

學術對談

與安妮·朗對談：傳播作為一門科學

訪談人：曾偉旻 盧沛樺 呂伯芬 楊佳純 邵奕儒

安妮·朗簡介



安妮·朗(Annie Lang)教授是認知取徑傳播研究(cognitive approaches to media)的代表性學者之一。她提出「有限容量模式」(limited capacity model of motivated mediated message processing, LC4MP)，解釋並預測電視節目的結構特徵(如鏡頭切換)，會引發注意力的自動處理機制(automatic processing)，產生較佳的記憶效果。更進一步，她採用心理生理學(如心跳、膚電、面部肌電等)作為測量指標，偵測人類資訊處理過程，揭開媒體訊息與效果之間的黑盒子。近年，安妮·朗教授關注動機(motivation)與情緒(emotion)對傳播過程與效果的影響，並進一步地運用於健康傳播與電玩研究上。她所發展出的有限容量模式已成為當代傳播學門的新典範之一。

曾偉旻就讀國立交通大學傳播與科技學系四年級，high221@gmail.com。

盧沛樺就讀國立交通大學傳播與科技學系四年級，dear20732@gmail.com。

呂伯芬就讀國立交通大學傳播與科技學系四年級，iamjanice601@gmail.com。

楊佳純就讀國立交通大學傳播與科技學系三年級，crystal770613@yahoo.com.tw。

邵奕儒就讀國立交通大學傳播與科技學系三年級，s955169s@yahoo.com.tw。

犢：《犢：傳播與科技》

朗：安妮·朗教授

犢：妳為何使用「認知心理學」來探索傳播問題？

朗：由於人們傳遞訊息且相互溝通，而這些傳播活動主要發生在大腦。我的意思是：人們發明傳播科技，並利用它來進行溝通；但溝通不是發生在科技本身，而在使用科技的人們之間。因此，如果你想知道：人們如何進行傳播？如何思索傳播？如何理解傳播？所有問題的中心應該是「人」本身。

犢：所以關鍵是「人」，對嗎？

朗：嗯，如果你視傳播為人與人之間的訊息互相流動，那這就是理所當然。也就是說，如果你對傳播法規等法律系統方面的傳播問題感興趣，那麼就不全然是對「傳播」感興趣，而是法律系統如何對傳播通訊進行規範。倘若你的興趣在於探究整體社會生態或傳播如何影響社會系統，那麼你真正關心的議題其實在於社會系統，因此，你會使用社會學理論來檢視傳播對社會結構造成的影響與變革，或互動科技如何弭平社會階層等議題。如果你感興趣的是：人們如何把資訊轉化成訊息，並且為其他人所接收。那麼你必須了解：人們如何從世間萬物中取得資訊，並產製出訊息以傳遞給他人，而這就是傳播領域讓我感興趣的部份。

犢：在你的研究中，認知心理學的貢獻和限制為何？

朗：認知心理學只是心理學的一個次領域。因此，我會說心理學對我研究的貢獻主要來自心理生理學（psychophysiology），這個次領域對我在思考人類的傳播問題上扮演非常關鍵的角色。而認知心理學對大腦如何處理資訊的問題上貢獻良多，「有限容量」及「記憶歷程」的想法皆源自認知心理學。因此，這兩個次領域（對我的理論）均有貢獻。

心理學關注的焦點不是人如何使用大腦做事情，而在於大腦如何運作。在認知心理學的領域裡，探討「大腦」如何運作仍過於籠統，真正關心的是

「思考」如何運作，認知心理學假設無須透過理解大腦也能了解思考。雖然人們對大腦的瞭解越來越多，發現大腦結構也可能會影響思考，但在認知心理學家感興趣的範疇中，重要的仍不是如何使用大腦，而在於：「我們能從人類思考歷程中習得什麼」。

我們向認知心理學借鏡的是，他們對人類如何思考的理解，可以作為傳播領域發展的基礎。但這也形成了限制：你無法提出一個傳播理論，但這理論卻違反了我們對人們思考的既有理解。你也許會說，人們思考傳播的方式與其他的思考方式不一樣，但它們確實一樣！因為它們皆來自於相同的資訊處理機制。因此，認知心理學是相當重要的，它提供了一定的限制：你的模型必須符合大家所認可的認知和生理心理學標準。

這就好比向認知心理學借助研究的基礎，但卻將它應用在全然不同的事物上。因此，當我向認知心理學家們提出如此概念時，他們始終極為擔心刺激物的複雜性會成為問題，紛紛提出「你怎麼可以處理那麼複雜的刺激物」的疑問。由於他們的研究是想要知道大腦是如何運作的，因此會採取將刺激物簡化以提高環境的控制，如此一來，他們才有足夠能力釐清、確認那些微小刺激物能引起的心理變化。相反地，我們則將這些微小刺激物，概化至大的事物，接著將它們放到複雜的環境中，進而檢視是否還能找到相同的運作原則。此種做法讓認知心理學家陷入瘋狂！但你知道，我們並不在乎這些論調（笑）。我們與認知心理學家在控制現象與達成概化的過程中，身處在光譜的兩極，因此，歸結因果的思考方式不同，在變因控制上自然也有所不同。在測量典範上也面臨相同的狀況，由於我們將這些測量典範放置在比心理學家最初發展時更加複雜的情境中，必須確保這些測量典範以同樣的方式運作，因此，必須花一定心力鑽研測量工具，以理解它們如何在複雜情境下運作。

傳播成為科學及形成典範的要素

犢：傳播研究是否為一門科學？孔恩（Thomas Kuhn）認為典範指導科學研究的發展，那麼你覺得在傳播領域裡存在著典範嗎？

朗：最簡單的答案是：「什麼是典範？」典範一詞被人以許多方式使用。如果你將典範視作一個巨大的概念，是大多數傳播學者所採納的想法，那麼我會說傳播領域並沒有典範指導研究的發展，但若將典範縮小範圍，典範的確指導著傳播發展。舉例來說，文化研究對傳播來說是一個相當人文取徑的領域，它的價值不在於對科學有所貢獻，而在人文。另外，我想傳播也可被視為一種藝術形式或實務運作，其價值在於它對數位藝術或專業實務的社會貢獻——無論你是做出一則好新聞或好廣告都是。

傳播也可以是一門科學，其目的就是了解傳播如何在跨平台、跨文化及人際間運作，並找出傳播的通則、理解影響此通則的具體特性，這就是科學所做的工作。

從傳播科學擁有典範的論調來看，我相當程度主張典範是存在的，也就是傳播學者間有一套共享的前提假設存在，這些共享的前提多與人類的本質有關。傳播科學，至少在個體層次上是受到來自心理學、社會心裡學及認知心理學的基礎假設影響，這些論點被視為傳播的起點，他們對方法論有普遍共識，對於哪些問題適當、哪些問題不適當已有普遍認同。在這個程度上，我才會說共享的典範是存在的。

此外，許多人將典範指涉為方法論上的典範，接受研究中相同的測量方法及限制。我認為在傳播領域中已有許多廣為人所接受的典範：一套測量方法、一組研究問題，特定觀點及其所致力於解決的問題...等都是。我們思考這些典範，而這正是我們（傳播學門）向前邁進的好方式。

犢：究竟傳播理論存在嗎？

朗：存在啊！我可以說出一堆呢（笑）。的確有很多理論存在，因此我不了解我們該如何爭論它是否存在。你指的是，究竟這些理論好不好嗎（笑）？

如果你檢閱一些主要的心理學期刊，如《兒童發展》，或主流的醫療期刊，你可能發現發展心理學家或醫療研究者所作的傳播研究。他們對傳播的認識較簡化，也就是他們使用的訊息刺激及媒介的控制漏洞百出，從傳播

的角度看來，這樣的文章不可能登上任何一本傳播類期刊。他們僅選用一則訊息，便將其結論概推至整體，這樣是不可能被傳播研究接受的，原因在於他們不了解媒體，也不懂如何在方法上及理論上進行傳播研究，甚至不瞭解其中的變項是什麼。

而這些不足在傳播學門已發展成熟，我們已建立各種透視媒體的方式，將媒體視為內容、長期效果、傳播目標、主題、體裁或傳播平台等。爲了這些，許多傳播研究者在找出重要的變項與如何思考變項上花了相當久的時間，而也在如何控制變項、將變項概化，以及測量變項上花了相當大的心力。不過在兒童發展及其他醫療期刊中，上面的步驟通通消失了，他們所得到的答案不是過分簡化，就是出現錯誤，因而顯得失真。

對我而言，媒體心理學漸成氣候。在美國心理協會（American Psychology Association）裡，媒體心理學也是相當重要的主題。這學門不僅有教科書，也可在心理科系和傳播科系找到媒體心理學的課程，因此能證明媒體心理學處於這兩學科的交界，在「大腦如何運作」與「媒體如何運作」上尋解答。唯有將這兩個問題結合爲「大腦和媒體如何一起運作」，才是了解「我們如何傳播」的起點，這也是爲什麼需要借助這兩方面的知識的原因。

犢：那麼傳播理論的下一步會是什麼？有可能是認知心理學嗎？

朗：不。爲什麼要這樣做？傳播理論不能進行下一步，因爲它是走回頭路。我認爲傳播必須回到它最初的樣貌，我指的是「將傳播視爲科學」，必須徹底屏除「將傳播視爲職業」的想法，否則傳播研究都是不完全的。也是因爲孔恩，我再次呼喚你（笑），認爲擁有典範的理由是因爲科學家要問他們能解答的問題，不必然是回答社會希望他們解答的問題。所以對醫療學者來說，社會想要知道他們「如何治癒癌症」，但這些是科學家所無法回答的問題，所以他們也不會嘗試。相反地，科學家必須問他們能解答的問題，他們的典範告訴他們如何嘗試了解下一步。但在傳播領域卻缺乏這樣的典範，因爲我們總試圖證明傳播研究與職業之間的相關性。這衍生出兩個問題：第一，因爲傳播業者認爲傳播研究是一文不值的（笑）；第二，傳播研究和傳播業產業不一定相關。

廣告或新聞從業人員想知道的問題與答案，不必然是現階段的我們所能解答的。如果我們繼續嘗試回答這些問題，我們只是不斷製造壞科學，因為我們沒有技巧、工具或知識，來著手處理目前面臨的所有問題，而且這樣也會限制一個好問題的發展。在美國傳播期刊如《廣告學期刊》、《廣播與電子媒體期刊》、《新聞學季刊》，我不知道為何期刊這樣命名，但你們一定有些像這樣的命名（笑）。這些期刊堅持與傳播專業相關，意味著他們是科學的守門人，但他們卻以相當荒謬的方式進行把關。但我並不是說我們不在乎實務運作或不能在傳播科系的大學教育中教導專業技能。但論及將傳播學門發展視為科學發展時，我們必須停止在少量傳播業者感興趣的應用性問題上打轉。我們應該要說下一個研究問題是在於：大腦與媒體如何互動、交會。

《LC4MP》有限容量模式對記憶歷程的作用

犢：妳強調記憶是一個過程而非狀態，可多做些闡述嗎？

朗：談到記憶時，一般傾向將它視為一種人擁有的東西，有些人擁有較少、而有些人則擁有較多。但我不認為記憶可比擬為東西，因為這是一個你從紙本、螢幕或世間萬物學習到腦中的一個獲取「過程」。

「過程」這個字告訴我們：它是隨著時間發生的，那正是為什麼我們將記憶視為過程的關鍵，因為記憶不僅只是經由感知並宣稱「我現在有它的記憶了」如此簡單的（笑）。過程不僅暗示著時間，也隱含記憶是有步驟性的，因此當感知發生，便產生了該事件的記憶：我有情節記憶，卻未創造任何語意記憶。

要說某人不記得某事，或說某人的確記得某事，是過於簡單的二分法，忽略了記憶是一個複雜、歷時性的過程，將外在資訊轉變為內在心理表徵！因為當那些被你詢問卻不記得某些事的人，其實他們記得很多，他們可能只是不記得你所問的部份；而那些看似記得很多的人，可能只是剛好因為他們記得你所問的問題。因為這兩種情況都經歷了資訊處理的歷程，所以

從我的觀點來看，須檢視建立心理表徵的三項處理程序，記憶的有趣之處在於，它並不是一個快照（snap spot）。

試想，在你看電視的三十秒時間裡，有多少資訊隱含其中？在這三十秒裡大概有六或七個場景改變（scence change），但這只是視覺上的變化；然而它還有文字，可能是很多的文字。在大量的資訊中，你只獲得其中的百分之一嗎？也許你可以，因為你應該也只需要那百分之一。那好，我們就好好處理那百分之一。但問題在於人類並不會獲得相同的百分之一，而是經由本身、環境或媒體來影響所得到的那百分之一是甚麼。如果你的興趣在於策略傳播，那麼你勢必喜愛控制這百分之一的資訊，那便會是個好問題。為了解決此問題，我們必須先理解「製碼（encoding）」是一個過程，以及影響它的因素是甚麼，接著我們還必須了解後續的「儲存（store）」及「提取（retrieve）」這百分之一資訊的過程。

「有限容量模式（LC4MP）」主張記憶的產生分為三階段：製碼、儲存及提取。如果你製碼，也儲存了，那麼你就能提取，這些就是我們所研究的過程。而 LC4MP 被設計來回答以下問題：哪些媒介要素影響製碼、哪些媒介要素影響儲存、哪些媒介要素影響提取，以及人和三項記憶階段如何發生交互作用。

犢：妳曾強調人類腦中訊息傳遞的過程並不是線性，而是平行的，對嗎？

朗：嗯，你要當心（這樣的說法），我會詳細解釋這個說法。有些東西以線性方式完成，而有些東西則是平行處理的。例如，音訊和口語資訊是相當線性的，因此要用其他方式瞭解言語內容其實很困難，因為每次只會出現一個字，而且同時只能處理一個字，所以我會說這是根基於媒介本身的。

而視覺訊息是較為平行的，因此所有的過程並不會有相同的限制特性。但我想試著澄清，如果你認為認知像早期對於認知運作的假設，即電子計算機「隱喻」下的階段模型，那是會引起「誤導的」。因為它們並非如此，所有的過程都可能是同時發生的，所以你正在製碼我所說的話，但你也正在儲存我一分鐘前所說的，並同時提取我昨天的演講內容，你是同時組合

它們以理解我現在所說的。雖然模式中的每個部份看來相當線性，但過程本身並非線性，而是一個持續且同時發生的過程。

續：LC4MP 理論認為人只有單一的心力資源庫，然而許多學者也提出多重心力資源庫的概念，為何你選擇單一的心力資源庫？

朗：（爲了）美學？（笑）最根本的理由在於，我尚未產出任何無法用單一心力資源庫模式解釋的實驗數據。少數關於多重心力資源庫的研究，也尚未找到明確證據支持多重心力資源庫模式的存在。除非我的研究數據將我帶往多重心力資源庫，否則我的研究將不會朝那個方向發展，因爲那正是 LC4MP 的關鍵所在－它是一個資料導向的模型。如果你想回到那個黑暗時代，大概是在 1990 年代的早期，Michael Basil 發表在《傳播研究》的幾篇文章，就是多重心力資源庫開始被命名的時候。第一篇文章是多重心力資源庫一個很重要的大型文獻回顧，然後在同期刊出的第二篇文章則是一個實驗，透過不同資訊通道來觀看心力資源庫。因此，才會出現一個音訊心力資源庫，以及另一個處理視訊資訊的心力資源庫的「多重」概念。

（Basil）實驗數據根本不支持多重心力資源庫模式。此外，Kahneman 不從多重心力資源庫切入，卻提出擴展性心力資源庫（extendable pools）的論點，這是個相當嚇人的說法，此理論假設你所擁有的是一個有限的心力資源庫，但當你處在激越的狀態，心力資源庫就會變大。

那在我們所作的實驗裡就有些不確定的因素，就像再度回到黑暗時代，再去試驗該論點，再一次地，實驗數據不支持該論點。舉例來說，我們著眼於「次要任務反應時間（STRTs）」的研究，從上述理論假設：看到激越刺激時心力資源庫會因此變大，反應時間應會變得較快，因此，照理來說激越應該要加速反應時間，而且心力資源庫跟著變大，但在我的實驗卻發現反應時間反而變慢。所以，最好的解釋應該是：腦中只有一個心力資源庫，而被激越後將可再用資源從原來的的位置聚集來處理激越刺激，所以反應時間就下降了，這就是為何數據會如此顯示的原因。因此我主張人只有一個心力資源庫，除非數據顯示且告訴我應該要有另外一個，而且單一

力資源庫的論點已經非常完備了，因此不需要再將（LC4MP）模型複雜化，因為它已經相當複雜了（笑）。

犢：LC4MP 理論提出近二十年，為何妳最近在理論中加入了動機的概念？

朗：（因為）自我（ego）！

犢：自我？

朗：（笑）因為動機一直都在我的理論當中，但卻沒有人真正注意到它（笑）。我對別人說有限容量模式不處理情緒變數感到厭倦，因為我的理論確實有處理情緒。從我早期的著作開始，到後來每篇文章都在處理情緒性媒介（emotional media）。我專注於探討情緒及認知的互動狀況，以及兩者之間怎麼互相影響，但後來人們卻忽視這個重要的概念，所以我才決定將「動機」放到標題中。這絕對是真的！（笑）我從來沒有稱它為理論過，況且它甚至也還不算是個理論。2000 年的這篇文章《媒介訊息有限容量模式》，但其他人習慣稱作《有限容量模式》，之後就甚至稱它為 LCP。所以我就決定自己給它一個我想要它叫的名字。這樣的命名全因我認為動機是相當關鍵的層面，因為動機或活化首先發生，而且幾乎所有媒介訊息都是具有情緒的。所以，我想應該要有一個名字來描述究竟什麼是媒介訊息的動機及認知模式。倘若我要捨棄某件事情的話，那麼我會剔除「有限容量」這個部份。因為我從來沒有這樣稱呼過，我只是將它重新正名（笑）。

犢：那麼 LC4MP 的下一個階段會是什麼？

朗：我現在所作的就是在將動機視為個人差異，找尋答案，檢視動機如何體現個人差異、並影響媒體和人如何處理媒體。因此，從我們選擇何種媒體、選擇哪些內容，對哪些資訊進行製碼，到如何回應情緒相關內容並影響製碼及儲存，及提取能力等都是。上述所有事都被個人差異和動機活化所影響，我認為這是格外有趣的部分，因為個人差異和動機活化確實影響著許多行為。

許多傳播學者特別對藥物濫用、抽菸、酗酒等風險行為感到興趣，而這些行為都與動機活化中的個人差異有關。就像媒體訊息與目標閱聽人的連結是自然發生的。此外，我也對引起共同活化（co-active）的訊息感興趣，因為我認為所有的媒體資訊大多具有共同活化的特性。理解共同活動如何影響我們所做的事情，對研究很有幫助。

我有一些次要的研究興趣，也衷心希望有人來針對這些興趣作研究（笑）。當人與訊息互動後，檢視線上處理如何影響後續的決策，特別是在說服和態度變遷領域。我還未對訊息之中所發生的事如何影響態度或行為做過任何系統性研究，但我意識到這個議題的存在，也發現仍有探討這項主題的空間。

接下來，你會一直需要更多的工具及方法來協助研究進行。目前只有部份影響自動處理機制的媒體結構特徵被發現，因此還有相當龐大的工作得進行。接受這個模式的人們，會開始尋找影響自動處理機制的其他特徵。而且媒體平台間是相當不同的，你可以測量網頁上的動畫廣告所引發的指向反應（orienting），將會有許多有趣的發現。雖然人們確實對動畫廣告的產生指向反應，但它可能是最快出現「習慣化」現象（habituating）的媒介。人可在第一次發生指向反應（笑），或在第二次發生指向反應，然後引起的效果就結束了。與電視裡的鏡頭切換相比，你總是不斷產生指向反應，畢竟鏡頭切換是非常生動的。

另一個我感興趣的部份是「glow」，這與特定性（specificity）有關。舉例來說，你傾盡全力來設計一個能引起自動處理機制的訊息，但是你真的讓人記得較多的訊息嗎？還是你只是讓人記得特定的訊息，但大部分其他資訊都沒有處理。所以，如果在訊息中放置越多素材，使人配置越多的資源，並且記得較多的資訊，在這情況下，這個訊息就擁有 glow。而另一種狀況是你放置了許多使人產生指向反應的素材，但是他們的記憶效果卻比較差。而我對他們如何運作非常感興趣，我們正在研究它們如何產生與消逝，且將它們視為同一件事情。我想底線是訊息本身並不會 glow，而是放置了太多素材、人們的記憶效果就較差。人們真的投注了大量注意力，卻不記得任何東西，因此你完全得不到概化的效果。而且我認為這在以網頁為基

礎的傳播上特別有趣，至今我們所進行的研究結果顯示，網路介面很難引發生理反應，這就是吸引我研究的地方（笑）。它是相當死氣沉沉（dead）的媒體。

因此網路上那些試圖要吸引你注意、讓你去點選的設計理應發揮功效。我們的研究顯示，這是一個不好的想法—因為你全仰賴「glow」，但網路卻完全沒有（glow）。所以就像我們對動畫（animation）所做的研究，我們發現人們確實產生指向反應，但卻無法讓你記住網頁上的內容。儘管它的確會幫助你記憶動畫中移動的東西，但這些記住的東西並不是設計者希望人們記住的。所以規則就是：如果你想讓某物以動畫呈現，就得以動畫呈現那些你想讓人們記住的東西，因為這就是人們注意力之所在。

犢：你剛才提及了「共同活化」（co-activation），它在媒體資訊處理及效果的角色為何？

朗：我認為所有的媒介都是共同活化的。當我在研究所的時候，我的指導老師曾經問過我「處理中介訊息與處理一般訊息一樣嗎？」這是一個既有趣又不有趣的問題：有趣之處在於，心理學中有一個論點認為透過媒介呈現的事物，等同於真實的事物；但傳播學中，卻認為透過媒介呈現的事物，不是真實的事物。我們從未認真看待這些論點（笑）。唯有當我們掌握到中介是否重要本身是變動的，才能真正瞭解中介如何重要。

所以中介重要的方式之一就是它會自動地產生「共同活化」，因為你使用媒體，你就會更接近媒體。它是正向的（關係），你會趨近在媒體中的某些事物，而這些事物是你真實生活中不會觸及的，因此會造成本質上「共同活化」的關係。這也意味著使用中介刺激來研究情緒的心理學家，並非真的在研究情緒（的本身），而是在研究共同活化的情緒（反應）。舉例來說，如果一隻老虎在電視上朝我們張牙舞爪，人會表現出類似老虎真的在追逐我們的反應，但僅止於這個層次，因為人不可能表現出所有真實情境下的反應。在真實生活中的許多事件都會引發防禦及逃避的行為，但不在媒體；但它們卻能引出相當程度的注意力和趨近行為。因此，了解「共同活化」是相當重要的，因為那是使中介訊息變得不一樣的主因。

犢：你說數位遊戲不同於其他的媒介？

朗：不，我不是指數位，我說的是遊戲本身。電視遊戲本身並不必然是數位的，它可以只是影像的（笑）。這對我來說是煎熬的，我認為數位改變整個世界的宣稱是瘋狂的，甚至是有些愚蠢的。數位可能改變世界，但不會改變傳播。不管你是在看電影、數位或影像，對於你來說都是一樣的（你都在看）。數位對工程師或社會來說是不同的，因為平台改變了，但在心理層面上，數位並未勝於其他媒體、並未較其他媒體重要。數位並未使遊戲產生改變，而是你的行動讓遊戲變得不同。當你在玩遊戲時，除非你採取行動，不然遊戲就不會進行下去，這有點像是人生（笑）。你的行動幫助產生不同種類的資訊處理，因為有更多的回饋環路逐漸建立。

犢：價性（valence）與激越（arousal）對記憶產生相同的效果嗎？兩者相互影響嗎？

朗：它們的作用是不同的，但確實有互動在。情緒價性與欲求（appetitive）或嫌惡（aversive）那一個系統被驅動、或兩個系統同時驅動有關，而情緒激發則反應驅動的強度。若欲求系統被驅動，激越程度越高，各層面的記憶處理越好。若嫌惡系統被驅動，激越程度越高，則會增加儲存、減少製碼。欲求與嫌惡並非扮演相同角色。我們有很多例子顯示，激越的內容需要更多資源，一個最簡單的方法是，高激越刺激物易於導致認知超載的徵兆而損害記憶，這通常被稱為「倒 U 字型模式」，表示激越對記憶的存在著某個最佳狀態。

它們只是一個實證的通則化，其他的許多研究也支持同樣的結果。LC4MP 也處理情緒價性，如果是負向且為高激越程度時，分配到製碼上的資源會減少。而也因為激越需要資源，它會壓迫系統導致超載。我們可以將它體現在很多不同的地方，而我們必須假設激越不只是其他事物的副產品。

當激越相等時，正向訊息通常能記得較好些，就像 LC4MP 所說的。但使激越程度相等是非常難的，因為媒介中的負向訊息總比正向訊息的激越程度來得高，尤其是美國媒體，美國媒體不介意暴力，卻不喜歡色情，美國

人是道德禁慾的。如果你去歐洲會發現完全相反的狀況，色情內容很多但鮮少暴力，接著會發現很難使媒體的激越程度相等，因為他們沒有負向的（情緒反應）（笑）。但我認為，兩者之間必然存有互動，並且造成不同的影響。

犢：作為一名傑出的學者，是否能提供我們這些學子一些建言？

朗：求職建言嗎（笑）？做你真正感興趣的事，因為成功的關鍵在於樂意去工作。就像你一早醒來會說：「真好，我必須去工作，從事我感興趣問題的工作」。所以秘訣就是，找出你真正想知道答案的問題，然後投入能幫你嘗試找出解答的訓練中，然後窮盡一生找尋這個答案。而且，找個夠難的問題，需要花去你一生的時間（笑），甚至更久，才能解決。我並不預期能在工作過程中回答出所有我的問題，但我希望能為別人留下繼續追尋解答的基礎，沿著我所做過的嘗試並繼續從事問題解答的工作。所以，成功來自於你的熱情，而熱情源自於喜愛，因此你該做你喜愛的事，那麼你自然會出色，而他人也將愛你所做的一切。

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Academic Dialogue with Annie Lang

Communication as a Science

Interviewers: Wei-Min Tseng, Pei-Hua Lu, Po-Fan Lu,
Yi-Ju Shao, Jia-Chun Yang

DU: DU Communication & Technology

L: Professor Annie Lang

DU: Why did you use cognitive psychology to answer the research question in the field of communication?

L: Because people communicate and communication happens in the brain. I mean, people invented communication technology and they used it to communicate. But the technology doesn't communicate. People do. And if you want to know what people do with communication, how they think about communication, and how they understand communication, the center of all is the "person."

DU: So the key point is the person, right?

L: Well, if you want to understand communication in the sense of being the transmission of information between people then it only makes sense. I mean, if you're interested in the legal system related to communication, you are not interested in communication, you are interested in how the legal system binds communication or doesn't bind it, right? And if you are interested in the sociology of work or how communication affects social systems, then, your interest is really in the social system, and you would use sociology theories to look at how faster communication alters social structures or how interactive technologies flatten hierarchies. And if you are interested in how people put information into messages that other people get out of the messages, then you have to understand how people take information out of any thing that is in the world. So, that is the part of communication that interests me.

DU: What are the contributions and the limitations of cognitive psychology from your research?

L: Cognitive psychology is only as a sub-area of psychology. So, I'd say the main psychological contributors to what I do are psychophysiology, which is another sub-area of psychology and is very key to the way I think about how people communicate. Cognitive psychology contributes ideas about how people process information. The notions of limited capacity and memory processing come from cognitive psychology. Both of these two areas would be really strong contributors.

The limitations are that: in general, in psychology, the question isn't how do you use the brain to do something; the question is how does the brain work. In cognitive psychology, it is not really having this brain work, it's really about how thinking works, because you have an assumption that you don't really need to understand the brain to understand thinking. Though as people understand the brain more and more, that assumption is becoming less and less certain. But the interesting thing to cognitive psychologists is not how do you use the brain, it's always gonna be "can we learn something about how people think." What we borrow from cognitive psychology is what they know about how people think, which is the information that constrains how you think about communication. You can't have a theory about communication that doesn't agree with what we know about how people think, because you'd say that people don't think about communication the way they think about other things. But they do! Because it's all coming out of the same thinking organ (e.g. brain). So it's (cognitive psychology) important because it tells you the constraints. Your models have to fit within the accepted models of cognition. They have to fit within the accepted models of psychophysiology.

It's more like you're borrowing the basis that you're starting from, but then applying it to complete different things. So when I present to cognitive psychologists all the time, they go crazy about the complexity of the stimulus. "How can you even deal with the stimulus that complex?" Because they wanna know how the brain works, they simplify the stimuli down to be something that is completely controlled in order to be able to detect the small changes in thinking elicited by the small changes in the stimulus. What we do is we take the small things, and we generalize them up to a big thing. And we put them in a great big mess of other things. And we try to see if we can still find the same principle of operation. It drives them crazy! But you know, we don't care about tones and flashes. (Laugh) We are on very different ends of the generalization to control phenomena. What we end up doing ends up being very different. And the same is true for any of the measurement paradigms, since we are putting them into a much messier world than they're developed in, we have to make sure they work in the same way in the messier world. You have to spend some time working on the measurement tool until you find out how it works in the messier world.

DU: Is communication research science? Thomas Kuhn argues that paradigms guide the scientific research. Is there any paradigm in communication research?

L: Well, the easy answer to that is "what's a paradigm?" The word paradigm gets used in a lot of different ways. If you want paradigm to be a big thing, that

everybody who says they study communication adheres to, then I will say no. But if you want a paradigm to be a smaller thing, then I would say yes. I would separate it out. There are cultural studies. They are really the humanistic approaches to communication, and their value lies in their contribution to humanities, not in the contribution to science. And I think there is communication as an art form or as a practice. Its value lies in the contribution to art or in the contribution to digital arts or the contribution to society in the case of professional practices, whether you are doing good journalism or good advertisement.

There's communication as a science. Its goal is to understand how communication works across platforms, across cultures, and across people, to find the generality in communication and to understand specificities that influence this generality. That's what science does.

To the extent that there is a paradigm for the scientific communication, I'd PROBABLY argue yes, a paradigm in a sense of a set of shared assumptions. The shared assumptions are probably more about the nature of people. The science of communication, at least at the individual level, is pretty accepting about basic assumptions of psychology, social psychology, and cognitive psychology. Those are kind of accepted as a starting place. There's a general agreement about methodology. There's a general agreement about what questions are appropriate and what are not. So, in that sense I'd say that there's a shared paradigm.

In addition, a lot of people who use a paradigm to mean a methodological paradigm, the way and the approach to doing research that accept a common set of measures and a common set of constraints. I think there are several methodological paradigms in the field where people have accepted a set of measures, a set of questions, and a specific perspective and then work on questions. That is a good way to move forward.

DU: Whether does communication theory exist?

L: It exists! I can name a bunch of them. (Laugh) There are lots of theories, so I don't know how we argue about whether it exists. You mean whether they are good? (Laugh)

If you picked up a major psychological journal like *Child Development*, which is a very influential psychology journal, or a major medical journal, in any given issue, you'd probably find an article about media written by developmental psychologists

or medical researchers. They will be both be totally ignorant of the media, and it'd be shallow. From the communication point of view, those articles can never be published in any communication journals because of the choice of media they used as stimuli or the kind of control they had over the medium. They only use one message, and then they generalize it. Things like that can't be accepted when you study communication, because they don't understand media, and they don't know how to study it, both methodologically and theoretically. They don't understand what are variables. That's something our field has done well. It developed a lot of ways of looking into media, sometimes looking at media as contents, sometimes as long term effects, sometimes in terms of goals of communication, sometimes its topics, sometimes its genre, sometimes as media platforms. For all those things we have spent time theorizing about what the important variables are or how to think about these variables, and how to control them, how to conceptualize them, and how to measure them. These are all missing when reading those (developmental, medical) papers, and as a result, the answers they get are simplistic or wrong or kind of laughable.

For me, the area of media psychology is coming more and more to be an area. There's a media psychology division in American Psychological Association now which is a big thing. There are textbooks. You find media psychology classes being taught in Psychology departments as well as in Communication departments. That's a demonstration of one thing that pulls ideas from both sides. Media psychology, as a discipline lies in the intersections between the question "how does the brain work" and the question: "how does the media work". When you put these two questions together you get, "how do the media and the brain work together", you are asking how do we communicate. That's why you need both sides.

DU: So, what's the next step in the development of communication theory?
Probably the cognitive psychology ?

L: No. Why are you doing that? It can't be the next step because it's an old step. I think that communication as a field needs to turn its back, I mean "communication as a science" needs to turn its back on "communication as a profession". And until they do, it is very unhealthy. Because of Thomas Kuhn, I'll call him back, (laugh) one of the reasons for having a paradigm is because scientists have to ask the questions they can answer, not necessarily the questions society wants answered. So, if you look at medicine, society wants the answer to the question of "how do you cure cancer", which scientists can't answer. So they don't try. Instead, they have to ask questions they can answer. Their research paradigm tells them what they can try

to understand next. In communication we lack that, because we are always trying to justify what we do by saying how it's relevant to professionals. There are two problems with that. One, professionals don't give it a damn. (Laugh) Two, it may not be relevant to professionals. The questions that the advertiser or journalist wants answers to aren't necessarily the questions we can answer right now. If we continue to try to answer them, we may just do a lot of bad science, because we don't have the skills or the tools or knowledge to tackle the whole question right now. And it also constrains what is a good question. We have journals that are called things like Journal of Advertising, Journal of Broadcasting and Electronic Media, Journalism Quarterly. I don't know the way your journals are called but you probably have some dumb names like that too. (Laugh) Those journals insist on relevance to the profession. This means they are the gatekeepers of our science, but they are gatekeeping in a totally ridiculous way. So, I'm not saying that we can't care about the professions or we can't teach professional skills in our undergraduate classes, but when it comes to time to developing the discipline as a science, we have to stop asking only applied questions of interest to a limited number of professionals. We should start saying what is the next question in our understanding of how brain and media come together.

DU: You highlight that memory is a process not a state, could you elaborate more of it?

L: There is a tendency to talk about memory like a thing that person has, that some people have more memory and some people have less memory. But I don't think memory is a thing because there is a process of getting something you are learning off of the paper or the screen or whatever it is in the world and into your head.

One thing the word "process" tells us is that it happens overtime, which we all know, that's why we have to study the process, because it's not enough to just perceive the thing and then say: "I have a memory of it now." (Laugh) Not only does "process" imply time, it also implies that there are steps along the way. So when the perception happened, it created a memory of the invent. I had an episodic memory but I didn't create any semantic memory.

To say that somebody doesn't remember something or to say that somebody does remember something is to take this very complex overtime process of turning the world into a mental representation and breaking it down into a simple dichotomy - yes or no, which it isn't! Because probably the people who don't remember the thing you asked them, still remember a lot, they just don't remember the thing you asked

them, but they probably have some memory of whatever it is you're asking them about, which they'll think about and then remember some other things, and so on. Because they did go through the processes of processing that information. From my perspective I'm going to look at three processes that go into building that mental representation, which is a very interesting thing because it's not a snap shot.

For example. If you looked at thirty seconds of television, think how much information is in there, probably these 30 seconds of television has six or seven scene changes and those are just visual. Then it has words, it could have a lot of words. So there is tons of information, and you're gonna get one percent of it? Maybe. And that's ok because you probably only need one percent of it. That's fine, we work well on one percent. But the problem is we are not all gonna get the same one percent, and there are things about us, about the environment, about the media that influence which one percent we get. If you're interested in strategic communication, then you'd love to control this one percent. That's a good question to ask, and to do that we have to understand that "encoding" is a process and we have to understand what the variables are that influence it and the same thing has to be done for storing and retrieving that 1%.

LC4MP argues at least three processes, that are pretty clearly in most cognitive models: the encoding process, the storage process, and the retrieval process as part of what goes into creating a memory. If you encode it, if you store it, and if you can retrieve it. Those are the processes that we study. The questions LC4MP is designed to answer and is still answering are what are the things about media that influence what's encoded, what are the things about the media that influence what's stored, what are the things about the media that influence how retrievable that is, and the same questions about people and then about how these things interact.

DU: You emphasized that human information process doesn't proceed in a linear fashion. It is in parallel, right?

L: Well, be careful (about such statement), I'll elaborate it. Somethings are probably linear, somethings are parallel. For example, audio, spoken information is pretty linear. It's pretty hard to understand verbal content any other way because it comes out one word at the time and is processed one word at a time. I'd argue it is inherent.

Visual information is pretty clearly parallel. So all processes don't have the same constraining characteristics. But the argument I'm trying to make is if you think about cognition in the way that early cognitive models did, the computer "metaphor" as stage models, that's equally "misleading". Because it isn't. Because

all the processes are happening at once. So you're encoding what I'm saying now, but you're storing what I said a minute ago, and you're retrieving what I said in the talk yesterday. And you're putting it all together for your current understanding of what I'm saying and that's all happening at once. So while there are parts of it that are occurring in a fairly linear fashion, the processing itself is not, it's continuous and simultaneous.

DU: LC4MP assumes that people have a single pool, but still some scholars argue that people have multiple resource pools. Why do you choose single pool?

L: Aesthetics? (Laugh) The basic reason is that I haven't been able to produce any data that cannot be explained by single pool model. And in a few studies where people have explicitly looked for evidence of the multiple pool model, those studies have not found any. Unless the data takes me to the multiple pools, I'm not going there, and that's the point about it (LC4MP), it's a data-driven model. If you would go to back to the dark ages, I think some time in the early 1990s, there are a couple of articles by Michael Basil published in *Communication Research*, and they are called multiple resource model. The first article is a big review of the multiple pool literature, and then the second article, in the same issue of journal, they're published together, is an experiment, and this one was looking for pools of resources by channels of information. So the idea that there'll be an audio pool, a pool for processing audio information, then another pool for processing video information.

Basically the data completely did not support the multiple pool model. Similarly, Kahneman, made an argument not for multiple pools but for expandable pools. That's even scarier. So you have a limited pool of resources, BUT he said when you get aroused, the pool gets bigger.

That's kind of a problematic thing. But we did in an experiment, also back in the dark ages, trying to test that argument. And again, the data doesn't really support it. For example, we tried looking at something with secondary task reaction times (STRTs). If you are watching arousing stimuli, and your pool gets bigger, you should have more resources, then your reaction times should get faster, the arousal should speed the reaction time because you have more resources. But they don't. They get slower. The better explanation is I got one pool, and the resources get allocated to processing arousal, so I use all the resources available, and so my reaction time is slowing down, and that's what the data says, So I say one pool, and I am saying one pool until the data says I have to have another, and really, the one pool explanation fits the data enormously well, and so there's no need to complicate

the model. It's complicated enough already. (Laugh)

DU: The model of Limited Capacity of Media Message has been proposed for more than ten years? Why do you put the word "motivated" in your recent theory?

L: Ego.

DU: Ego?

L: (Laugh) Because the motivation has always been in the theory, but no one ever noticed it. (Laugh) I got tired of people saying that the limited capacity model doesn't deal with emotional media. It always deals with the emotional media. My very earliest work was on the emotional media, and every paper I've ever done is always dealing with emotional media. It is always looking at the interaction between emotion and cognition, how the two influence one or another. But people kept missing it, so I decided to put it in the name. It's really honestly true! (Laugh) I never named the theory, it's not even a theory. The article in 2000 is called "the limited capacity model of mediated message processing", but other people starting to call it "the limited capacity model", and then people decides to call it the LCP. So I just decided to take hold of it and gave it the name I wanted it to have. And I named it that because I think motivation is the key aspect, because the motivation or activation happens first, and almost all mediated messages are emotional anyway. So, I thought it should have a name that to describe what is the model of motivation and cognition of mediated messages. If I were to drop something, I'd drop the limited capacity part. But I didn't name it! (Laugh) I rename it, however. (Laugh)

DU: What's the next stage of the LC4MP? And the LC4MP will be like...

L: What I am doing right now is looking at motivation as an individual difference, and looking at how motivation as an individual difference influences everything about media and media processing: from the types of media that we use, to the selection of content within the media, to the selection of information within the message for encoding, to the response to the emotional content in the message which influences encoding and storage, and the ability to retrieve the message. All of these things are influenced by individual differences in motivational activation. I think it's particularly interesting, because individual differences and motivational activation also influence a lot of behaviors.

Communication scholars are particularly interested in having influence on behaviors

like drug use, smoking, drinking, and risky behavior of all kinds are very much related to individual differences in motivational activation,. It's a natural way that things about message can connect to things about target audiences. So I think that's an interesting thing, and I am really interested in co-active messages, because the whole media thing is in the co-active state. I think understanding how that influences what we do is probably really useful.

I have some very minor interests. I really would like someone else to do it, and I'm hoping they will. (Laugh) Probably there's room to expand a little bit beyond the time that a person's interaction with the message stops to looking at how online processing influences later decision making, particularly in the area of persuasion and attitude change. I have never done any systematic looking at how the things that happened during the message influence attitude or behavior. But I suspect those are there, and there is room to think about that.

And then you will always need more measures and more ways to look at things. Right now, we have only a partial list for any medium of what structural features influence processing automatically. There's just a huge job left to do, and a lot of more people would have to buy into the model and start looking for them. There're a lot of things we haven't looked at yet. And each media platform is different. You can measure orienting to animations in web ads, and if you do that, you find out some interesting things about it. People DO orient to animations in web ads, but it's gotta be the fastest habituating media orienting response in the world. They orient the FIRST time, (laugh) and maybe the second time, and then it's over. Comparing it to camera changes in television, which you just keep orienting to over and over.

And another thing I'm interested is "glow", which is about specificity. For example, if you just do stuff to a message to elicit automatic attentional responses, do you get to a level of attention that just makes people remember more, or do you increase the specificity of what they remember at the expense of the whole message? So glow would be the more stuff you put in the more resources get allocated the more people would remember so the message glows; the other option is the more stuff you put in the more people orient but the less they remember. Now I'm very interested in how that works, and we've been looking at it off and on, trying putting together a sense of things. I think the bottom line is that messages don't glow, the more stuff you put in the less people remember. They pay REALLY a lot of attention and remember almost nothing. So, you don't get this generalized effects, and I think this is gonna be particularly interesting in web based communication, because from the research we've done so far, the web is physiologically very dead, it is very difficult using the

web interface to elicit any physiological responses at all, which I find quite fascinating. (Laugh) It's a very DEAD medium. So the things that do work when it attempts to do them in order to draw attention or get people to click. But other research we've done so far suggests that's really a bad idea because then you're depending on glow, but there isn't any. So, like the thing we did on the animations, we found they did orient, and it didn't improve memory AT ALL for what the web page was on. It did improve the memory for the thing that was moving in the animation. But usually that is not the thing you want people to remember. So here comes the rule: if you want to animate something, you better animate something you want them to remember because that's what they're gonna walk away with.

DU: You just mentioned “co-activation”, what is the role of co-activation in media processing and in effects?

L: Well, I think all media is co-active. When I was in graduate school, my adviser used to say to me: “is processing a thing that's mediated the same as processing the thing?” It's both is interesting question and it isn't an interesting question. The reason it IS an interesting question is because in psychology, there's an assumption that a mediated thing is a real thing, and in media there's an assumption that a mediated thing is not a real thing. But neither of us takes those assumptions seriously (laugh). When it's handy, we treat the mediated thing like the real thing because we can't do the real thing; when it's not handy, we use mediation as the reason why it's not bad for us. Neither thing is true. Sometimes it matters that something is mediated, and sometimes it doesn't. Until we take the whole notion that mediation matters variably, we can't really understand how mediation matters.

So one of the ways that mediation matters is that it automatically creates co-activation. Because when you use media, you approach media. It's positive. You can approach things in media that you would not approach in real-life, which makes it inherently co-active. This also means that the psychologist who uses mediated stimuli to study emotion does not really study emotion, but rather studies the coactive emotion, an echo of the real emotion linked with some approach activation. For example, if a tiger pounces us, and it's on TV, I will show responses similar to if a tiger is running towards me, but only up to a point, because I won't show all the responses associated with getting out of here. A lot of things that would elicit big time defensive behavior or avoidance behavior in real life don't do so in the media; instead they elicit really intense levels of attention and approach behavior. It's important to understand co-activation, because that's one of the big things that makes the mediated thing different.

DU: You mentioned that digital game is different from other kinds of media.

L: No, I didn't say anything about being digital. I say Games. And video games are not necessarily digital, they could be video (laugh). I'm just being difficult, because I think this notion that digital is somehow changing communication is crazy. I think it's stupid. Digital might be changing the world, but it's not changing communication. You DON'T know when you watch something whether it's film or digital or video, it's all the same to you! It's different to engineers, it's different to society because of the change in platforms, but digital doesn't make something psychologically more important than something else. It's not being digital that makes a game different; it's your acting that makes a game different. When you play a game, it will not proceed unless you take action, kinda like life (laugh). That makes for different kinds of processing because now you are setting up more feedback loops.

DU: Do valance and arousal have the same effect on memory? Is there any interaction between them?

L: They do not have the same effect on memory, and there is an interaction. Valance is gonna be related to whether you get an appetitive or an aversive activation, and arousal is gonna be related to how much. If it's appetitive activation, the more arousal the better for all the memory processes. If it's aversive, greater activation should increase storage and decrease encoding. They shouldn't necessarily do the same thing. And there's always the case of too much, because certainly arousing content clearly requires resources. One of the easiest ways is to show signs of cognitive overload in the memory processes is by having very arousing stimuli. This has often been called the inverted U arguing that there is some optimal level of arousal for memory.

Those are typically empirical generalizations. But it is true that it seems to hold across a lot of studies. The LC4MP also deals with valence, if it's negative, at very high levels of arousing content you get lower levels of resources allocated to encoding. and also because arousal requires resources, it does push the system into overload. And we can show that in a lot of different ways. Let's suggest it's (arousal) not just a byproduct of things.

If you equate arousal, then positive messages tend to be remembered a little bit better, which goes in line with what the LC4MP says. But it's very hard to equate arousal, because negative messages in media are always more arousing than

positive, especially the American media, because in American media we don't mind violence but we don't like sex. We are puritanical. If you go to Europe you'd find the reverse, there is a lot of sex but not very much violence, and they may find that it's hard to equate arousal in their media because they should not have negative. (Laugh) But there's definitely an interaction, and they definitely have different influences.

DU: As a distinguished scholar, could you give we graduate and undergraduate students some advices?

L: Career advices? (Laugh) Do something that you are really interested in. Because the key to being successful is to like going to work. The key is to do something where you get up in the morning and say "oh, good. I get to go to work", and the to work on problems that you are really interested in. So the trick is to find the question that you really want to know the answer to, and get the training you need to be able to try to answer, and then spend your life trying to answer it. And pick a hard enough question that it will take your whole life, (laugh) or longer! I don't expect to answer my question before I am done working. But I hope to lay a foundation for other people to continue answering my question long after I am done going to work and answering it myself. So the success comes from passion, and passion comes from liking. Therefore, you should do what you like, and then you'll be good and people will like what you do.

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