行政院國家科學委員會專題研究計畫 成果報告

開放科學運動的理念與挑戰
研究成果報告(精簡版)

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計畫參與人員：碩士級-專任助理人員：楊雅竹

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中 文 摘 要 ： 「開放科學」並不是晚近才出現的概念，事實上，自二十世紀以來，多數科學研究社群都受到開放科學的價值精神影響，科學研究向來具有很強的開放性、社群性及相互批判性等社會規範與價值。近年來，由於愈形密切的產學合作關係及政府規範研發成果的法令，使得科學研究的成果漸趨商業化，科學社群過去所強調開放與分享的社會規範與價值受到相當大的挑戰，也因此使得開放科學的呼聲時有所聞，開放科學的概念也又重新受到重視。究竟應如何解決或舒緩科學研究過度封閉、排他或商業化之問題，以實踐開放科學的理想，並維持開放科學的成果，涉及許多法律與政策問題，亟待學界討論研究。

本研究計畫介紹近年來開放科學運動的推動背景及正當性，其中著重在探討制度及法律上造成科學研究漸趨封閉的原因。本研究亦探討相關推動開放科學之作為所可能面臨的困難與挑戰，由法律、政策、科學研究的本質及科學社群運作慣例等角度切入，對不同的開放科學推動策略作出可行性及成功可能性之評估。此外，本研究亦希望發現國內科學社群對於開放科學議題之態度，及國際上開放科學運動之對國內科學社群之影響，以為未來制定相關政策時之參考。

中文關鍵詞： 開放科學、科學社群、專利法、產學合作、生醫研究、商品化、公眾授權

英 文 摘 要 ： ’Open science’ is not a new idea to the scientific communities. The value of open science has rooted in most scientific communities since twentieth century. Science has been recognized as a field of openness, community, and criticism. Nonetheless, in recent years, science has been more and more commercialized and its openness has been partly eroded because of the increasing academic-industrial collaboration and government regulations. Therefore, there has been a call for ’open science’ from various scientific communities, especially biomedical ones. How to solve or alleviate the over-closed, over-exclusive, and over-commercialized problem in scientific research and maintain the openness of science are associated with a number of legal and policy issues, which is valuable for further research.

This project introduces the background and justification of the open science movement, especially the laws and policies that cause the increasing secrecy and competition with the scientific communities. This project also analyzes the obstacles and challenges facing the open science movement via the lenses of law, policy, the nature of science, and the social norms underlying the scientific communities. Moreover, this project assesses the feasibilities of varios open sceince strategies. Lastly, this project will observe the impact of open science movement on domestic scientific communities, and provide some relevant information for future policymaking.

英文關鍵詞： open science, scientific community, patent, academic-industrial collaboration, biomedical research, commercialization, public license

壹、前言

科學的創新，除了端賴於大量有價值資訊的生產外，亦與該等資訊能否被廣泛的分享有關[1]。科學社群過去所風行的社會規範與價值是強調開放與分享，但是近年來隨著學術期刊電子化及研究成果商業化的發展，科學研究的成果已經不再是可供公眾或科學社群分享的資訊，也因此，開放科學(open science)的呼聲近年來在科學界時有所聞。事實上，開放科學並非近年才有的概念，依據社會學家Robert K. Merton的研究，「開放科學」係由以下四種概念所構成[2]：

1. 普遍性(universalism)：科學的發展應對所有的研究者公開。
2. 公有性(communalism)：思想應廣泛被分享，而不應被任何人擁有。
3. 公正性(disinterestedness)：科學家應超越個人主觀。
4. 系統性的懷疑(organized skepticism)：所有的科學發現應接受同儕審查(peer review)。

本文之目的，即在於介紹近年來開放科學運動的推動背景及正當性，亦探討相關推動作爲所可能面臨的困難與挑戰。除了「開放科學」以外，亦有論者使用 Science Commons 來表達對於開放科學研發成果之主張與期待，其中創用 CC(Creative Commons)計畫甚至以 Science Commons（以下以 SC 簡稱此一分支機構）爲名，成立一分支機構推動一連串開放科學研究成果的計畫。因此，有時相關文獻中提到 Science Commons 時，其指涉之對象不一定是創用 CC 計畫之前述分支機構，而是代表一般開放科學理念之泛稱。然而 SC 所處理的問題，包括學術期刊之開放近用及研究材料及資訊的分享流通，的確是近年來開放科學運動所關注的核心主軸，此亦爲本文所欲處理之主要對象。由於(1)學術期刊之開放近用及(2)研究材料及研發成果的分享流通，對於科學社群來說，係不同的兩個問題，因此處理的模式有相當差異，前者與著作權法相關，後者則與專利法較有關，因此本文以下論述亦多以學術期刊及研究材料及資訊兩種不同的研究成果區分討論開放科學運動或 Science Commons 之發展。

貳、Science Commons 的形成背景

一、學術期刊

近年來學術期刊訂閱價格高漲已成爲學術界關心的一個重要問題，以美國爲例，自 1986 年至 2004 年之間，學術期刊的訂閱費用一共成長了 220%，而單

[1] Robert Cook-Deegan, *The Science Commons in Health Research: Structure, Function, and Value*, 32 J. TECH. TRANSFER 133, 135 (2007).

[2] ROBERT K. MERTON, SOCIAL THEORY AND SOCIAL STRUCTURE 268-69 (1996).

就科技及醫學的期刊而言，自 1982 年至 2002 年之間，其訂閱價格成長了超過 600%，其中化學研究的學術期刊訂閱價格更是成長了 752%，一些學術期刊的單年訂閱費用，動輒超過兩萬美元以上。如此的趨勢已經使得許多小型圖書館、獨立研究人員及開發中國家的研究機構無法負擔，但是此等價格調整是否純粹反映了期刊的製作成本，抑或是出版商提升獲利的手段，其所造成的社會成本是否必要，均是值得探討的問題。

在過去網際網路及數位科技尚未興盛時，學術期刊出版商主要藉由出售紙本期刊作爲主要獲利來源，但是隨著網際網路及數位科技的進步，期刊出版商開始將期刊內容數位化，並藉由不同的數位權利管理(digital rights management, DRM)技術限制使用者對於期刊內容的接近使用，期刊的定價方式也不再只是過去單純的紙本售價或訂閱價，而是有一套更精密的數位定價系統，出版商可以文章下載次數、系統使用人數或使用期間等方式作爲定價基礎，向使用者或使用機構收取費用。

藉由著作權及新發展的數位權利管理技術，出版商對於期刊內容的控制力更甚於以往純粹紙本出版的時代，許多出版商甚至將研究機構所需要及不需要的不同期刊組合成單一的授權包裹(license package)，要求研究機構照單全收，以收取更高額的授權費用。這種趨勢造成學術論文使用者取得期刊內容的成本日益提升，許多小型的圖書館及開發中國家的研究機構都無法負擔高額的整批出售(bundle)費用。此外，整批出售手法的運用對於學術期刊出版的市場結構亦具有關鍵影響，由於一般研究機構及圖書館訂閱經費有限，所以許多機構都會選擇能涵蓋最多期刊或最重要期刊的包裹作爲採購對象，此種選擇的結果將會使期刊市場最終被少數出版商所把持，從而對市場競爭造成負面影響。

事實上，學術期刊的出版市場本來就不是一個完全競爭市場，超過半數的科技及醫學學術期刊是由全球前二十大的出版商所出版，而某些期刊在專業領域具有無可取代的學術聲望（如科學研究的 Nature 及 Science 等期刊），學者們多競相爭取在該等期刊發表的機會，以提升學術聲望或作爲獲得升等的有利條件，學術機構也將該等期刊列爲絕對必須的訂閱對象，相對而言，其他期刊甚難取代這些一流期刊的地位，也因此，這些一流期刊的出版商能夠恣意提高期刊訂閱價格，或搭配其他期刊一起整批出售。

相較於其他類型的出版市場而言，學術期刊出版市場的特色在於不同作者之間及作者與讀者間的關係其實是更爲密切的，許多學者身兼不同學術期刊的作者、讀者及編輯委員等不同身分，他們花了相當多的工作時間及資源爲學術期刊撰搞、審稿，並閱讀期刊上其他學者的論著，但是他們的報酬並非由期刊出版商所支付，而是由其所屬的研究機構給付薪資，就此而言，雇用學者的研究機構藉由給付學者薪資及投稿費用、獎勵學者爲學術期刊撰稿等行爲，其實是某種程度補貼了期刊出版商在學術文章產出上所應花費的成本。有趣的是，支付學者薪資

的研究機構通常也是學術期刊訂閱的最大宗客戶，爲了使其所雇用的學者能做出具有水準的研究，許多研究機構每年都支付給期刊出版商鉅額的訂閱費用。

基於上述分析，學術機構（或者是爲其提供財務支持的政府、納稅人或贊助人）其實對學術期刊的出版提供了雙重的財務支援，一方面支付學者薪資，使其從事研究、爲學術期刊提供內容，一方面再支付給期刊出版商高額的訂閱費用；而出版商除了取得學術機構的雙重補助之外，還取得了期刊論文的著作權，依據Gadd、Oppenheim、Probets(2003)對英、美兩國八十家學術期刊出版商提供給作者的合約所作的研究，90%的出版商要求作者將著作權轉讓給出版商，另外 10%的出版商中，則有一半會要求取得作者的專屬排他授權。但是，經濟上是否有必要對出版商如此重複補助，卻頗有探討的餘地。既然學術期刊的內容都由學者無償提供，則相較於其他出版事業而言，學術期刊出版商的內容生產成本應相對較低，從而訂閱費用亦應維持在一定水準以下，然而，近年來學術期刊的價格走向卻呈現相反的趨勢，有學者指出許多學術期刊的訂閱費用的總和早已遠超經營該等期刊所需要的必要費用。

二、研究材料及成果

「開放科學」並不是晚近才出現的概念，事實上，自二十世紀以來，在大學中的科學研究社群都受到開放科學的價值精神影響[3]，在學術界的科學研究具有很強的開放性、社群性及相互批判性等社會規範與價值[4]。然而，由於近年來愈形密切的產學合作關係，科學研究的成果漸趨商業化，科學研究的開放性逐漸萎縮[5]；而政府對於其所資助達成研發成果之態度，亦是造成開放科學縮減的原因之一，舉例而言，爲了使聯邦政府所資助發展的研究成果能獲得更廣泛的利用，並鼓勵私人投資者能將科學發明商品化，美國於 1980 年代所通過的拜杜法案(Bayh-Dole Act)鼓勵科學家爲研究成果尋求專利保護[6]。該法爲大學及科學家們提供了相當誘因，將其研發成果專利化與商品化，也因此，縱使是對於包括DNA序列、蛋白質結構及疾病路徑(disease pathway)等基礎科學或一般研究工具，科學家們也開始思考應如何就其取得專利權保護[7]。

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[3] James Stewart, Comment, *The Academic-Industrial Complex: A Warning to Universities*, 75 U. COLO. L. REV. 1011, 1026-30 (2004).

[4] Cook-Deegan, *supra* note 1, at 136.

[5] Megan Ristau Baca, iBrief, *Barriers to Innovation: Intellectual Property Transaction Costs in Scientific Collaboration*, 2006 DUKE L. & TECH. REV. 4, ¶4.

[6] *See e.g.* Cook-Deegan, *supra* note 1, at 138; Arti K. Rai & Rebecca S. Eisenberg, *Bayh-Dole Reform and the Progress of Biomedicine*, 66 DUKE J. L. & CONTEMP. PROBS. 289, 290 (2003).

[7] Rai & Eisenberg, *supra* note 6, at 291.

(一) 研究工具與材料移轉

過去生醫研發之上游階段所發展出來的研究工具(research tool)，常提供予下游研究者之診斷或治療目的而無償利用[8]；但是，今日科學研究發展的現況卻非如此，以基因序列爲例，特定基因序列在被分離之時，可能立即取得專利權保護，專利權人此時甚至對於該序列可成爲何種商品還一無所知[9]，準此，上游研發專利化的結果，不但增加了下游研發的成本，易減緩整體生醫之產業創新。許多研究機構縱使不尋求專利權保護，也會限制研究材料及試劑的流通，避免許多可能帶來商業價值的後續研究[10]。也因此，有學者用反共有悲劇(tragedy of the anticommons)描述生醫研發的財產權歸屬狀態[11]。凡此種種，均使得過去原屬於開放科學的領域逐漸縮減。該等科學研究成果商業化的發展趨勢，亦使得科學社群及學術研究機構間之關係發生質變，過去科學界習於協力研究，但今日卻更注重研究進展的秘密性及競爭性[12]。

生醫研究機構常需使用其他研發機構所發展出的材料（特別是包括基因、細胞株或其他生物產品等研究工具）作爲研發基礎，而爲了處理系爭材料所衍生之智慧財產權問題，許多研究機構都以材料移轉契約(material transfer agreements, MTAs)規範系爭材料在何等範圍內、可供何種使用。爲了控制下游研發者對系爭材料之使用，原材料開發者通常會在材料移轉契約中要求系爭材料之下游使用者將其研發成果之智慧財產權授權或移轉，或以其他方式控制下游使用者之研發成果[13]；對材料授移轉者而言，材料移轉契約亦可爲其提供相當保障，避免其在需要材料時，被要求承諾不合理的條件，或因材料的延遲移轉，造成研究空窗期，影響研究進度或研究補助申請[14]。

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[8] Michael Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698, 698 (1998).

[9] Molly A. Holman & Stephen R. Munzer, *Intellectual Property Rights in Genes and Gene Fragments*, 85 IOWA L. REV. 735, 739 (2000).

[10] Rai & Eisenberg, *supra* note 6, at 291.

[11] Heller & Eisenberg, *supra* note 8, at 699.

所謂「反共有悲劇」是指數人就單一珍貴資源，擁有排除他人使用之權利，因此沒有一個人就系爭資源有絕對之決定權，進而導致係茲資源使用不足之不效率情況，國內文獻對此理論之介紹，參馮震宇，從司法院法學資料庫隱私權問題看政府資訊委外的發展與問題，月旦法學雜誌，154期，2008；李素華，基因及基因藥之專利法制發展趨勢，法學新論，4期，2008。

[12] *See e.g.* Baca, *supra* note 5, at ¶18, ¶ 21; Cook-Deegan, *supra* note 1, at 136.

[13] Baca, *supra* note 5, at ¶23.

[14] *Id.* at ¶24.

然而，研究發現，縱使在過去曾有合作關係的研究機構間，材料移轉契約條款的談判都常花費許多時間及費用，該等談判亦會導致研究時程的拖延[15]。由於材料移轉契約談費所耗費的可觀交易成本，許多科學家所幸就不將自己研發所得之材料與其他科學家分享[16]。由此可見，不論是否簽訂材料移轉契約，現今科學資訊的流通都受到相當的阻礙。

(二) 人類基因體計畫

引發開放科學風潮的另一原因是科學界爲了發現人類基因體序列而引發的相關爭議，1996 年成立的國際人類基因體定序聯盟（International Human Genome Sequencing Consortium）係由一群來自世界各地、以分享人類基因序列資訊爲宗旨的科學家所組成，該組織成員均依據「百慕達原則」(Bermuda Principles)，主張相關研究成果應儘速置於公共領域(public domain)[17]。然而，在 90 年代末期，某些公司開始探索將人類基因序列商業化之可能性，前述國際人類基因體定序聯盟的一個成員成立了賽雷拉基因公司(Celera Genomics)，該公司搶先於國際人類基因體定序聯盟之前，完成了第一組人類基因序列[18]，並大量就人類基因序列申請並取得專利[19]。2001 年時，國際人類基因體定序聯盟及賽雷拉基因公司個別發表類人類基因組織工作草圖，然而，前者卻主張後者係抄襲前者已公開發表之資訊，後者卻否認之[20]，雙方對此等爭議最後並未有一致性的訴訟或仲裁處理，但是卻使得開放科學的觀點受到更多重視。

(三) 小結

無論是科學材料移轉的限制及人類基因體研究成果的歸屬，都使得開放科學的問題受到重視，而將專利權保護範圍擴及至所有研發成果，也相當程度的阻礙了研究機構間及科學家間的合作研發機會，根據 2002 年所作的一項實證研究顯示，基因科學家間的合作研發已較過去大幅減低，主要原因是科學家們因爲彼此

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[15] *Id.* at ¶24-25.

[16] *Id.* at ¶25.

[17] Andres Guadamuz González, *Open Science: Open Source Licensing in Scientific Research*, 7 N.C. J. L. & TECH. 321, 333-34 (2006).

[18] John Sulston, *Intellectual Property and the Human Genome*, *in* GLOBAL INTELLECTUAL PROPERTY RIGHTS: KNOWLEDGE, AND DEVELOPMENT 61, 64-65 (Peter Drahos & Ruth Mayne eds., 2002).

[19] Guadamuz González, *supra* note 17, at 334-35.

[20] 關於雙方之爭議及立場，請參見R. Waterston, E. Lander & J. Sulston, *On the Sequencing of the Human Genome*, 99 PROC. NAT'L ACAD. SCI. 3712 (2002); E. Myers et al., *On the Sequencing and Assembly of the Human Genome*, 99 PROC. NAT'L ACAD. SCI. 4145 (2002).

合作而造成的專利侵權風險[21]。此外，範圍過廣的專利範圍，對市場競爭亦有負面影響。針對此等問題，開放科學的擁護者亦開始思考，究竟應如何實踐開放科學的理想，並維持開放開學的成果。

參、推動 Science Commons 之具體作為

一、學術期刊

針對前述學術期刊之近用問題，國際間已形成何謂「開放近用」運動，根據目前最為人所熟知的布達佩斯開放近用提議(Budapest Open Access Initiative)，「開放近用」指的是：資料能在公眾網際網路上被自由取用，並允許任何使用者得閱讀、下載、重製、散布、列印、搜尋或連結至該等文章的全部內容、得為檢索目的爬梳(crawl)該等文章、得傳遞該等文章至軟體作為資料，或為任何其他合法目的，在除了與近用網際網路不可分離的限制外，別無財政、法律或科技障礙之下而能使用該等文章。對於重製及散布的唯一限制，及著作權在上述範圍內的唯一角色，是必須允許作者得控制他們著作的完整性，和保障作者應被適當表彰及引用。

而貝斯達開放近用出版宣言(Bethesda Statement on Open Access Publishing)則對何謂「開放近用出版」給了定義。只要符合以下兩個條件，即可稱為開放近用出版。

1. 作者及著作權人給予所有使用者自由、不可撤回、全球、永久的得近用其著作的權利，並授權所有使用者得在任何數位媒介、為任何合法目的、在適當表彰著作人的條件下重製、使用、散布、傳輸、公開展示、改作其著作，及得為個人使用的目的少量印刷其著作。
2. 完整的著作內容及所有補充資料，包含上述所允許的著作重製物，必須以適當的標準化電子格式、在著作初出版時立即被存放在至少一種線上素材庫(online repository)中，而該等線上素材庫必須是由學術機構、政府組織或其他設立完善以尋求促進開放近用、不受限制地散布、可互通性及長期典藏為目的的組織所支持。

延續布達佩斯開放近用提議及貝斯達開放近用出版宣言的精神，於 2003 年簽署的柏林宣言關於科學及人文學知識的開放近用(Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities)進一步列舉了開放近用內容(Open Access Contribution)，舉凡原始科學研究結果、原始資料及後設資料、以數位方式呈現的圖像資料和學術多媒體資料都屬此處所定義的「開放近用內容」；此外，柏林宣言關於科學及人文學知識的開放近用對於「開放近用內容」的判斷標準，則幾乎相同於貝斯達開放近用出版宣言對於「開放近用出版」的認定標準。

[21] D. Blumenthal et al., *Data Withholding in Academic Genetics*, 287 J. AM. MED. ASS'N. 477 (2002).

前述 SC 下即成立一個「出版」計畫，處理學術期刊的出版問題，「出版」計畫的提出主要爲響應近年來提倡開放近用的浪潮，期透過標準化學者與出版商間的契約，來消除以往傳統學術出版模式所帶給文章作者本身及大眾在取用資料上的不便利。該計畫中，目前發展最完整的應該是開放近用法律計畫(Open Access Law Program,下稱 OAL 計畫)，該計畫主要係爲鼓勵法學類期刊的開放近用。OAL 計畫分別列出幾項原則，讓贊同其理念的法學期刊出版商（或其編輯）及法律學者可資遵循。供法學期刊出版商（或其編輯）遵守的原則（「開放近用法律原則」，Open Access Law Principles）要求：(1) 該期刊向期刊文章作者所取得的商業出版專屬授權必須是合理的、有限的期限，且不得阻礙作者將其文章以和創用 CC「姓名標示-非商業性」同樣自由的授權釋出；(2)文章獲該期刊刊登的作者則必須承諾在再版的情況下，會標明該期刊爲這篇文章的原始出版人；(3)文章刊登之後，期刊出版商必須提供作者該篇文章的電子檔；(4) 若該期刊並無採用 OAL 出版合約(Open Access Law: Publication Agreement)，則期刊出版商必須在其網站上提供其所採用的出版合約內容讓大眾得閱覽，且該出版合約不得違背以上所列的 4 項原則(Science Commons, n.d.j)。目前許多知名的法學期刊，如杜克大學法學期刊(Duke Law Journal)、哈佛大學法律與科技期刊(Harvard Journal of Law & Technology)、紐約大學法學期刊(New York Law School Law Review)等都已加入了這個計畫(Science Commons, n.d.h)。

而要加入 OAL 計畫的法律學者則必須承諾將遵守以下 3 原則：(1) 在該學者對某法學期刊具有編輯權限的情況下，將採用「開放近用法律原則」；(2) 當該學者擔任某法學期刊顧問(advisor)時，將鼓勵該期刊的編輯採用「開放近用法律原則」；(3)該學者將只向支持「開放近用法律原則」的期刊投稿。

除了針對法學期刊出版商（或其編輯）和法律學者分別擬定可資遵循的原則外，OAL 計畫也制訂了供兩方共同簽署的制式出版合約，讓作者得保有其文章的所有著作權，且納入 4 種創用 CC 授權的選項：「姓名標示」、「姓名標示-非商業性」、「姓名標示-非商業性-相同方式分享」、「姓名標示-非商業性-禁止改作」讓作者自行決定其文章欲以何種創用 CC 授權提供大眾利用。若某法學期刊原先並非採用 OAL 所擬定的出版合約，OAL 計畫也提出 3 種具修改原先出版合約效力的附件(addendum to publication agreement)來達到文章得開放近用的效果。「開放近用創用 CC 1.0 附件」(OpenAccess-Creative Commons 1.0 Addendum)規定，作者保有得爲非商業性目的利用其著作的權利，並得將其著作依類同於創用 CC「姓名標示-非商業性」效果的授權方式提供予大眾利用。例如，作者得在教學及研究的過程中重製及散布其著作，亦得在其個人網頁、甚至其他開放近用數位資料庫上張貼其著作。第 2 種附件，「開放近用 1.0 附件」(OpenAccess-Publish 1.0 Addendum)除規定作者得散布其文章的任何一個版本（含期刊最後刊登的版本），更進一步寫明作者得爲和其教學、研討會發表、演講、其他學術著作和專業活動

相關的目的利用其文章，但不強制規定期刊出版商須授權作者得將其文章以創用CC 授權；最後一種附件，「開放近用延遲 1.0 附件」(OpenAccess-Delay 1.0 Addendum)內容大致和「開放近用 1.0 附件」相同，但另外規定作者需在文章刊登 6 個月後才得將文章最終刊登的版本提供大眾取得。無論是上述那一種附件中皆規定，若期刊出版商在不簽署附件的情形下逕行刊登作者的文章，將視同期刊出版商同意附件之條款。

再者，由於長久以來，學術機構是傳統學術期刊出版商的主要支持者，爲出版商提供期刊內容來源及訂閱費用，所以在可預見的未來，學術機構及學者間的集體行動將爲傳統出版模式與開放近用出版模式的消長帶來關鍵影響。近年來許多世界一流學術機構都已經意識到出版商對學術研究成果過度控制所造成的不良後果，諸如美國加州大學、哈佛大學及康乃爾大學等學術機構都開始抵制高價的學術期刊及其出版商，要求校內教授考慮避免在該等期刊上發表著作，這些學術機構也鼓勵教授在接受期刊刊登邀約時，應保留在公共網路上自我典藏該著作的權利，但是出版商是否會接受，則涉及雙方的議價實力及商業考量，儘管有研究顯示高達 90%的期刊允許某種形式的自我典藏，然而，實際運作上，學者卻容易受到不同期刊有不同的政策（如允許著作典藏的格式、著作出版後經過多久的期間始得公開等）所困擾；基於相同的原因，學術機構也開始思考，如何藉由鼓勵開放近用的出版模式，重新取得對學術研究成果的控制權。

二、研究工具與材料移轉

基於研發成果專利化與商業化在科學研究上的發展趨勢，近年來針對政府補助完成研發成果之開放科學呼聲時有所聞，美國國家衛生研究院(National Institute of Health, 以下簡稱NIH)於 2004 年時即提議，所有由NIH補助完成的研發成果都應及時對其他科學家、醫療服務提供者、學生、教師、甚至所有有此資訊需求的美國人民公開 [22]。而許多開放科學的支持者已開始思考，是否應參考自由軟體 (free software)或開放原始碼軟體(open source software)的授權模式，來促進科學資訊的流通與分享，如此的想法最早由英國聖格研究院（Sanger Institute）的科學家Tim Hubbard提出，其認爲開放原始碼的授權模式非常適合應用於人類基因體研究成果 [23]，Hubbard雖然自己草擬了基因研究成果的相關公眾授權條款，但卻未被聖格研究院採用，因爲該院認爲，所有的科學研究材料及成果，都應釋出到公共領域，而既然該等成果已在公共領域，則自無以其授權之可能性 [24]，該

[22] Press Release, National Institutes of Health, *Enhanced Public Access to NIH Research Information* (Sept. 3, 2004), *available at* http:// grants.nih.gov/grants/guide/notice-files/NOT-OD-04-064.html.

[23] Guadamuz González, supra note 17, at 336.

[24] *Id.*

院之觀點反應了部分科學家對於將科學研究成果以公眾授權釋出的懷疑，因爲這些科學家認爲，授權代表將研發成果財產權化，但是財產權化其實向來被認爲是有害於科學資訊及材料的分享與流通[25]。

承前所述，材料移轉契約其實帶來了相當可觀的交易成本，因此並無法達到促進科學資料分享與交流之理想，因此科學界近年來開始逐漸開始出現簡化科學資料分享程序之呼聲[26]，申言之，若科學家們將其研發材料分享予其他科學家時，無須花費驚人的精力及成本，則其將有更高的意願將系爭材料提供分享。然而，該等簡化資料分享程序之目標其實並不易達成，過去美國公共衛生學界及產業界代表曾協力制訂了一份「標準生物材料移轉契約範本」(Uniform Biological Material Transfer Agreement, UBMTA)，其目的即爲藉由該標準化的範本，簡化生物材料分享程序、降低交易成本[27]，但是該範本實際推行的結果卻是，許多持有生物研究材料之機構仍站在本位主義之立場，將該範本之條款修改爲對自己有利的條款，對生物研究材料之移轉增加許多原本範本所無之限制，有論者指出，會有如此發展趨勢之原因，係因爲研究機構的技術移轉單位多將收取授權金或相關費用當作自己之主要工作內容，因此在生物材料移轉契約之制定、談判及簽訂時，都會盡期所能的增加契約對造取得或使用系爭材料之限制[28]。然而，將原本標準化的契約範本過度客制化的結果，不但增加了契約兩造就契約談判之交易成本，亦使得原本契約範本簡化生物材料分享程序及促進材料分享之目的無法達成。

創用 CC 組織基於其過去發展彈性內容公眾授權條款之成功經驗，近年來亦開始在其 Science Commons（以下簡稱 SC 計畫）中投入發展標準化的材料移轉契約。與前述 UBMTA 不同的是，創用 CC 過去發展出的授權條款，在一定程度內提供了授權人就特定授權方式（如是否供商業使用、是否可改作以及改作作品是否須依相同方式分享等）的選擇性，且依據該授權條款所授權釋出之內容多可利用網路搜尋引擎尋得。

對 SC 所要發展的標準化材料移轉契約而言，創用 CC 的成功經驗可提供以下的啓發：爲了降低契約雙方協商的交易成本，應該僅可能將雙方較無爭議或利益衝突性較低之條款確定，而在雙方較有可能需要花費資源協商之條款中，依照材料使用受限制之程度，設計出限制程度寬嚴不一的一系列使用條款，而該等設計係將現今材料移轉契約之設計實況予以類型化。此外，應將材料移轉契約數位

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[25] Sulston, *supra* note 18, at 64.

[26] Baca, *supra* note 5, at ¶27.

[27] Uniform Biological Material Transfer Agreement: Discussion of Public Comments Received: Publication of the Final Format of the Agreement, 60 Fed. Reg. 12771, 12771 (Mar. 8, 1995).

[28] Rai & Eisenberg, *supra* note 6, at 306.

化，使科學家們能輕易的透過簡單的電腦操作，將其所開發出的材料授權與其他科學家使用，或搜尋其他科學家有哪些材料、依據何等條款可授權移轉他人使用。最後，標準化的材料移轉契約應協助科學家在「放棄全部權利」及「保留全部權利」的兩個極端中，取得「保留部份權利」但仍開放部份資源之可能性。

肆、推動 Science Commons 運動所面臨的挑戰

一、學術期刊

就學術期刊經營者的觀點而言，開放近用經營模式的商業價值仍有待觀察，就財務的觀點而言，純粹開放近用的經營模式可節省行銷及訂戶管理的費用，但是卻喪失了傳統經營模式主要的獲利來源：訂閱費用。目前大部分開放近用出版的經營費用係來自：出版機構的自有經費、外界捐贈、會員加值服務費用、作者所繳納的稿件處理費用及廣告收益等。此外，就稿件供給的觀點而言，開放近用出版模式多要求作者繳納相當的稿件處理費用，此等要求可能會影響作者提供稿件的誘因，該誘因的降低，對於尚未建立學術聲望的期刊而言，係屬不易處理的課題。

從作者的角度而言，開放近用的出版模式除了可增加讀者的數量以外，另一個潛在的利益是作者可以得到更多關於其作品的回應，開放近用期刊的出版者可以透過網際網路及資訊科技，爲每一篇文章建立獻上論壇，另外，作者亦可以將其研究的基礎資訊，以不同的形式（如聲音、影片、數據、實驗筆記及資料庫等）置於網站上供讀者檢驗參考，如此將可提升研究的準確性及嚴謹度；從讀者的角度而言，開放近用出版除了降低接近使用期刊的成本以外，更重要的是，讀者可透過 Google Scholar、Citeseer 或 Citebase 等搜尋引擎找尋其所需求的學術文章，由於許多研究者都習慣在各自專業領域的資料庫中尋找相關文獻（如法律學者習慣使用 Westlaw 及 LexisNexis 資料庫），所以對於其他領域的相關主題研究可能不易得知，但是透過開放近用出版的期刊及網際網路，研究者將可更輕易的取得其他領域的相關文獻，就此而言，開放近用的出版模式亦有助於跨領域研究。

由於開放近用的出版模式不向讀者收取線上閱讀及下載的訂閱費用，所以對於此種經營模式最常見的質疑就是其在經濟上是否能達到收支平衡。事實上，爲支付專業期刊的必要開銷（如排版、安排同儕審查、網站管理及印刷等行政費用），一些開放近用學術期刊的出版者會向作者收取一定的出版費用，以知名的開放近用出版組織公共科學圖書館(Public Library of Science, PLoS)爲例，其所出版的期刊要求作者或其所屬的研究機構支付每篇美金 1,250 元到 2,500 元不等的出版費用，但是如果作者及其所屬機構無力負擔該出版費用，則可申請免除負擔部份或全部出版費用，此外，如果作者所屬的研究機構支付美金 2,000 元至 100,000 元的會員年金，則作者在出版費用上可獲得 10%到 75%的折扣，PLoS 的主要經濟

來源來自捐款、獎助、紙本的訂閱費用以及上述作者或其所屬機構所支付的出版費用。另一家英國的開放近用期刊出版商 BioMed Central(BMC)則向作者收取每篇美金 490 元到 2,340 元的處理費用，但若作者或其所屬研究機構已經支付過 BMC 的會員費用，則無須支付文章處理費用。而近年來一些實證的研究也顯示，開放近用的學術期刊經營模式，在經濟上是可行的，而開放近用學術期刊的數量，也在持續增加中。

開放近用期刊能否經營成功，另一個關鍵性的因素是此等期刊能否建立卓著的學術聲譽。對作者來說，在開放近用的期刊上刊登文章，或許可以增加被閱讀的次數及被引用的頻率，而此種頻率的增加雖然可以某種程度的提升作者的學術地位，但是在開放近用期刊建立起一流學術聲譽之前，許多作者可能還是會把最滿意的著作優先投稿至如 Science 或 Nature 傳統的一流學術期刊，以獲得學術界普遍認可的肯定，就此而言，開放近用期刊似乎不易在短時間內，挑戰既有的一流學術期刊所建立的學術聲望。此外，實證研究也發現，許多學者對於專業領域中的開放近用學術期刊仍不熟悉或缺乏信心，此種情形極可能導致開放近用期刊獲得較少高水準的稿件，而難以提升其學術水準。

因此，開放近用期刊能否在學術市場全面成功，將端視學術界能否以成功的集體行動支持開放近用的出版模式，事實上，近年來學術界的集體行動已經逐漸展開，除了前述一流學術機構對傳統期刊出版模式的反動以外，許多重量級的學者也開始擔任開放近用學術期刊的編輯委員，以表達對開放近用理念的支持及期刊內容的肯定，而 PLoS 更是由 1989 年諾貝爾醫學獎得主 Harold Varmus 博士所發起成立，並獲得多位諾貝爾獎得主的支持，其所出版的期刊內亦不乏諾貝爾獎得主的著作。

二、研究材料與成果

前述創用 CC 所欲發展之標準化材料移轉契約其實亦受到不少質疑，許多論者指出，過去創用 CC 的發展經驗並無法完全移植到材料移轉契約，因爲創用 CC 授權條款所針對者係受著作權法所保護之著作，但材料移轉契約所欲移轉者則多爲具體的物或不受著作權法保護之資訊；此外，材料移轉所涉及之相關當事人關係可能較創用 CC 著作權授權之主體更爲複雜，許多大型研究機構就研發成果都受到自身規定、相關法令及提供研究資助者的規範，而如前所述，許多大學或研發機構的技術移轉部門人員，對於凡是有可能降低授權金收入之條款，都不易接受。凡此種種，都使得 SC 要改變既存的科學材料移轉實務相當不易。

此外，科學研發的成果與過去適用創用CC授權條款之內容有顯著不同，後者係受著作權法保護之客體，受到著作權法創作保護主義[29]之規範，一旦創作完

[29] 著作權法第 10 條：「著作人於著作完成時享有著作權。但本法另有規定者，從其規定」。

成，即可授權釋出，但前者所涉及的智慧財產權卻多爲專利權及營業秘密，若是專利權，則開發者須待專利申請核准後，方有權利將系爭專利授權釋出，然而專利取得之成本及時間有時相當可觀，有可能會影響開發者授權釋出之權利及意願。此外，由於取得專利權的成本有時相當龐大，因此許多從事科學研究的機構都期待藉由專利授權能回收部分研發成本與投資，並希望以專利權作爲其和其他研究機構或企業協議交互授權之談判籌碼[30]。因此，縱使有完整的授權條款，亦不易讓研究機構以公眾授權的方式，將研發成果授權釋出。

伍、結語

雖然有許多頂尖的科學家都支持開放科學運動，但是保留甚至創造一塊純淨的 Science Commons 園地卻非常困難，因此開放科學運對所面臨的挑戰其實甚爲嚴峻。這些挑戰除了來自科學研究過程中部不擴張的商業力量外，亦與既有的科學研究組成結構及國家科技政策有密切關係。

就學術期刊的開放近用而言，雖然已出現了少數經營成功的學術期刊，但是多數科學社群的成員對於開放近用出版能否有成功、延續的經營模式，仍高度存疑，本文以爲，雖然學術期刊的開放近用對於不同的學術領域的價值及適用方式或有差異，但是政府機關或政府所屬研究機構所出版的學術期刊，均應採取開放近用的出版模式，以使得其所出版的研究成果能更廣泛的爲研究人員及社會大眾所接近使用；再者，透過聲譽卓著的學術機構（諸如美國加州大學、哈佛大學及康乃爾大學等）漸漸出現的抵制高價學術期刊及其出版商的行動，及民間組織如創用 CC 成立 SC「出版」計畫來推動期刊的開放近用。

而研究材料及成果的開放及分享，在實踐上其實比學術期刊的開放近用更爲困難，蓋其所涉及之專利權對許多研究機構均具有聲譽上及財務上之重要性，以現今各國以專利權衡量研發成果及促進產學合作之政策而言，研發成果專利化之趨勢早已蔚爲風潮。雖然，不可否認的，財產權對於提升研發績效有相當程度的正面影響，但是過度財產化所有研究材料及資訊其實對長期科學發展並非益事。未來開放科學運動的推動成效，實有賴於科學家、科學社群及研發機構間的集體行動，否則單依少數組織或個人的大聲疾呼，實難改變既有科學研究社群所瀰漫的專利化及秘密化之競爭結構。

[30] Guadamuz González, *supra* note 17, at 336.

FILTERING ONLINE CONTENT:

"CODE IS LAW" IN THE CASE OF CHINA

Jyh-An Lee[*]

I. Introduction

In the book "The World Is Flat," Thomas Friedman states that anyone with an Internet connection has the ability to find almost any information on the web now.[1] A

[*] Assistant Professor of Law, National Chengchi University, Taiwan.

number of commentators also claim that the Internet enables free flow of information and a freer society.[2] This may be true in most, but not all, countries in the world.[3] In China, the government has built probably the world's most sophisticated Internet filtering system to block a number of foreign websites,[4] which are viewed by the government as a threat to the Chinese State. The blocked websites include those containing information associated with Tibetan Independence, Taiwan Independence, human right, Falun Gong, and other perceived threat to the Communist Party.[5] The government argues that such practice is desirable as it can prevent the Western world from "dumping" information on China. Therefore, there is no surprise that in a public talk, Hu Jintao once said, "[w]hether [the government] can cope with the Internet is a matter that affects the

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[1] THOMAS L. FRIEDMAN, THE WORLD IS FLAT: A BRIEF HISTORY OF THE TWENTY-FIRST CENTURY (2006).

[2] Ronald J. Deibert, *Dark Guests and Great Firewalls: The Internet and Chinese Security Policy*, 58 J. SOC. ISSUES 143, 143 (2002); Christopher Stevenson, *Breaching the Great Firewall: China's Internet Censorship and the Quest for Freedom of Expression in a Connected World*, 30 B. C. INT'L & COMP. L. REV. 531, 533-34 (2007).

[3] Stevenson, *supra* note 2, at 534; *see also* Deibert, *supra* note 2, at 143 (China "is a 'hard case' for those who argue that the Internet cannot be controlled"); Kristen Farrell, *The Big Mamas Are Watching: China's Censorship of the Internet and the Strain on Freedom of Expression*, 15 MICH. ST. J. INT'L L. 577, 590 (2007) ("[t]he Internet [in China] has increasingly become a tool for security agencies to identify, monitor, arrest and imprison potential dissidents.")

[4] *See e.g.* Stevenson, *supra* note 2, at 536-37; Lijun Tang & Peidong Yang, *Symbolic Power and the Internet: The Power of a "Horse"*, 33 MEDIA, CULTURE & SOC'Y 675, 678 (2011). *See also* YUEZHI ZHAO, COMMUNICATION IN CHINA: POLITICAL, ECONOMY, POWER, AND CONFLICT 32 (2008) (stating that "[w]ith the increasing sophistication of firewalls and filtering software, the survival time for offensive content in cyberspace has been progressively reduced.").

[5] *See e.g.* Stevenson, *supra* note 2, at 541; Robert Faris & Nart Villeneuve, *Measuring Global Internet Filtering, in* ACCESS DENIED: THE PRACTICE AND POLICY OF GLOBAL INTERNET FILTERING 5, 12 (Ronald Deibert et al. ed., 2008). *See also* Farrell, *supra* note 3, at 587 ("China considers a wide range of topic sensitive and controversial…including the Tiananmen Square uprising, support for a free Tibet, the Falun Gong spiritual movement, criticism of China's human rights and social justice records, independent news media, and pro-democracy/pro-Western commentary.").

development of socialist culture, the security of information, and the stability of the state."[6]

When the Internet was first introduced to China, some researchers had optimistically viewed it as a librating force in China's democratic development.[7] They assume that free flow of information fostered by the Internet would definitely lead to a free society[8]. Nonetheless, the Chinese government has actually been using network technologies to control online information and grafting its own ideology to the Net. Digital technologies have become the government's tool to tamp down political threats.[9] Technically, the Chinese government has ordered Chinese Internet carriers, like China Telecom, to deploy Cisco's equipment to block unwanted materials from entering China.[10] This practice has significantly changed the open nature of the Internet. Although the government may choose to use the law to regulate people's online behavior, controlling access to online information via technical architecture seems to be a much more effective approach.

In fact, the Chinese government has been attempting to control online content via several different targets, including Internet content providers, individual consumers,[11] and content on foreign websites. Nonetheless, this Article only focuses on the filtering mechanism that prevents local Chinese Internet users from accessing foreign online content. This Article will use Lawrence Lessig's pronouncement "code is law" as lenses to understand the Internet filtering system in China. The theory is that technology can

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[6] Xiao Qiang, *The Rise of Online Public Opinion and Its Political Impact*, *in* CHANGING MEDIA, CHANGING CHINA 202, 207-08 (Susan L. Shirk ed., 2011).

[7] *See e.g.* Yutian Ling, *Upholding Free Speech and Privacy Online: A Legal-Based and Market-Based Approach for Internet Companies in China*, 27 SANTA CLARA COMPUTER & HIGH TECH. L.J. 175, 215 (2011).

[8] *See e.g.* Stevenson, *supra* note 2, at 533-34; SHANTHI KALATHIL & TAYLOR C. BOAS, OPEN NETWORKS, CLOSED REGIMES: THE IMPACT OF THE INTERNET ON AUTHORITARIAN 1-2 (2003).

[9] It is not easy to draw the relationship between the Internet and democracy because there are a number of complicated human experiences, institutions, and other factors in between. *See* GUOBIN YANG, THE POWER OF THE INTERNET IN CHINA 10 (2009).

[10] *See e.g.* Bambauer, at 379; Stevenson, *supra* note 2, at 542.

[11] *See e.g.* Gudrun Wacker, *The Internet and Censorship in China*, *in* CHINA AND THE INTERNET: POLITICS OF THE DIGITAL LEAP FORWARD 58, 69-70 (Christopher R. Hughes & Gudrun Wacker ed., 2003); Yang, *supra* note 9, at 48.

fulfill a regulatory function or at least have the same effects as regulation. The essential characteristic of code-as-regulator is that "[a] rule is defined, not through a statute, but through the code that governs." Through the application of Lessig's theory to the Chinese great firewall, this Article intends to illustrate the theory's new implications and the government's policy options in cyberspace. Indeed, the Internet filtering practice in China has drew considerable criticism, especially from the perspectives of democratic development and the value of open Internet.[12] Nonetheless, the aim of the Article is not to criticize the Chinese Internet filtering system, but rather to illustrate how a government can regulate and shape human behavior via architecture.

II. Internet Filtering in China

The information and communications technologies (ICT), including the Internet, in China have been growing rapidly because of strong support from the government during the past 15 years.[13] The Internet infrastructure in China has experienced extraordinary growth in terms of scale, technology, and quality.[14] In the meantime, the Chinese government has endeavored to control the information flowing on the Internet via various approaches, such as regulations and technologies.

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[12] For example, When President Barack Obama visited China in 2009, he said:" I am a big supporters of non-censorship...in the United States, the fact that we have free Internet--or unrestricted Internet access is a source of strength, and I think [it] should be encouraged." *See* Robert Mackey, *Obama Walks China's "Great Firewall,"* N.Y. TIMES, Nov. 16, 2009, at http://thelede.blogs.nytimes.com/2009/11/16/obama-on-chinas-great-firewall/. For other criticisms on Internet filtering, *see e.g.* Kevin Werbach, *The Centripetal Network: How the Internet Holds Itself Together, and the Forces Tearing It Apart*, 42 U.C. DAVIS L. REV. 343, 367 (2008).

[13] *See e.g.* Wacker, *supra* note 11, at 58.

[14] *See e.g.* Wei Wu, *Great Leap or Long March: Some Policy Issues of the Development of Internet in China*, 20 TELECOMM. POL'Y 699, 699-701 (1996); Jonathan J.H. Zhu & Enhai Wang, *Diffusion, Use, and Effect of the Internet in China*, 48 COMM. ACM 49, 50-52 (2005).

"Filter" originally means blocking data from entering or leaving a network by programming the router.[15] The aim was to provide Internet service providers (ISPs) with means to control viruses, worms, and spam.[16] The same technology has been employed by the government to filter online information,[17] and that became the "Internet filtering," which represents the technical approach to prevent Internet users from accessing specific Internet Protocol ("IP") addresses.[18] The reason to block online information from citizens is that such information is deemed too sensitive by the government.[19] A great number of countries have developed their own Internet filtering systems because of political, moral, religious, or security concerns.[20] Traditionally, there are two types of Internet filtering technique: the inclusion filter and the exclusion filter.[21] The inclusion filter typically uses a "white list" to include websites that are permitted for browsing, whereas the exclusion filter employs a "blacklist," which specifies websites that users are prohibited from visiting.[22] Countries blocking websites usually request Internet service providers (ISPs) to implement the task because it is the cheapest way to filter online information.[23]

The Chinese government has adopted the exclusion filter by requesting carriers, such as China Telecom, to install Cisco's apparatus, which can drop information from at least three hundred IP addresses.[24] The Chinese government provided the carriers with a list of forbidden websites and their addresses, and ordered these carriers to block the sites

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[15] HUMAN RIGHTS WATCH, RACE TO THE BOTTOM: CORPORATE COMPLICITY IN CHINESE INTERNET CENSORSHIP 9 (2006)

[16] *Id.*

[17] *Id.*

[18] Marc D. Nawyn, *Code Red: Responding to the Moral Hazards Facing U.S. Information Technology Companies in China*, 2007 COLUM. BUS. L. REV. 505, 510 (2007).

[19] Jonathan Zittrain & John Palfrey, *Introduction, in* ACCESS DENIED: THE PRACTICE AND POLICY OF GLOBAL INTERNET FILTERING 1, 1 (Ronald Deibert et al. ed., 2008)

[20] *Id*. at 3; Faris & Villeneuve, *supra* note 5, at 6, 9.

[21] Nawyn, *supra* note 18, at 510.

[22] *Id*; Ling, *supra* note 7, at 184.

[23] Faris & Villeneuve, *supra* note 5, at 13-14.

[24] *Id.* JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET: ILLUSIONS OF A BORDERLESS WORLD 93 (2006).

through Cisco's equipment. [25] These sites include Amnesty International's (www.amnesty.org), Reporters without Borders (www.rsf.org), the BBC (news.bbc.co.uk), [26] the Economist (http://www.economist.com), and the New York Times (http://www.nytimes.com)[27]. In this way, certain information has been dropped and can never reach the domestic end users.

From the government's perspective, because new websites continuously emerge, the inclusion filter usually includes too few websites, while the exclusion may exclude too few.[28] In order to avoid such over-blocking or under-blocking, governments have started to the "content-analysis" technique as a new tool for Internet filtering.[29] Content-analysis approach prevents users from accessing any website or URL path containing certain keywords designated by the government.[30] One advantage for the government to adopt the content-analysis approach is that it does not have to incessantly update the white list or blacklist. In China, keywords for content analysis may include Tibetan Independence, Taiwan Independence, human right, Falun Gong, and etc.[31]

The Chinese government has built a complicated technical system into the Internet to filter online information since the digital network was built.[32] In 2002, Jonathan Zittrain and Ben Eldman produced a list of foreign websites blocked in China through the help of an end user there.[33] The Chinese government blocked them or has blocked them because they were deemed as a threat to the Chinese state. Of course, China is not the only country that filters away politically sensitive content. Other countries with similar motives include Bahrain, Ethiopia, Libya, Iran, Indonesia, Malaysia, Myanmar, Thailand,

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[25] GOLDSMITH & WU, *supra* note 24, at 93-94.

[26] ANDREW MURRAY, INFORMATION TECHNOLOGY LAW 74 (2010); Farrell, *supra* note 3, at 588.

[27] Deibert, *supra* note 2, at 147.

[28] Nawyn, *supra* note 18, at 510-11.

[29] *Id*. at 511.

[30] *Id*. at 511; Faris & Villeneuve, *supra* note 5, at 15; Ling, *supra* note 7, at 184; Susan L. Shirk, *Changing Media, Changing China*, *in* CHANGING MEDIA, CHANGING CHINA 1, 14 (Susan L. Shirk ed., 2011)

[31] *See e.g.* GOLDSMITH & WU, *supra* note 24, at 96; Stevenson, *supra* note 2, at 541.

[32] Nawyn, *supra* note 18, at 512; Stevenson, *supra* note 2, at 540.

[33] Jonathan Zittrain & Benjamin Edelman, *Internet Filtering in China*, 7 IEEE INTERNET COMPUTING 70 (2003).

Pakistan, Saudi Arabia, Singapore, Syria, Tunisia, Uzbekistan, and Vietnam[34]. For different purposes such as blocking pornography, some democratic countries, including Australia, Britain, Canada, France, Japan, and New Zealand, filter online content as well.[35]

But how could the Chinese government control the information flow into the country? It actually built a great firewall via the help of the U.S. hardware vendor Cisco,[36] which has made the whole country's Internet into a huge intranet.[37] It is estimated that the company earns USD$500 million each year in China.[38] Other companies that provide filtering software to China include Sun Microsystems, Websense, and Bay Networksboth, all of which are U.S. companies as well.[39] The filter has been constructed on different layers of China's Internet, but primarily at the backbone, which is the physical infrastructure that links the domestic Internet to global networks.[40]

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[34] Bambauer, at 382; Faris & Villeneuve, *supra* note 5, at 9-10; Shaojung Sharon Wang & Junhao Hong, *Discourse Behind the Forbidden Realm: Internet Surveillance and Its Implications on China's Blogosphere*, 27 TELEMATICS & INFORMATICS 67, 74 (2010).

[35] Bambauer, at 382; Derek E. Bambauer, *Filtering in OZ: Australia's Foray into Internet Censorship*, 31 U. PA. J. INT'L L. 493, 516-17 (2009).

[36] GOLDSMITH & WU, *supra* note 24, at 93; Stevenson, *supra* note 2, at 541-42.

[37] Deibert, *supra* note 2, at 147; Stevenson, *supra* note 2, at 540-41.

[38] Stevenson, *supra* note 2, at 542.

[39] *Id*; Deibert, *supra* note 2, at 148; *see also* Farrell, *supra* note 3, at 587 ("American engineers aided the Chinese in censorship by developing special routers, integrators, and a special firewall boxes"); Wacker, *supra* note 11, at 69 ("[i]t is ironic, therefore, that while the Western media frequently criticize China for obstructing the development of the Internet, it is Western firms that are supplying the technological means which enable China to carry out surveillance.") Some literature focuses on the legality of those U.S. companies' support of the Chinese filtering regime, especially whether they violate the Global Online Freedom Act of 2006, *see e.g.* Ling, *supra* note 7, at 192-94; Nawyn, *supra* note 18, at 544-554; Stevenson, *supra* note 2, at 545-558. In the meantime, human right supporters also sent out appeals criticizing Cisco's involvement with the Chinese filtering regime. *See e.g.* Electronic Frontier Foundation, *Tell Cisco: Stop Helping China Abuse Human Rights!*, at https://secure.eff.org/site/Advocacy?cmd=display&page=UserAction&id=504 (last visited Aug. 10, 2011).

[40] Farrell, *supra* note 3, at 587; Nawyn, *supra* note 18, at 511-12.

The metaphor most frequently used in describing the Internet filtering in China is "the great firewall,"[41] which is obviously the combination of "the Great Wall" and "firewall." The Great Wall was originally built to keep foreign barbarians out of ancient China while the great firewall denotes China's attempt to block undesirable content from its netizens. Different from the firewall established to protect enterprises' information security, the Chinese great firewall is set around the whole country.[42]

The country's Ministry of Information Industry (MII) is authorized to build the network connected to the global Internet, and, thus, has the opportunity to ensure government control over the network.[43] Because online information enters into the country through a limited number of points, the Chinese government is able to control the information via controlling these points.[44] Government control over information flow is via several Internet access providers (IAPs), "each of which has at least one connection to a foreign Internet backbone."[45] IAPs peer at three Internet exchange points (IXPs) run by the Chinese government, and these IAPs "grant regional Internet service providers (ISPs) access to backbone connections."[46] Therefore, individual Chinese end users purchase Internet access from several thousand ISPs, and those ISPs are in effect retail sellers of Internet access wholesale of the few IAPs. Different from the decentralized Internet architecture in most countries around the world, most ISPs in China need to connect to the global network through one of the four state-controlled companies operating the IAPs

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[41] *See e.g.* Ling, *supra* note 7, at 177, 180, 184; David Pierson, *Brief Web access in China as Great Firewall Falls*, WASH. POST, A09, Jan. 5, 2010, *at* http://www.washingtonpost.com/wp-dyn/content/article/2010/01/04/AR2010010403599.html; Qiang, *supra* note 6, at 206.

[42] GOLDSMITH & WU, *supra* note 24, at 92

[43] Farrell, *supra* note 3, at 585; HUMAN RIGHTS WATCH, at 9.

[44] YOCHAI BENKLER, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM 267 (2006); GOLDSMITH & WU, *supra* note 24, at 93.

[45] OpenNet Initiative, *Internet Filtering in China: 2006-2007*, http://opennet.net/studies/china2007 (last visited Mar. 26, 2010); *see also* Deibert, *supra* note 2, at 147 ("[s]uch funneled access provides the most important outer layer of control and basis for "firewall" technologies to be implemented that ostensibly block controversial or politically undesirable Web sites"); Faris & Villeneuve, *supra* note 5, at 14 ("[China's] blocking is done at the International gateway level affecting all users of the network regardless of ISP.")

[46] GOLDSMITH & WU, *supra* note 24, at 93.

and IXPs.[47] By effective managing the IAPs and IXPs, the Chinese government is able to control information flowing from abroad.

In other words, the Chinese government had architecture the national's Internet into two layers. The lower layer is the network where ISPs provide Internet access to consumers, while the upper layer is another set of connections where the lower layer can connect to the network outside the country.[48] It is reported that in the upper layer there are nine gateways connecting the nation's Internet to the international Internet.[49] By controlling a number of key connection points in the upper layer, the government is capable of controlling online information flowing from abroad. Therefore, commentators have described the country's Internet as a huge Intranet.[50]

III. Code-is-Law in the Context of Internet Filtering

This section applies the code-is-law theory to the Internet filtering scenario in China. By this application, we can see how code-based regulation is different from the law, and how architecture shape human behavior.

A. Code-Is-Law Theory

The code-is-law theory is most notably illustrated by Professor Lawrence Lessig. He argues that code—software or hardware—can perform regulatory function and can have the same effects as legal regulation.[51] The architecture of the Internet, including the languages and protocols underlying software and hardware, has determined how messages are moved from one place to another and how people perceive them. Therefore, whether and how the Internet is regulated depends on its architecture of code. The code is

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[47] Ling, *supra* note 7, at 184.

[48] *See e.g.* Stevenson, *supra* note 2, at 540.

[49] Qiang, *supra* note 6, at 207.

[50] Stevenson, *supra* note 2, at 541.

[51] LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE VERSION 2.0 5 (2006)[hereinafter LESSIG, CODE VERSION 2].

law in the sense that it constrains what you may or may not do in cyberspace. It enables certain activities while disabling others. Lessig believes that that the "code" which controls the Internet effectively creates the Internet's architecture and its "laws."[52] In a place like cyberspace, sometimes it is the code, not the law, has the greatest impact on human behavior. In Lessig's words, "[a] rule is defined, not through a statute, but through the code that governs the space."[53] According to him[54],

> The software and hardware that make cyberspace what it is constitute a set of constraints on how you can behave…The code or software or architecture or protocols set [certain] features, which are selected by code writers. They constrain some behavior by making other behavior possible or impossible. The code embeds certain values or makes certain values impossible. In this sense, it too is regulation.

Lessig observes that "We can build, or architect, or code cyberspace to protect values that we believe are fundamental, or we can build, or architect, or code cyberspace to allow those values to disappear." [55] From a policy perspective, Lessig reminds policymakers to ponder on which means, including the law and architecture or code, can best advance their goals.[56] Just as code's functionality define the digital universe where people act, it also defines the range of regulatory options for policymakers. Although Lessig explicitly recognizes the fundamental differences between the law and the code,[57] some commentators criticize his theory as a disingenuous representation of the role of technologies in regulation[58].

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[52] *Id.* at 5-6.

[53] *Id*. at 24.

[54] *Id.* at 124-25.

[55] *Id*. at 6.

[56] *Id.* at 129.

[57] *Id.* at 5.

[58] R. Polk Wagner, *On Software Regulation,* 78 S. CAL. L. REV. 457, 460-61 (2005).

B. Theory Application

By building probably the most complicated Internet filtering architecture,[59] the Chinese government has been crafting a new Internet architecture according to the nationalist ideology[60]. This architecture is deviated far from its counterpart in the Western world,[61] which has been characterized as openness and freedom.[62] Comparing the differences of these two types of Internet architecture, it is not difficult to understand Lessig's argument that "some architectures enable better control than others."[63]

1. Law v.s. Code as Regulation

The "code is law" theory raises interesting questions regarding the role of code or architecture as an alternative to the law. When policymakers have regulatory options between code and law, they shall take into account the impact of each and the costs and benefits associated with each option.[64] In China, the government has employed several mechanisms to regulate online information available to its citizens. Such mechanisms

[59] *See e.g.* Rebecca MacKinnon, *Flattered World and Thicker Walls? Blogs, Censorship and Civil Discourse in China*, 134 PUB. CHOICE 31, 32 (2008); *see also* Farrell, *supra* note 3, at 577 (stating that "[c]ompared to other states, China's censorship regime is pervasive, sophisticated, and effective").

[60] LESSIG, CODE VERSION 2, *supra* note 51, at 89.

[61] *Id.*

[62] Stevenson, *supra* note 2, at 533-34.

[63] LESSIG, CODE VERSION 2, at 24.

[64] *See e.g.* Jay P. Kesan & Rajiv C. Shah, *Shaping Code*, 18 HARV. J.L. & TECH. 319, 321, 322-23 (2005).

include laws,[65] forcing search engines to remove inappropriate content,[66] intensive cyber policing,[67] and technologies that filter online content.[68]

Comparing to being regulated by the law, it is usually more difficult for citizens to sense that they are regulated by the code. When a Chinese end user fails to open a forbidden website, the screen will not show that "the Website is blocked by the Government."[69] It will only show the signal of "site not found."[70] Some countries, such as Tunisia, Iran, United Arab Emirates, and Saudi Arabi,[71] use SmartFilter software, developed by the U.S. company Secure Computing, as a proxy filter, and the software provides "a blockpage that looks like the…browser's default error page."[72] The software used by China is similar to SmartFilter, but is developed by China itself.[73] All the software helps to conceal the fact that blocking is taking place. Uzbekistan's Internet filtering likewise hides government's blocking by redirecting users to Microsoft search engine www.live.com.[74] Therefore, it is quite difficult for the user to know whether this

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[65] Deibert, *supra* note 2, at 148-49; Farrell, *supra* note 3, at 588-90, 598; Ling, *supra* note 7, at 180-84; Nawyn, *supra* note 18, at 509-10; Stevenson, *supra* note 2, at 537-40; YANG, *supra* note 9, at 48-49.

[66] LESSIG, CODE VERSION 2, at 80, 309; Stevenson, *supra* note 2, at 532; 543-44.

[67] According to Professor Yuezhi Zhao, a great number of "cyber police squads…are patrolling Chinese cyberspace, deleting politically incorrect content in real time, blocking websites, monitoring networking activities of citizens, and tracking down and arresting offending individuals.") *See* Zhao, *supra* note 4, at 20.

[68] Stevenson, *supra* note 2, at 540-41. *See also* Shirk, *supra* note 30, at 14 (describing that "human monitors are proactively censor content on their sites"); Qiang, *supra* note 6, at 207, 208 (introducing the Internet police in China and noting that "human monitors are employed by both Web sites and the government to manually read and censor content.")

[69] GOLDSMITH & WU, *supra* note 24, at 94.

[70] *Id*. Bambauer, at 391.

[71] Stevenson, *supra* note 2, at 542.

[72] Faris & Villeneuve, *supra* note 5, at 15.

[73] HUMAN RIGHTS WATCH, at 10; THE OPENNET INITIATIVE, INTERNET FILTERING IN TUNISIA IN 2005: A COUNTRY STUDY (2005), *available at* http:// www.opennetinitiative.net/studies/tunisia/ONI_Tunisia_Country_Study.pdf.; *see also* Wacker, *supra* note 11, at 69 (stating that Chinese companies have begun to supplied the government with filtering software).

[74] Bambauer, at 392; Faris & Villeneuve, *supra* note 5, at 16.

problem is because of government intervention or a pure technical problem.[75] And in this way, code shapes and regulates human behavior more surely and subtly than the law.

The invisible feature of Internet filtering proves that Lessig's concern over code-based regulation is not over-stated. Lessig has warned us that since regulating by code is not as transparent as regulating by the law, the former may weaken the democratic value in a society.[76] Put it more clearly, when citizens are regulated by code, rather than the law, they will "experience these controls as nature."[77] This is what's now happening in China. The Chinese government has never disclosed what it filters.[78] When citizens are more used to the fact that a great number of websites cannot be viewed via their computers, they will more likely to take such intervention and control for granted.

Of course, governments implementing filtering system can choose not to disguise the fact that they are blocking website. They may decide to declare what material they block in laws or public announcements.[79] For example, Saudi Arabia has disclosed explicitly the reason for Internet filtering in its government website.[80] The country using SmartFilter as well, has decided to provide a blockpage that notifies users the requested content is blocked.[81] The blockpage also informs users the way to lift the block.[82] However, Saudi Arabia is just one of the few countries willing to disclose blocking information and to provide remedy among those with Internet filtering systems.[83] Therefore, when regulating by code, the government has the option of whether to disclose its intent in constraining behavior.

Using the law or the code to regulate may bring about different costs. Law regulates behavior through an *ex post* approach. Law will not be enforcement until a violation

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[75] Bambauer, at 391; GOLDSMITH & WU, *supra* note 24, at 94.

[76] LESSIG, CODE VERSION 2.0, at 138.

[77] *Id.*

[78] Bambauer, at 394.

[79] *Id.*

[80] *Id.* at 390-91.

[81] Faris & Villeneuve, *supra* note 5, at 15.

[82] *Id.*

[83] *Id*. at 16; Stevenson, *supra* note 2, at 536.

behavior takes place.[84] Although law enforcement may threaten potential violations in the future, it may also incur significant costs for the regulator. From the perspective of the Chinese government, sending violators, who use the Internet to disseminate prohibited content, to jail or imposing other punishment may draw considerable attention and negative impression internationally. The associated costs are extraordinarily high given China's increasing importance and visibility in the global community. In contrast, regulating by code is an *ex ante* approach. Although adopting the Internet filtering techniques may lead to certain criticisms regarding citizens' right to information, its costs are respectively low for the government as opposed to regulating by law. At least the Chinese government may explain that such practice can be justified by the fact that a large number of countries word wide is filtering online content.[85]

Sometimes regulating by code needs to be implemented via laws and policies. When such laws and policies are announced, policymakers may still experience considerable costs because this is an *ex post* approach, rather than purely regulating by code. For example, in 2009 the Ministry of Information Technology initiated a project requiring all computers made and sold in China be preinstalled the filtering software Green Dam Youth Escort.[86] However this project was cancelled because of strong public protest.[87] The filtering software is eventually required only for computers in schools and Internet cafes.[88] The Green Dam Escort initiative is actually an *ex post* approach, that made citizens aware of the subject regulation and, thus, able to oppose it before it went into effect. Therefore, comparing with the Green Dam Escort initiative, Internet filtering in the gateway level causes much less costs and is obviously more effective.

2. Fulfilling Policy Goals via Architecture Design

[84] LESSIG, CODE VERSION 2.0, at 124.

[85] Faris & Villeneuve, *supra* note 5, at 6, 13.

[86] Qiang, *supra* note 6, at 209.

[87] *Id*. Ling, *supra* note 7, at 184-85.

[88] Ling, *supra* note 7, at 185.

As a number of commentators have illustrated, the history of the Internet stands for freedom and openness.[89] The original Internet architecture was designed as a distributed network without central control, and by its very design, the Internet is indeed quite difficult to control. The values underlying the original Internet design include interconnectivity, openness, flexibility, and the lack of a pervasive centralized authority.[90] Nonetheless, such attributes do not perfectly exist in the Chinese Internet architecture as the Chinese government is weaving nationalist ideology into the Internet itself.

Similar to law in practice, where the government monopolizes enforcement virtually in all areas, the Chinese government has dominated the design and the making of the Internet architecture since its inception.[91] Therefore, the Chinese government was able to architecture its preferences into the Internet, which made it significantly different from its counterpart in the Western world.[92] It seems that, in the case of Internet filtering, the Chinese government has understood that when code is law, it becomes "a crucial focus of political contest,"[93] and gotten ahead of every entity to win the contest.

Another successful Internet filtering system, Saudi Arabia, also created its unique network where Internet traffic flows through three "choke points" overseen by the Communications and Internet Technology Commission.[94] Both China and Saudi Arabia had designed centralized controlling points in the international gateway of their Internet architecture when they were built in mid 1990. Therefore, the filtering systems have been implemented at the international gateway level regardless the cooperation from ISPs.[95] Such centralized controlling points have made government control over information not only viable but also effective. They also characterize both countries' Internet filtering

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[89] LESSIG, CODE VERSION 2.0, at 146.

[90] JOHN NAUGHTON, A BRIEF HISTORY OF THE FUTURE 275-77 (2000).

[91] Nawyn, *supra* note 18, at 509, 513; Stevenson, *supra* note 2, at 540.

[92] *See also* YANG, *supra* note 9, at 44 (stating that "it is ultimately the government that has the power to decide what architecture to build and how regulatable the Internet remains" based on Lessig's code-is-law theory).

[93] DAVID G. POST, IN SEARCH OF JEFFERSON'S MOOSE: NOTES ON THE STATE OF CYBERSPACE 133 (2009).

[94] *See Content Filtering in Saudi Arabia*, http:// www.internet.gov.sa/learn-the-web/guides/content-filtering-in-saudi-arabia (last visited Apr. 1, 2010).

[95] Faris & Villeneuve, *supra* note 5, at 14.

regimes. As Jonathan Zittrain explains the code-is-law theory, "[i]f regulators can induce certain alterations in the nature of Internet technologies that others could not undo or widely circumvent, then many of the regulatory limitations occasioned by the Internet would evaporate."[96]

Australia provides a good comparison with China. The Australian government has attempted to build a filtering system into its existing Internet architecture.[97] However, because the country's Internet is as decentralized as its counterpart in other Western countries,[98] the government can hardly find a controlling point to deploy an effective filtering system.[99] The case of Australia explains that the cost and difficulty of implementing an Internet filtering system are quite high if the government did not take such system into consideration when structuring the Internet architecture in the beginning. Other countries like Iran with decentralized filtering regimes had found it hard to maintain consistent result because filtering techniques differ from various ISPs.[100] The difference between the Australian and the Chinese Internet filtering systems illustrates how a government can decide the regulablility of the subject architecture and how an open architecture can constrain government's power. As Lessig points out:[101]

> [w]hether [the Net] can be regulated depends on its architecture. Some architectures would be regulable, others would not. I have then argue that government could take a role in deciding an architecture would be regulable or not.

Therefore, if the Internet architecture has been crafted as an open and decentralized one since its inception, government's power to regulate the network would be reduced. In other words, an open architecture represents a constraint on the government power. This echoes Lessig's suggestion that the Internet's architecture checks government control over the Internet and the ideas carried on it (or the values embedded in it)[102].

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[96] JONATHAN ZITTRAIN, THE FUTURE OF THE INTERNET AND HOW TO STOP IT 105 (2008).

[97] Bambauer, *supra* note 35, at 508.

[98] *See e.g.* POST, *supra* note 93, at 86-87 (describing the decentralized nature of the Internet).

[99] Bambauer, *supra* note 35, at 509.

[100] Faris & Villeneuve, *supra* note 5, at 16.

[101] LESSIG, CODE VERSION 2.0, at 151-52.

[102] *Id*. at 7.

Certainly, the Chinese government also attempts to create an Internet with positive externalities in business and economic development, education, and information exchange.[103] Although such intention and the open nature of the Internet are somehow conflicting with state's control over the network via Internet filtering and other regulations,[104] the Chinese government seems to carefully maintain the balance of openness and control associated with its Internet policy. One commentator cited the 2005 People's Daily editorial to illustrate this viewpoint[105]:

> As long as we use more ways of properly looking at the Internet, we can make use of the best parts, we go for the good and stay away from the bad and we use it for our purposes, and we can turn it around on them…we won't be defeated in the huge Internet wars by the various intranational and international reactionary ideological trends in various areas.

According to the Chinese government, the purpose of filtering online information is to block "spiritual pollution" from the country.[106] In sum, the Chinese government encourages taking advantage of digital technologies, but such usage cannot undermine the state control.[107] Maintaining such balance is a core goal of China's Internet policy.

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[103] Deibert, *supra* note 2, at 147; MacKinnon, *supr*a note 59, at 31.

[104] *See e.g.* Deibert, *supra* note 2, at 151 (describing "the long-term incompatibility of China's restrictive Internet policies and its strong interest in promoting information and communications technologies through trade, foreign direct investment, and industrial policy"); Qiang, *supra* note 6, at 204 (stating that "[s]ince the introduction of the Internet in China, the Chinese Communist Party (CCP) and Chinese government have shoiwn ambivalence toward its effect as a new force in Chinese society.")

[105] MacKinnon, *supr*a note 59, at 33.

[106] Deibert, *supra* note 2, at 147.

[107] *See e.g.* Shubo Li, *The Online Public Space and Popular Ethos in China*, 32 MEDIA, CULTURE & SOC'Y 63, 71 (2010) (reporting that "[s]ince 2003, the Hu Jin-tao administration has successfully dismantled the online political discussion space, while at the same time maintaining the stability of the online public mood); Shirk, *supra* note 30, at 13 (noting that the Chinese government embraces the Internet and invests more in controlling online content at the same time); Lokman Tsui, *An Inadequate Metaphor: The Great Firewall and Chinese Censorship*, 9 GLOBAL DIALOGUE 60, 62 (2007) (describing Beijing's desire to simultaneously secure the economic advantage and limited the political disadvantage brought by the Internet); Wang & Hong, *supra* note 34, at 73 (stating that "[t]he Chinese government has found a

This may probably explain why empirical evidence suggests that the Internet promotes both freedom and control in China.[108]

3. Architecture's Impact on Human Behavior

Some researchers have argued that the goal of Internet filtering is to "shape citizens' information environments and thereby alter behavior."[109] From the direct and indirect evidence shown below, the Internet filtering has affected the Chinese netizens' behavior in some ways. If users fail to open a webpage, most of them would try to visit another substitute rather than to wait[110]. For those who are aware of the government filtering and censorship, they may still feel frustrated when continuously being blocked from the content they wish to browse.[111] Although sophisticated users can always circumvent the Internet filtering technologies and reach the blocked foreign sites,[112] it is undoubted that the filtering system has effectively prevented most Chinese end users from accessing foreign websites that the authority deems inappropriate[113]. This is just one aspect of how architecture regulates behavior. However, the most profound consequence of this architecture is not that it stops immediately citizens' access to sensitive foreign content, but is that it is gradually shaping human behavior in cyberspace.

Together with other regulations and monitoring techniques imposed by the government, the Chinese are using the Internet in the way that the authority plans. According to a 2005 study conducted by the Chinese Academy of Social Science, most

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compromise between its desire to control the Internet and the need to become more competitive in the industry…China's model [is] a blend of economic openness and strict control over politics and dissent").

[108] Lijun Tang & Peidong Yang, *Symbolic Power and the Internet: The Power of a "Horse"*, 33 MEDIA, CULTURE & SOC'Y at 675, 679 (2011).

[109] Bambauer, at 383.

[110] ZITTRAIN, *supra* note 96, at 105.

[111] Bambauer, at 392.

[112] Nawyn, *supra* note 18, at 514.

[113] *But see* Zittrain, *supra* note 96 (optimistically and theoretically arguing that unsavy users can easily learn how to get around blocks).

Chinese Internet users look for entertainment, rather than political discussions.[114] Some more recent research also reaches similar conclusions that the Chinese neticizens are more interested in the playfulness than in the politics.[115]

Influenced by the filtering architecture and perhaps some other factors, not many Chinese Neticizens are interested in seeking out political information online.[116] For those Chinese browsing news online, they have developed a quite strong preference in domestic news than in other Chinese or non-Chinese news sources.[117] Even university students, who are aware of technologies, such as proxy servers that enable circumvention of Internet filtering, are not interested in taking advantage of these technologies to reach blocked foreign websites.[118] Even for those technologically savvy Chinese young people who access blocked websites, such actions are just a game without much political interest.[119] This phenomenon also echoes Lessig's argument that we cannot conclude that effective control of code is not possible only because complete control or perfect does not exist.[120] By shaping citizens' online behavior via Internet architecture, the Chinese

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[114] MacKinnon, *supr*a note 59, at 33; *see also* Ian Weber & Lu Jia, *Internet and Self-Regulation in China: The Cultural Logic of Controlled Commodification*, 29 MEDIA, CULTURE & SOC'Y 772, 772 (2007) (reporting that "entertainment is one of the main drivers of China's internet development"). Nonetheless, this statement does not mean that Chinese Internet users do nothing but play. In fact, a new form of online activism is rising in China. *See* YANG, *supra* note 9, 28-31 (2009).

[115] *See e.g.* Li, *supra* note 107, at 75 (stating that "[t]he folk society, the central figure of the Chinese web, once demonstrated the aspiration for civic virtue as well as the capacity to organize democratic practices and to generate deliberative discussions, now is preoccupied with a crave for mind paralyzing fun time); Wang & Hong, *supra* note 34, at 75-77 (finding that political interest is absent in the Chinese blogosphere).

[116] In making this argument, we do not mean that Chinese people are not at all interested in engaging in online political discussions. I only want to point out that many of them may lose interested in finding online sensitive political information.

[117] Daniela Stockmann, *What Kind of Information Does the Public Demand? Getting the News During the 2005 Anti-Japan Protest*, *in* CHANGING MEDIA, CHANGING CHINA 175, 188 (Susan L. Shirk ed., 2011).

[118] MacKinnon, *supr*a note 59, at 33.

[119] Wacker, *supra* note 11, at 72.

[120] LESSIG, CODE VERSION 2.0, at 57.

government has slowed down the Internet's impact of being a tool for political change,[121] and, thus, reinforce its political authority.[122]

Nonetheless, it would be too naïve to jump to the conclusion that Internet filtering and other government's measures can completely eliminate subversive online content. Netizens in China have worked out some ways to avoid their online expressions being filtered out. For example, homophony has become an important weapon for Chinese netizens to fight against the government's Internet filtering efforts. The pronunciation of *river crab* in Chinese is *he xie*, which is similar to that of *harmony*. Therefore Chinese netizens use *river crab* to replace *harmony* when they are mocking at the government use of Internet filtering to create a harmonious society.[123] Another popular term used by Chinese netizens is *grass-mud horse*, the pronunciation of which is *cao ni ma*, a near homophone of "fuck your mother" in Chinese.[124] Other popular homophony in China include *du cai* (meaning *poisonous jackal*, a homophone of *dictator* or *dictatorship*) and *min zhu* (meaning *talking pig*, a homophone of *democracy*).[125] In most cases, homophony will not cause comprehension problem, but it is very difficult for the government to ban all the homophony keywords because the Chinese language is abundant in homophones.

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[121] MacKinnon, *supr*a note 59, at 34.

[122] In making this argument, we do not mean that Chinese citizens in the People's Republic of China are not interested in engaging in online political discussions. We only wish to point out that many of them might lose interested in finding sensitive political information online.

[123] *See e.g.* Dong Han, *"Use" Is An Anagram of "Sue": Cultural Control, Resistance, and the Role of Copyright in Chinese Cyberspace*, 7 GLOBAL MEDIA & COMM. 97, 108 (2011); Hongmei Li, *Parody and Resistance on the Chinese Internet*, *in* ONLINE SOCIETY IN CHINA: CREATING, CELEBRATING, AND INSTRUMENTALISING THE ONLINE CARNIVAL 71, 78-79 (David Kurt Herold & Peter Marolt eds., 2011); Qiang, *supra* note 6, at 210; Tang & Yang, *supra* note 108, at 680; Michael Wines, *A Dirty Pun Tweaks China's Online Censors*, N.Y. TIMES, Mar. 11, 2009, at http://www.nytimes.com/2009/03/12/world/asia/12beast.html.

[124] Tang & Yang, *supra* note 108, at 679-80.

[125] Wei Ji Bai Ke, Bai Du Shi Da Shen Shou [*Hundred Poisonous Ten Mythical Creatures*], *at* http://cn.uncyclopedia.wikia.com/index.php?title=%E4%BC%AA%E5%9F%BA%E6%96%87%E5%BA%93:%E7%99%BE%E6%AF%92%E5%8D%81%E5%A4%A7%E7%A5%9E%E5%85%BD&variant=zh (last visited Aug. 15, 2011).

Obviously, in the short run, the Internet's role in enabling a public discourse around political and policy debates in China will be limited because of governmental control. Nevertheless, it is difficult to assess whether and how circumvention of the Chinese Internet filtering will make a difference in the long run.

4. Regulating the Intermediaries

As mentioned above, the Chinese Internet filtering is primarily implemented in the international gateway on the level of IAPs, IXPs, and ISPs. This practice provides a good example of how government can regulate the decentralized Internet architecture. Because of the open and decentralized nature of the Internet, it is extremely difficult and costly to directly regulate each Internet user's behavior. Professor Lessig has argued that it is more difficult to regulate scattered individuals than to regulate a few large firms in cyberspace.[126] Consequently, targeting at intermediaries has become a quite common and effectual alternative for government control in the digital environment.

In the case of online content control in China, it would be more effective for the government to indirectly regulate those users by directly regulating intermediaries like IAPs or IXPs. A possible explanation for such indirect regulation is that intermediaries, such as IAPs or IXPS, are far more susceptible to pressures from the government than are individual Internet users. Those providers have little choice but to comply with regulations and directives on filtering requirement imposed by central and local governments.[127] Similarly, ISPs are also the primary target for the Chinese to control content over short message services (SMS)[128]. Because those ISPs cannot afford to disregard the state's control regime, they have consistently abided by their contracts with state-owned telecommunications operators and the government's political imperative.[129] As Jack Goldsmith and Tim Wu argue, "[w]hen government practices control through

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[126] Lawrence Lessig, *The Limits in Open Code: Regulatory Standards and the Future of the Net*, 14 BERKELEY TECH. L.J. 759, 764 (2001); LESSIG, CODE VERSION 2.0, at 149–52.

[127] Qiang, *supra* note 6, at 206-07.

[128] ZHAO, *supra* note 4, at 33-34.

[129] *Id.*

code, it is practicing a commonplace form of intermediary control."[130] In summary, it would be much less effective to control individual Internet users' access to foreign website than to directly mandating Internet filtering implemented by IAPs or IXPs.

As mentioned above, in addition to regulating the code, the Chinese government also uses the law to control human behavior[131]. Among these regulations, the major laws,[132] to regulate online content impose significant obligations on ISPs. These regulations prohibit ISPs from displaying any content not approved by the government[133]. Regulating content via intermediaries is not uncommon in other countries, which may have different ways filtering online content. For example, in Australia, the Australian Communications and Media Authority (ACMA) has the power to issue take-down notice to ISPs once it identifies prohibited or potentially prohibited content[134]. If such content is hosted abroad, the ACMA will filter it out by adding it to the blacklist via another intermediary[135].

Regulating intermediaries is not new in Internet law. Because ISPs are essential points of control in online information flow, they have become obvious and appropriate

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[130] GOLDSMITH & WU, *supra* note 24, at 72.

[131] *See* text accompanying note 65.

[132] These laws include including the "Provisions for the Implementation of the Interim Provisions Governing Management of Computer Information Networks in the People's Republic of China," State Council Order No. 292, "Measures on Internet Information Services" (IIS Measures), and the "Decision of the Standing Committee of the National People's Congress on Preserving Computer Network Security." *See* Decision of the Standing Committee of the National People's Congress on Preserving Computer Network Security, Ninth People's Congress, Dec. 28, 2000, at http://english.gov.cn/laws/2005-09/22/content_68771.htm; Measures on Internet Information Services, State Council Order No. 292, Sept. 25, 2000, translation available at http:// www.transasialawyers.com/translation/legis_16_e.pdf; OPENNET INITIATIVE, INTERNET FILTERING IN CHINA IN 2004-2005 9, Apr. 14, 2005, *available at* http://www.opennetinitiative.net/studies/china/ONI_ China_Country_Study.pdf

[133] *See* Decision of the Standing Committee of the National People's Congress on Preserving Computer Network Security, *supra* note 132, art. 2-4; Measures on Internet Information Services, *supra* note 132, art. 15.

[134] Bambauer, *supra* note 35, at 503; Stevenson, *supra* note 2, at 535.

[135] Bambauer, *supra* note 35, at 499, 505; Stevenson, *supra* note 2, at 535.

targets for government regulation.[136] As Professor Seth F. Kreimer wrote:"[the Internet] is a target-rich environment [for governments because it] …involves a series of electronic links; at each link, from user to originating computer to server to ISP to Internet backbone and back down the chain to the end user."[137] Because each country has its own ISPs that provide Internet access to individual users, it is natural for governments to target at ISPs for law-enforcement purposes. As a result, policymakers in different countries may impose different obligations on their local ISPs according to different values, and the global Internet will be increasingly fragmented. In this sense, the Internet is local rather than global especially when filtering or censorship is concerned.

IV. Conclusion

The Internet may have the power of eliminating sovereign boundaries in certain scenario, but this does not mean that it exist in a social and political vacuum. Conventional wisdom believes that the Internet provides anyone with perfect access to information. However, this turns out to be not true in many countries that implement Internet filtering systems. Like many other countries around the world, China filters Internet content, which the government deem too sensitive for ordinary citizens. And it has done so with precision and effectiveness.

In the case of China, we learn that Internet's impact on politics varies depending on how its architecture is designed. As China has changed the original nature of the Internet, it has become obsolete for commentators to claim that the Internet will democratize the country. This Article claims that the Internet filtering technology in China verifies Lawrence Lessig's code-is-law theory. When a person fails to open a prohibited website, he or she may view it as a technique problem, rather than government intervention. In this sense, a code-based regulation is not as transparent as the law. Moreover, from the government's perspective, regulating by code may occasionally lead to much less cost

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[136] Seth F. Kreimer, *Censorship by Proxy: The First Amendment, Internet Intermediaries, and the Problem of the Weakest Link*, 155 U. PA. L. REV. 11, 18-27 (2006).

[137] *Id.* at 16.

than regulating by law. This is especially true the Chinese context of regulating online information flow.

The history of the Chinese Internet has made it unique and effective in filtering online information. Like Saudi Arabia, China designed its Internet architecture in the beginning with the aim to control and block information flow from abroad. Therefore, it is able to filter or block information much more effectively and efficiently than other countries with a traditional open and decentralized network. Together with other surveillance mechanisms, Internet filtering has to a certain degree shaped citizens' online behavior according to the government's preference.

East Asian Law and Society Conference 2011

Dialects and Dialectics: East Asian Dialogues in Law and Society

- Dates: 30 September – 1 October 2011
- Venue: Yonsei University, Seoul, Republic of Korea
- Organizers: Collaborative Research Network on East Asian Law and Society (CRN-EALS), Law and Society Association, and the Korean Society for the Sociology of Law

To Whom This May Concern:

The Collaborative Research Network on East Asian Law and Society (CRN-EALS) of the Law and Society Association and the Korean Society for the Sociology of Law cordially invite Professor Jyh-An Lee from Taiwan to the East Asian Law and Society Conference 2011 to be held in Seoul, Korea, on 30 September and 1 October 2011. Details of the conference are available at the website: http://sociologyoflaw.or.kr.

As the conference will be held over two days, participants are expected to arrive in Seoul before 29 September 2011 and leave after 2 October 2011. The conference registration fee and the travel and accommodation costs will be borne by the participant.

Please kindly consider this letter for the purpose of obtaining an entry visa or securing a grant or any other kind of funding.

We look forward to meeting with you in Seoul.

Yours sincerely,

Jeong-Oh Kim

Professor of Law, Yonsei University, Seoul, Korea
President, Korean Society for the Sociology of Law
Chairperson, Organizing Committee for the East Asian Law and Society Conference 2011
Fax +82 (0)303-0799-0377, Mobile +82 (0)10-3394-9436, eals.korea@gmail.com

Second East Asian law and Society Conference Program : Day One

30 September 2011 (Friday)

9:15 a.m. - 9:45 a.m. **Registration & Greeting** (Venue: Foyer)

9:45 a.m. - 10:45 a.m. **Opening Session**

10:45 a.m. - 11:00 a.m. **Coffee Break** (Venue: Foyer)

11:00 a.m. - 12:30 p.m. **SESSION I**

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7
Panel 14: Legal Education in Asia: Assessments and Proposals	**Panel 8: Lay Participation in the Criminal Justice System I: Inside the Courtroom**	**Panel 25: North Korea: Citizens and the State**	**Panel 4: Independent Directors in Australasian Corporate Governance Law and Practice**	**Panel 36: Regulating the Spread of Rule of Law— Globally, Locally, and Virtually**	**Panel 6: Legisprudence and Legislative Evaluation**	**Panel 32: Pushing the Conceptual Boundaries of International Legal Framework**
Chair: TBA	Chair: TBA	Chair: TBA	Chair: Luke Nottage	Chair: TBA	Chair: Cheoljoon Chang	Chair: TBA
Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: Bruce Aronson	Discussant: TBA	Discussant: TBA	Discussant: TBA
Kwang-Jun Tsche: "Increasing Challenges for New Law Schools in Korea and Japan: Is the Korean System Better than the Japanese One?"	David T. Johnson: Capital Punishment without Capital Trials in Japan's Lay Judge System	Patricia Goedde: Rights Protection for North Korean Escapees in Refugee Law Context	Souichirou Kozuka and Jong-Ho Kwon: Independent Directors in Austral-Asia: Formally Convergent but Functionally Confusing	Veronica Taylor: Donor Dynamics: The Shift Toward Rule of Law Promotion	Luc J. Wintgens: Rationality of Legislation and Evaluation	Tsung-Sheng Liao: "Common Problem" Rhetoric Expanding Subjects of International Law: Taking Taiwan Joining WCPF Convention as an Example
Neha Bhat: "Reform in Legal Education: The Way Forward"	Kaoru Kurosawa: A Problem of Saiban-in Seido: Prosecutor Recommendation of Punishment	Amanda Anderson: The DPRK's Law on Sex Equality and CEDAW		Murshamshul Kamariah Musa: Small Farmers and Intellectual Property: A Look at Farmers' Rights	Gyehyeong Yun: Evaluation of Legislation in Korea – Past Development, Current Trends and Future Challenges	
Hae Jeong Jun: Gender and Legal Education: A Case of Teaching Feminist Jurisprudence in Korea	Sangjoon Kim: The Assessment of Judicial Decision-Making in Jury Trial by Judge-Jury Agreement Analysis	Sejin Kim: Legal Basis for South Korean Government's Emergency Plan in Response to Abrupt Collapse of North Korea	Manabu Matsunaka: The End of History for *Kansayaku* in Japan			Laura Marschner: The Dialects of International Criminal Law: A 'Tower of Babel'?
Amy Heuy-Ling Shee and Yoshiharu Matsura: LawPack: A New Way of Doing Comparative Law in Contexts	Oh Geol Kwon: A Study on the Korean Jury Trial System	Andrew Wolman: Protection for Chinese Nationals who have Provided Humanitarian Assistance to North Korean Escapees: Recent Development in U.S. Immigration Law	Luke Nottage, Matt Nichol and Fady Aoun: Independent Directors in Australia and Singapore: Same But Different?	Jongho Kim: IFIs' Operating Mechanism and Changed Roles: The Financial Crisis of Emerging and Different Sovereign States	Cheoljoon Chang: Judicial Review and Legislative Evaluation	Rostam Neuwirth: A State of "Lawless Law" – The Oxymoron as a Modern Koan?
Young-Bae Son and Ji Yoon Park: Law-Related Education in Korea: Focused on LRE Programs by the Ministry of Justice					Woomin Sim: Legislative Argumentation and Legislative Evaluation	

12:30 p.m. - 2:30 p.m. **Lunch** (Delegates' own costs)

2:30 p.m. - 4:00 p.m. **Session II**

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Panel 1: Test for Law School Admission: An East Asian Perspective	**Panel 9: Lay Participation in the Criminal Justice System II: Socio-legal Perspectives**	**Panel 20: Degrees of Belonging: Citizenship and Immigration in Asia**	**Panel 30: Comparative Corporate Governance in the Age of Globalization**	**Panel 19: Faces of Legality in East Asian History**	**Panel 10: Asian Constitutional Review in the Global Context**
Chair: Jaewon Kim	Chair: TBA	Chair: TBA	Chair: TBA	Chair: TBA	Chair: TBA
Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA
Akira Fujimoto: Need Renovation? The Japanese LSAT and Its Challenges	Valerie Hans: Comparative Empirical Study of Lay Participation in Legal Decision Making	Chulwoo Lee: The Law and Politics of Ethnizenship: The Creation and Preferential Treatment of Kin-Foreigners in Comparative Perspective	Caslav Pejovic: Japanese Corporate Governance: Insights from the Unsuccessful Adoption of the American Model	Yanhong Wu: Bringing Lawsuits to Court in Late Imperial China	Chaihark Hahm: Politicization of Constitutional Adjudication: The Case of a "European" Constitutional Court in Korea
Jae-Hyup Lee: Looking for Legal Eligibility and Aptitude: A Korean Case	Sanghyun Lee: Embedding Jury Trial in South Korea's Legal System as a Type of Legal Transplant	Young-Hee Shim: Globalization and Change of Migration-Related Laws in Korea: Focusing on the Change of Marriage Migration-Related Laws	Douglas Branson: Sub-dialects and Corporate Governance in East Asia	Yonglin Jiang: Constructing Han Legal Identity in Yuan, Ming, and Qing China	David S. Law & Wen-Chen Chang: The Limits of Transnational Judicial Dialogue
James Vaseleck, Jr.: Merit in Translation: Can LSAT Questions be Translated for Law Schools in Asia?	Manako Kinoshita: The Changes of Japanese Attitude toward the Lay Judge System before and after its Operation		Horace W.H. Yeung: Law and Finance: What Matters? Hong Kong as a Test Case	Duk Hee Lee Murabayashi & Tae-Ung Baik: Historical Development of Early Korean Immigration to Hawaii and Its Legal Structure	Clark Lombardi: Judicial Discovery of Islamic Law in Asia
	Shozo Ota: The Confidentiality Duty of Saiban-in (Lay Judge) Concerning the Deliberation: Protection or Undue Constraint in the Eye of Potential Saiban-ins?	Eugene Kheng-Boon Tan: Nation-State or Global City? Challenges of Immigration, Citizenship and Belonging in Singapore		Shao Dan: Bloodline and Borderline: Chinese Nationality Law and State Succession	Dominic Nardi, Jr.: Judicial Empowerment under Authoritarian Regimes: Preliminary Cross-National Tests and Cases from Southeast Asia

4:00 p.m. - 4:15 p.m.	**Coffee Break** (Venue: Foyer)					
4:15 p.m. - 5:45 p.m.	**Session III**					
	Room 1	**Room 2**	**Room 3**	**Room 4**	**Room 5**	**Room 6**
	Panel 2: Legal Education and Legal Professions in Japan and Hong Kong	**Panel 33: Perceptions of the Law in Japan and Korea: the Old, the New, and the Absurd**	**Panel 22: Giving Voice to the Voiceless: Discrimination Issues in Asia**	**Panel 29: Legal Transplants in Commerce and Finance: The View from Asia**	**Panel 18: Locating "Law" in Asian Jurisprudence**	**Panel 11: Judicial Behavior and Interpretation in East Asia**
	Chair: Kay-Wah Chan	Chair: TBA	Chair: TBA	Chair: TBA	Chair: TBA	Chair: TBA
	Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA
	Colin Jones: Pushing on a String to Reform a Mirage: Legal Education and the Legal Profession in Japan	Anna Dobrovolskaia: Japan's Pre-war Jury Trials as Seen by the Journalists of the HoritsuShinbun (The Legal News)	Lan Lan Liu: Employment Anti-discrimination against HBV Carriers in China	Ming Du: The Pitfall of Legal Transplant as Means of Legal Change in China: The Case of Chinese Company Law	Yong-Sung Jonathan Kang: Legality and Morality in Korean Jurisprudence	Mark Levin: "Circumstances that would Prejudice Impartiality": The Meaning of Fairness as Expressed in the Jurisprudence of Judicial Challenges in Japan
	Richard Wu and Michael Dilena: Second Chance Assessment: Assessment Practice Reform in Hong Kong Legal Education	Leon Wolff: Japanese Attitudes to the Rule of Law: Perspectives from Popular Culture	MiYoung Gu: Korean Supreme Court Decisions on Employment Discrimination	Sean McGinty: Legal Origins and Finance in Japan	David Bergan: Dialects of Confucianism, Dialectics of Legal Culture	John Leitner: Conceptions of Equality through the Prism of Korean Judicial Review and Social Discourse
	Kay-Wah Chan: A Comparative Historical Study of the Mentalities of Japanese and Hong Kong Lawyers	Michael H. Fox: Innocence & Double Jeopardy in Japan: Is the Saibanin System Absurd?	JaeWon Kim: A Socio-legal Discourse on Mental Disability	Modh Zakhiri: Conceptualising Legal and *Shariah* Risks in Contemporary Islamic Finance Legal Framework: An Analysis of Islamic Commercial Dispute Resolution Cases 1983-2010 in Malaysia	Eric Yong Joong Lee: Concept of Law in Traditional East Asia	Sun Choi: Political and Institutional Causes of the Inconsistent Constitutional Review: Focusing on the Decisions Related with the Separation of Powers System in Korea
	Vai Io Lo: The Internationalization of Legal Education in East Asia	Hiroshi Fukurai: Korea's Two Key Legal Reforms of Lay Adjudication	Denis de Castro Halis: "Why Are Your Children Better than Mine?" Requests (and Denials) of Macau's Non-Resident Workers to Have Their Children Live with Them	Dong-Won Ko: Regulatory Response to the Global Financial Crisis: The Korean Experiences	Håkan Hydén: Putting Law in Context: Some Remarks on the Implementation of Law in China	Kyu Youm: Right of Reply in South Korean Media Law 30 Years After: Taking Stock of Press Freedom v. Reputational Interests
					Klaus Ziegert: Path Dependence of Law: Comparing the Differentiation Paths of Law in East Asia and Europe	
6:00 p.m. - 8:00 p.m.	**Reception** (Venue: TBA) (Sponsored by the University of Washington, USA)					

Second East Asian law and Society Conference Program: Day Two

1 October 2011 (Saturday)

9:00 a.m. - 10:30 a.m. — **SESSION IV**

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Panel 13: Politics of Lawyering in East Asia	**Panel 37: Fukushima Nuclear Disaster, Energy Sovereignty and the Future of Atomic Energy Ambitions in East Asia**	**Panel 5: Legal Educations and Professions in China and Korea: Issues of Gender, Child Support, and Multicultural Families**	**Panel 26: Indices and Boundaries of Property Rights in Asia**	**Panel 28: Culture, Custom, and Comparative Law**	**Panel 17:Policy and Procedure in East Asian Criminal Justice**
Chair: TBA	Chair: Hiroshi Fukurai	Chair: Haesook Kim	Chair: TBA	Chair: TBA	Chair: TBA
Discussant: TBA	Discussant: Hiroshi Fukurai	Discussant: Grace Shu-chin Kuo	Discussant: TBA	Discussant: TBA	Discussant: TBA
Terence Halliday and Sida Liu: Political Liberalism and Politcal Embeddedness: Understanding Politics in the Work of Chinese Criminal Defence	Patricia Blazey: Does China's 12th Five Year Plan Allow for Sufficient Energy to be Produced from Nuclear Power Plants to Support Its Booming Economy in the Period 2011 -2015?	Xianan Liu: Women in Legal Education and the Legal Professions: Recent Changes	Chun Peng: A Party-State in Transition and Rule of Law in the Making? The Story of Eminent Domain in China	Kunihiko Yoshida: Challenges for Sino-Japanese Tort Law in the 21st Century: With Reference to Recent Legislation in China and a Critical "Rule of Law"	Zhiyuan Guo: Interaction between Menal Health Assessment and Criminal Justice System in Mainland China: An Emprirical Perspective
Takeshi Akiba: Cause Lawyering and Constitutional Change in Japan: The Nationality Case of 2008	Hiroshi Fukurai: The Embracement of the Atomic Energy Program in Japan	Haesook Kim: Working with a New Paradigm: Prospects for the Legal Professions in Korea	Richard Wu: A Study of Title Registration System Development in Singapore: What Lessons Can Hong Kong Learn	Youn-Mee Cho: Human Rights of "Thieves": A Case Study on Indonesian State Terror (*Petrus)* and the Logics in *Adat*	Mami Hiraike Okawara and Kazuhiko Higuchi: A Presumption of Guilt rather than Presumption of Innocence Appeared in a Japanese Criminal Case of Complicity
Samuel Clark: Corruption and Rule of Law in Post-Suharto Indonesia: Mobilizing the Law to Prosecute Corruption versus Mobilizing the Law to Extort from Corruption	Eri Osaka: General Electric, Corporate Liability and the Fukushima Nuclear Disaster	Minji Kim: Child Support Enforcement in Korea	Jung-Jin Oh: Law's discourse about Communal Space: Comparing Korea and Japan	Salil Kumar Mehra: Accidents, Culture and Remedies: An Experiment	
Tomohiko Maeda: Processes and Qualities of Legal Services Provided through Lagal Counseling Center: Findings fom the Follow-Ups of Nationwide Survey on Legal Counseling	Koichi Hasegawa: Anti-Nuclear Movements in Japan	Hyo Jean Song: Multiculturalism and Legal Issues related to Children in Korea			Min C. Kim: A Comparison between DNA and Fingerprint Evidence in Korea
	Michelle Daigle: Parallel Disasters: Lessons for Fukushima from Minamata's Sociolegal Context				Mari Hirayama: Criminal Justice Policy for Sex offenders in Japan: The Possibility of a Japanese Version of Megan's Law?

10:30 a.m. - 10:45 a.m. — **Coffee Break** (Venue: Foyer)

10:45 a.m. - 12:15 p.m. — **SESSION V**

Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Panel 12: Recent Developments in the Legal Profession	**Panel 24: Regulating Health and Safety through Law**	**Panel 21: Engendering Equality in Family, Politics, and Military**	**Panel 23: Rights and Duties in Cyberspace: Internet Law in Asia**	**Panel 27: Many Layers of the Law: Legal Pluralism in South and Southeast Asia**	**Panel 16:Toward "Civility" in Mediation: China, Taiwan and Korea**
Chair: TBA	Chair: TBA	Chair: TBA	Chair: TBA	Chair: TBA	Chair: TBA
Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA	Discussant: TBA
Kukwoon Lee: Recent Changes in Korean Large Law Firms	Minyoung Choi: Universality and Particularity of Human Dignity with regard to Bioethics and Safety Act in Korea	Hyunah Yang: Legal Discourse of "Gender Difference" in the Men-only Draft System in Korea	Matthew Wilson: E-Elections: Law in Asia & Online Political Activities	Richard Powell and Azirah Hashim: Comparing Language Policy and Discourse Management in Malaysian Syariah and Common Law Courts	Shu-chin Grace Kuo: Cultural Legal Analysis of Family Dispute Mediation in Taiwan
Kota Fukui: Japanese Lawyers and Their Changing Roles	Yohei Katano: Food Safety and Social Justice: The Case of Japan	Jau-Yuan Hwang: Gender-Based Affirmative Actions in Taiwan: From Women Quota to Gender Proportion	Yi-Jong Suh and Youngjin Kim: Public Interest and Freedom of Expression: A Sociological Approach to the Minerva Case in Korea		Yun-Hsien Diana Lin: Civil Mediation in Taiwan and Mainland China: Legal Culture, Practices and Recent Developments
Atsushi Bushimata: The Recent Development of the Bar-Sponsored Lawyer Referral Service in Japan	Robert Leflar: Legal and Institutional Responses to Manmade Public Health Disasters: Medical and Nuclear Accidents Compared			Nor Fadzlina Nawi: Family Mediation in Malaysian Muslim Society: Some Lessons for the Civil Family Law in Malaysia	
Yukyoung Choe: [Legal Education Reform Process in Korea]	Young Hoa Jung: The Legal Econo-Sociological Analysis on the Public Conflicts of the Medical Specialization in Korean Recent Cases	EunHee Cho: Gender Equality as Seen Through the Course of Changes in the Marital Property System in Korea	Taiwon Oh: Concept of Privacy in Social Network Service	Tamara Relis: Conceptualisations of Justice in Legal and Quasi-Legal Regimes Processing Human Rights Cases in India	Won Kyung Chang: Criminal Mediation in Korea: Changing Rooms from Criminal Trials to Ciivil Cases
	Dongsheng Zhang: Food Safety and Law in China	Jin-Sook Yun: Changes to Surname in Korean Family Law and Gender Equality		Kwai Ng: What is "common" among the common law of Hong Kong, Malaysia and Singapore today?	

12:15 p.m. - 2:00 p.m. — **Lunch** (Delegates' own costs)

2:00 p.m. - 3:30 p.m.	**SESSION VI**					
	Room 1	**Room 2**	**Room 3**	**Room 4**	**Room 5**	**Room 6**
	Panel 7: Lawyers in the Silver Screen and the TV in East Asia	**Panel 31: Limits of State-centered Law in Redressing Rights Violations**	**Panel 3: Sexual Orientation and Gender Identity Law and Cases in East Asia**	**Panel 35: Freedom of Expression as a Right in East Asia: Balancing of Speech with Individual and Societal Interests in the Internet Era**	**Panel 34: Balancing Rights Conflicts in Asia**	**Panel 15: Frontiers of Dispute Resolution in East Asia**
	Chair: Jae-Hyup Lee	Chair: TBA	Chair: TBA	Chair: Kyu Ho Youm	Chair: TBA	Chair: TBA
	Discussant: Jisuk Woo	Discussant: TBA	Discussant: TBA	Discussant: Kyu Ho Youm	Discussant: TBA	Discussant: TBA
	Alison Connor: Trials (and Justice) in the Movies of Xie Jin	Tae-Ung Baik: Getting to the Truth: The Procedural Fairness for Transitional Justice in South Korea	Hiroyuki Taniguchi: Law and Sexuality in Japan: Heterosexism, Gender Binary and Family Values	Jyh-An Lee: Filtering online content: 'Code is Law' in the Case of China	JuYoung Kim: A Review on the Practical Extension of "Human Rights" in Korea: The Students Human Rights Orginance in Gyeonggi Province	Shahla Ali: Exploring Effective Financial Dispute Resolution Design Models through a Dialectic Process: Experiences from East Asia
	Takayuki Ii: Lawyers in the Media: The Case of Japan	Luh Rina Apriani: The Importance of Recognitions and Fulfillment on the Rights of Indigenous Peoples in Climate Change Mitigation Efforts	Garam Han: The Legal Reality of Homosexuals in South Korea	Eric Fish: Is Internet Censorship Compatible with Democracy?	Rikiya Kuboyama: Conflicts and Conflict Resolutions of the Field of Sex-Business: Can the Law control It and Should It?	Flora Xiao Huang: China's International Arbitration at Crossraod
	Jae-Hyup Lee: Legal Consciousness and Images of Lawyers as Reflected in Korean Legl TV Dramas	Sang Soo Lee: The Judicial Control of Human Rights Abuses Committed by Transnational Corporations	Suh Yeon Chang: Litigation for LGBT Rights in South Korea and East Asia	John Leitner: Korean Freedom of Expression in Cyberspace and a Proposal for Equal Expressive Opportunity	Justina Razumaite: Role of Media and NGOs in Human Rights Litigation Process in China	Michelle Kwon: The Relationship Between the Surpreme Court and the Korean Commerical Arbitration Board: Competitors or Complements in the Field of Commercial Arbitration in South Korea?
	Hee-Eun Lee: Images of Law and Reality in TV Legal Series: Focusing on "True Story: Crime and Punishment"		Seung Hyun Lee: Changing the Legal Sex of Transgender in East Asian Countries: Focus on the Sterility Criterion	Ahran Park: Insult Law in South Korea: Online Speech Chilled		
3:30 p.m. - 3:45 p.m.	**Coffee Break** (Venue: Foyer)					
3:45 p.m. - 5:15 p.m.	**Concluding Session** (Venue: TBA)					
6:00 p.m. - 8:00 p.m.	**Farewell Dinner** (Venue: Residence of former President Yun Bo-Seon)					

國科會補助計畫衍生研發成果推廣資料表

日期:2012/10/31

國科會補助計畫	計畫名稱: 開放科學運動的理念與挑戰
	計畫主持人: 李治安
	計畫編號: 100-2410-H-004-020- 學門領域: 商事財經法

無研發成果推廣資料

100 年度專題研究計畫研究成果彙整表

計畫主持人：李治安	計畫編號：100-2410-H-004-020-
計畫名稱：開放科學運動的理念與挑戰	

成果項目			量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）
			實際已達成數（被接受或已發表）	預期總達成數(含實際已達成數)	本計畫實際貢獻百分比		
國內	論文著作	期刊論文	1	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	0	0	100%		
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（本國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	1	0	100%	篇	
		研究報告/技術報告	0	0	100%		
		研討會論文	0	0	100%		
		專書	1	0	100%	章/本	Nonprofit Organizations and Intellectual Commons (Edward Elgar 2012)
	專利	申請中件數	0	0	100%	件	
		已獲得件數	0	0	100%		
	技術移轉	件數	0	0	100%	件	
		權利金	0	0	100%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	100%	人次	
		博士生	0	0	100%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		

其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。)	無

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與（閱聽）人數	0	

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估 ■達成目標 □未達成目標（請說明，以 100 字為限） □實驗失敗 □因故實驗中斷 □其他原因 說明：
2. 研究成果在學術期刊發表或申請專利等情形： 論文：■已發表 □未發表之文稿 □撰寫中 □無 專利：□已獲得 □申請中 ■無 技轉：□已技轉 □洽談中 ■無 其他：(以 100 字為限)
3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）(以 500 字為限)