一件極之複雜的事情。

不同的是，切爾諾貝爾核電站的主要反應堆發生大爆炸後，產生大火，把輻射物遠處散播到歐洲各地；而福島第一核電站在地震與其引發的海嘯後，雖然也有爆炸和大火，但事態卻是慢慢逐步發展。不過，當中牽涉的核堆不只一個，而是四個。「當第一、二及三號機芯部份熔毀後，當局的反應好像非常混亂。」胡教授道。特別令人關注的是負責當局似乎沒有一個對應的機制。在缺乏機制的情況下，即時的決策至為重要，可惜一連串的決定必須獲得高層以至首相的同意，當局因而採取了不向第二及第三號機組注入海水以降溫這個難以理解的決定。

福島危機顯示出，在機構的層面上，不同人對核電的「可接受的風險」會有不同概念。胡教授表示，基於企業利益或其他商業因素，機構對公眾安全，也許不能給予全面的考慮。事實上，機構的自身生存和公眾安全，往往有對立的考慮，這種情況，在危機事件中便會體現出來。

任何核災難都會令人反思，更何況是因商業機構的種種考慮而惡化的事故。胡教授估計，人們最少十年後才會開始考慮返回受災的福島核電站周邊二十公里的禁區內，這已是讓人們回歸正常生活所需最短的時間。因泥土被污染，興建建築物需採用特別的防輻射建造方法，而農作耕地或需更長的復元時間。除此以外，災難對居民心理和社會的影響更難以估算。



相關的清理工作亦將是一個纏繞不休的問題，胡教授提出三個可能的方案。第一個方案是將放射性物質埋於日本某些地方，但日本市區人口稠密，這方案未必可行。第二個方案是，日本可考慮要求俄羅斯的援助，將廢料置於這個大國內無人居住的地區。第三個方案，就是像處理切爾諾貝爾核電站般永久密封該核電站，但三個方案都絕非易於執行。

在上述的背景，人們很容易會有放棄以核電供應能源的傾向。但胡教授稱，人類不可能持續採用化石燃料，即使加上其他可用的能源，都只能應付我們無盡的需求中的一小部分。核能發電，對全人類的將來非常重要，加快調高全球發電的能力亦是關鍵所在。「只有這樣做，我們才可繼續生存。」

在香港附近地區，有十四間核電廠於四年內投入運作，另有九間正處於計劃階段¹。因此，核能的利弊很快就會是本地大眾的切身問題，福島危機事故將促使公眾去認真考究核能的安全。三里島事故及切爾諾貝爾核電站意外都是很久以前的事，人們早已遺忘當中的教訓。但福島事故將有助提升公眾對核能管理的警覺，並促使經營者提高透明度，制定措施，確保安全。

即使不談意外事故，正常運作的核電站，都會在環境中釋放氬—氫的放射性同位素。這高放射性物質原在大自然中極為稀有，但很小劑量的氬也可以對兒童和孕婦帶來很嚴重的後果。隨著核電站增多，我們有必要開始為氬的排放定出界線，要做到這點，公眾必須意識到問題的存在。

一般而言，核電站所遵守的排放規格已經是在二十年前所制定的，更新數據亦顯示有需要收緊監管，因此當前最明顯的問題是為何仍會沿用這些過時的規格？胡教授認為，問題的關鍵在於缺乏公眾監督，但這並不來自故意的疏忽，而是公眾根本不懂得怎樣提出合理的要求，從而向核能業界施壓求變。

現有的太陽能及風力發電等方法完全未能滿足將來的能源需求。化石燃料對大自然已經造成嚴重損害，要離棄對它的持續倚賴，就必須對核能供應業界的運作有所認識，以及對如何能獲取有關的資訊有所瞭解，這是極為重要的。福島危機確實喚醒我們要儘快尋求解決方案，並付諸行動。「這是給人類世界一個很好的警號。」胡教授總結道。❖

and other alternative energy sources combined could only make a small dent in our almost insatiable requirements. Nuclear power is vital to our future, and a relatively rapid shift towards greater generation capacity worldwide is critical. "We have to do it; do or die."

In the region around Hong Kong alone, 14 more nuclear plants will come online in the next four years, with another nine in the planning stages¹. Within a relatively short time the local public will need to be thinking about the ramifications of nuclear power, and the Fukushima crisis is one of the few events that could have pushed thoughts of nuclear safety into the public mind. The Three Mile Island and Chernobyl meltdowns are now distant memories, and people had become complacent about the possibility of avoidable risk. The beneficial outcome of the Fukushima crisis is likely to be increased public vigilance of how nuclear power is managed, while operators are forced to improve transparency, develop measures and ensure safety.

Leaving aside crises, on standard operational level plants need to release tritium, a radioactive isotope of hydrogen into the environment. This highly radioactive substance is extremely rare in nature. Yet, even a very small

dosage of tritium can be detrimental to small children and pregnant women if absorbed. As nuclear plants proliferate, we should start to draw the line at its disposal, which can only happen if the public is actually aware of the problem.

In a broader sense, the emission standards that plant operators comply with are up to 20 years old, with new data revealing the need for far stricter controls. The most obvious question to ask is why are those outdated standards still being adhered to? Prof. Woo argued that a lack of public oversight has been the major problem. This is not a case of wilful ignorance, but more one of the public not knowing how to make reasonable demands to put pressure on the industry to change.

Knowledge of how the nuclear power industry operates, and an understanding of where to find once inaccessible information, will be vital as we push aside our dependence on the fossil fuels that have so heavily damaged our planet. Solar power, wind energy and the like will provide nowhere near enough of our future energy needs. The Fukushima crisis has reminded us that we need to start thinking about what action we need to take right now. "This is a good wake-up call for people", Prof. Woo concluded.

Inauguration of the Hong Kong Academy of Humanities 香港人文學院正式成立



In April 2011, top humanities scholars from across Hong Kong pooled efforts to establish the Hong Kong Academy of Humanities. With 39 Foundation Fellows from the eight government-funded institutions of higher education and The Open University of Hong Kong, the Academy aims to bring together Hong Kong's leading humanities scholars to form a strong and united voice on behalf of the humanities, and to properly recognize excellence in humanities scholarship and research. All humanities disciplines such as history, philosophy, literature, languages, linguistics, music, fine arts, Chinese, English, cultural studies and translation are represented by these Foundation Fellows.

The Academy strives to contribute to the advancement of Hong Kong society through collegial exchange in and support of the arts and humanities. It aims to promote outstanding scholarly achievements of the territory through meaningful engagement and cooperation with similar institutions regionally and internationally. It will endeavour to assist local humanists in scholarly engagement and collaboration in Asia and other international communities.

Newly elected President of the Academy, Prof. Kam Louie, Dean of Arts, University of Hong Kong, said, "The humanities, which play such a vital role in enriching Hong Kong life, need to be better explained and promoted – to government, business and the community – and who better to do this than the territory's most distinguished humanities scholars?"

Prof. Zhang Longxi, Chair Professor of Comparative Literature and Translation, City University of Hong Kong, was elected the Academy's Vice-President. Also elected to the Executive were Profs. Martha Cheung and Clara Ho (Hong Kong Baptist University), Simon Haines and David Parker (The Chinese University of Hong Kong), Louise Edwards (The University of Hong Kong), Richard Davis (Lingnan University), Leonard Chan (The Hong Kong Institute of Education), and Huang Chu-ren (The Hong Kong Polytechnic University).

二零一一年四月，香港頂尖人文學者攜手創立香港人文學院，並選出學院的三十九位創院院士，他們來自政府資助的八所高等教育院校和香港公開大學。香港人文學院的成立，旨在匯聚香港頂尖人文學者，形成一把代表人文學科的強而統一的聲音，並表彰人文學術和研究領域的傑出成就。學院的創院院士代表了人文學科的不同領域，包括歷史、哲學、文學、語言、語言學、音樂、美術、中文、英文、文化研究及翻譯等。

學院致力透過在人文藝術學範疇上的學術交流與支援，推動香港社會的發展。學院亦期望透過與區內及國際間同類型院校進行具意義的協作計劃，表揚本地學者的傑出成就。學院更會致力推動本地人文學者在亞洲及其他國際社會中進行學術協作活動。

學院新任院長香港大學文學院院長雷金慶教授表示：「人文學科在豐富香港人的生活方面扮演極為關鍵的角色，我們應該向政府、工商界和社會大眾更有效地解釋人文學科的重要性，以促進這學科的發展。要做到這一點，還有誰比本港最傑出的人文學者更能勝任呢？」

學院新任副院長為香港城市大學比較文學與翻譯講座教授張隆溪教授，另被選為學院執委的包括：香港浸會大學張佩瑤教授及何劉詠聰教授、香港中文大學Simon Haines及David Parker教授、香港大學李木蘭教授、嶺南大學戴仁柱教授、香港教育學院陳國球教授，以及香港理工大學黃居仁教授。

¹ Cameco, "Cameco Signs Supply Agreement With China Guangdong Nuclear Power", Press Release, 23 November 2010
Cameco 於二零一零年十一月二十三日所發的新聞稿「Cameco 與中國廣東核電集團簽訂供應協議」
http://www.cameco.com/media/news_releases/2010/?id=539

Three PolyU scholars elected as Foundation Fellows

Besides being elected as an executive committee member, Prof. Huang Chu-ren, Chair Professor of Applied Chinese Language Studies and Dean of PolyU Faculty of Humanities, was also elected as a Foundation Fellow of the Academy. Another two PolyU scholars who were elected as Foundation Fellows are Prof. Chu Hung-lam, Chair Professor and Head of the Department of Chinese Culture, and Prof. Winnie Cheng, Director of the Research Centre for Professional Communication in English of the Department of English.

理大三學者成為創院院士

理大講座教授兼人文學院院長黃居仁教授除了被選為學院執委之外，亦被選為學院其中一位創院院士。理大另有兩位學者被選為創院院士，他們是：中國文化學系講座教授兼系主任朱鴻林教授、以及英文系英文專業傳意研究中心總監鄭梁慧蓮教授。



Prof. Huang Chu-ren

Prof. Huang Chu-ren received his PhD in linguistics from Cornell University in 1987 and has since played a central role in developing Chinese language resources and in leading the fields of Chinese corpus and computational linguistics. He has directed or co-directed the construction of many important corpuses.

He has published some 80 journal and book articles and nearly 300 conference papers on different aspects of Chinese linguistics and computational linguistics. He has also edited some 15 books or journal special issues.

Prof. Huang is one of the 19 permanent members of the International Committee on Computational Linguistics. He is also the first and the only Chinese in this prestigious institution in the field. He is currently the Editor in Chief of Cambridge Studies in Natural Language Processing and also serves on the editorial boards of important journals.

Recent publication: Entitled *Ontology and the Lexicon – A Natural Language Processing Perspective*, published by Cambridge University Press in the Cambridge Studies in Natural Language Processing Series (2010), this volume depicts the relationship between ontologies and lexicon in a multidisciplinary perspective and focuses on the integration of lexical resources and semantic technologies.

黃居仁教授

黃居仁教授自一九八七年在康奈爾大學取得語言學博士學位後，一直在研究建立中文語言資源、領導中文語料庫及計算語言學方面扮演重要角色，並曾主持或共同主持開發多個重要的語料庫。

在中文語言學及計算語言學的範疇中，黃教授共發表了八十多篇期刊或專書論文、近三百篇會議論文、以及作為十五本專書或期刊專號的主編。

黃教授是國際計算語言學委員會的十九名終身委員之一，他是這個在計算語言學界地位崇高的團體中第一位也是唯一的一位華人。另外，他現任劍橋出版社自然語言處理叢書系列的主編，同時亦擔任多本重要國際期刊之編輯委員。

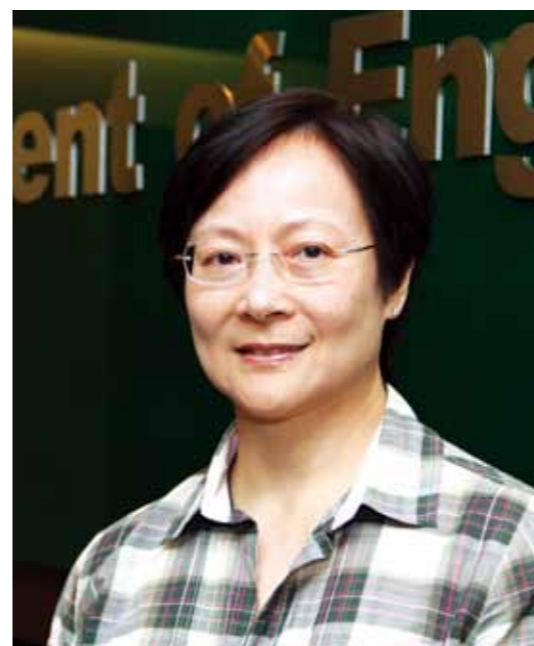
新近著作：於二零一零年由劍橋大學出版社出版的劍橋自然語言處理系列的《本體論與詞匯 – 自然語言處理的觀點》。此書以跨學科的角度論述本體與詞匯之間的關係，並集中討論詞匯資源與語義技術的融合。

Prof. Chu Hung-lam

Prof. Chu Hung-lam graduated from the Chu Hai College in Hong Kong and earned his Ph.D. in East Asian Studies from Princeton University. Prof. Chu is by training a sinologist with specialization in the history and culture of late imperial China. His areas of research include the intellectual, social and political history of that period, particularly of the Ming, Neo-Confucian classics, and literary collections – *wenji* – by Ming authors.

He is an active researcher and serves the profession as the editorial board member of a number of scholarly journals and as reviewer of manuscripts. He has written six books and close to 70 refereed articles.

He was a Fellow of the Woodrow Wilson International Center for Scholars in Washington, D.C. and a Research Fellow of the Institute of History and Philology at the Academia Sinica in Taipei before returning to teach in Hong Kong. Prior to joining PolyU, he was Professor and Deputy Chairman of the Department of History and Director of the Research



Prof. Winnie Cheng

Prof. Winnie Cheng is currently Adjunct Professor at University of International Business and Economics, Beijing; Ningbo Institute of Technology, Zhejiang

Centre for Confucian Studies in the Research Institute for the Humanities at The Chinese University of Hong Kong.

Recent publication: *Zuijinglou ji* (2010) – the literary collection of the late Ming Confucian Tang Boyuan, including his poems, biography, book titles and text written when making acquaintances.

朱鴻林教授

朱鴻林教授畢業於香港珠海書院，隨後留學美國普林斯頓大學，並考獲東亞學博士學位。朱教授接受漢學訓練，而專攻中國近世歷史與文化，研究包括：中國近世知識、社會及政治歷史、尤其明代的思想、宋明理學經典、明人文集等。

朱教授除積極研究之外，也擔任多份學術刊物的編委及文稿審查人，以服務其專業界別。他的著作包括六本書籍及近七十篇評審文章。

在返港教學之前，朱教授曾任美國威爾遜國際學者中心研究員、以及臺灣中央研究院歷史語言研究所兼任研究員。在理大任教之前，他亦曾任香港中文大學歷史系教授及副系主任、以及該校人文學科研究所儒學研究中心主任。

University; and Zhejiang Sci-Tech University in China. Her main research interests include English for specific purposes (ESP), intercultural business and professional communication, intercultural pragmatics, corpus linguistics, conversational analysis, discourse analysis, discourse intonation, outcome-based education, work-integrated education, and collaborative learning and assessment.

Prof. Cheng is Chief Editor of the *Asian ESP Journal*, and Secretary/Treasurer of the LSP and Professional Communication Association. She is serving on some committees of the Education Bureau. Her publications include two research monographs, two edited books, a textbook, 30 articles in leading journals of applied linguistics and higher education, 40 book chapters, and 19 conference proceedings and working papers.

Recent publication: Entitled *Exploring corpus linguistics: Language in action* (forthcoming in 2011), this textbook adopts a practical approach to guide readers in acquiring the relevant



新近著作：於二零一零年出版的《醉經樓集》為明儒唐伯元文集，收錄了外詩文、傳記、著作書目及交遊所寫文字。

knowledge and theories to enable the analysis, explanation and interpretation of corpus results, a key aspect of the many areas within applied linguistics.

鄭梁慧蓮教授

鄭梁慧蓮教授現為北京對外經濟貿易大學、浙江大學寧波理工學院、以及浙江理工大學的兼任教授。鄭教授的研究興趣包括：專門用途英語、跨文化商業與專業傳意、跨文化語用學、語料庫語言學、會話分析、話語分析、話語語調、成果導向教育、校企協作教育和合作學習及評估。

鄭教授是《亞洲專門用途英語》期刊總編輯、以及專用語言與專業傳意協會的秘書/司庫。此外，她亦是教育局內多個委員會的委員。她的著作包括兩本研究專著、兩本編輯書籍、一本教科書、三十篇刊登於應用語言學和高等教育界頂尖期刊的文章、四十篇書章、以及十九篇研討會論文集與文章。

新近著作：將於二零一一年出版的專業教科書《探討語料庫語言學：語言運用》，透過實用方法引導讀者探索有關的知識和理論，以分析、詮釋和闡明語料庫結果，這是應用語言學眾多範疇中重要的一環。❖