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A mycelial model for understanding distributed creativity: collaborative partnership in the making of 'Axis Mundi' (2013) for solo bassoon.

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Abstract

Drawing upon Tim Ingold's work in ecological anthropology and a recent project examining aspects of distributed creativity carried out together with Eric Clarke and Mark Doffman, I explore a 'mycelial' model as a metaphor for collaborative creative practice in contemporary music. A consideration of the structure of fungal mycelia systems with their complex meshwork of catalytic transformation and an active distribution of nutrients, leads to potentially new ways of thinking about distributed creativity beyond a more mechanistic modelling of creativity as a hierarchy of levels and cogs, or even as the distributed model of a rhizomatic morphology of branching connections and nodes. I discuss a recent composition for solo bassoon, *Axis Mundi* (2013), aiming to shift the view of a structure of creative exchange apportioned or pre-determined via a role (performer offers techniques; composer acts upon these to make a piece), towards an understanding of collaboration as the current that carries the participants into an intertwining world of practice in which materials themselves become the tools of perception.

Keywords: mycelium, composition, performance, collaboration, distributed creativity

This paper looks at a rather recent shift in how I view collaboration and creative exchange with performers and how this is impacting on my own practice as a composer. The discussion will focus on the working process surrounding the composition of *Axis Mundi* (2013) which arose out of a collaboration with the bassoonist Alban Wesley. This shift in perspective has been prompted in part by my participation in a research project into aspects of distributed creativity conducted in 2011 together with Prof. Eric Clarke and Dr Mark Doffman¹. My composition *Tongue of the Invisible* which makes use of improvised sections in a composed context was used as a case study to look at issues of creative ownership and an ecology of collaboration. Out of the hours of recorded interviews with the participants, there is one comment from trumpet player Marco Blaauw that I find particularly provocative. In a discussion with Eric Clarke about ownership and the performer's role in collaboration he makes a rather clear demarcation in creative ownership saying:

¹ Clarke, E., Doffman, M. & Lim, L. (2013) 'Distributed creativity and ecological dynamics: a case study of Liza Lim's *Tongue of the Invisible*'. *Music & Letters* (accepted 9/11/12). Project of the AHRC Centre for Musical Performance as Creative Practice: 'Distributed Creativity in Contemporary Concert Music', Oxford.

It is really the composer's process...it is really the composer's piece...
I mean, when you build a house and somebody delivers the bricks, the brick owner is not the owner of the house or not the architect; there is no way the brick factory can say 'this is our house', so I have no problem delivering bricks if the composer makes a beautiful house. But if the house is bad and falls apart, and the material is actually good, then I feel robbed.²

Marco is expressing the status quo in terms of how composer-performer collaborations are often carried out in contemporary music practice. That is, the performer-collaborator is cast as an artisan, a craftsperson providing building blocks for the architectural vision of the composer. Creative ownership is demarcated very clearly where a performer's creative contribution lies in making 'good', that is, reliable even if unusual, technical innovations that can be usefully employed in a general sense by composers.

I want to dig deeper into the artist/artisan or architect/brick maker relationship that Marco describes, since it is just such a collaborative process that has been central to my own work. Here I am interested in shifting the viewpoint from a position in which 'techniques' offered by a performer are merely static building blocks, or 'objects' which can then be manoeuvred at will within a larger architecture, to a less clear cut view in which techniques and sounds can be understood as a form of embodied knowledge for creative perception and practice. I want to rethink the dynamics or **modality** of composer-performer collaboration.

I want to draw on some ideas from cultural/ecological anthropologist Prof. Tim Ingold who in his writings on creativity and 'making' in art and architecture articulates a distinction between *objects* as inert, self-enclosed containers separate from the surrounding world, and *things* as 'a certain gathering together of the threads of life'³. He argues against a *hylomorphic* model of creation (from Aristotle: *hyle* = matter; *morphe* = form) of abstract form imposed on passive matter and in which creativity is read 'backwards' from finished object to some initial intention of an originating creator. Instead, he proposes a creativity that is read 'forwards' as an itinerant, improvisatory process of 'intervening in the fields of forces and currents of material wherein forms are generated'.⁴ In this creative world of 'things', everything is swept up in a form of

² Interview with Marco Blaauw, 7 June 2011, documentation gathered as part of project into distributed creativity; see footnote 3.

³ Ingold, T. (2008) 'Bringing things to life: Creative entanglements in a world of materials'. *Realities*, Working Paper #3, p.4 [accessed online 10/3/13: <http://www.socialsciences.manchester.ac.uk/realities/publications/workingpapers/15-2010-07-realities-bringing-things-to-life.pdf>]

⁴ Ingold, T. (2010) 'The textility of making'. *Cambridge Journal of Economics*, 34, p.92.

mutually permeable, binding and circulating 'meshwork' of lines of activity, (a 'becoming' as Deleuze & Guattari would express it⁵), rather than of point-to-point causal relationships.

Of particular interest to me in this ontological focus on matter as flux and as inseparable from generative currents, is Ingold's use of the fungal mycelium (contrasted with Deleuze & Guattari's use of the rhizome) as a metaphor for creative distribution.⁶ Mycelia are the underground, vegetative part of fungi made up of networks of very fine threads forming a sort of colony that comes into an ecological relationship with everything around – trees and other plants, decomposing matter, the soil etc. The filaments spread throughout a zone bringing enzymes that break things down, facilitating diffusion of biological elements and actively transporting nutrients around the system.⁷ I find this systems model of catalytic enzymes, of bio-transformation, and the transport and distribution of nutrients rather potent as a metaphor for a way of thinking about the complexity of creative processes. It offers a useful set of conceptual relationships with which one can investigate a structure of thinking for creative collaboration that moves beyond perhaps a more mechanistic modelling of creativity as a hierarchy of levels and cogs (bricks becoming houses) or even as the distributed model of a rhizomatic morphology of branching connections and nodes (though similar to the latter especially in Deleuze and Guattari's formulation of a molecular understanding of the rhizome's decentred multiplicity).

⁵ Deleuze, G. & Guattari, F. (2004) *A Thousand Plateaus*. trans. B. Massumi. London: Continuum.

⁶ Ingold, T. (2011) *Being Alive: Essays on Movement, Knowledge and Description*. Taylor & Francis. p.86.

⁷ Stamets, P. (2005) *Mycelium Running: How Mushrooms Can Help Save the World*. Berkeley: Ten Speed Press.

Ex. 1 see illustration of fungal mycelia

<http://www.terrain.net.nz/friends-of-te-henui-group/fungi-te-henui/fungal-mycelia.html>



Associated mycelic images of fermentation, decomposition, diffusion and re-composition can, I think, be usefully applied to describe a simultaneity of heterogeneous qualities, processes and tangential connections that are drawn into processes of creative engagement. The fungal structure is a useful model for thinking about the active and intermeshed nature of the entanglements of creative exchange.

Invisibility

I begin with the 'cello solo called *Invisibility* (2009) as a point of reference, and then move on to a very recent work for solo bassoon, *Axis Mundi* (2013), using this mycelial analogy in order to open up to view some of the threads of the creative processes that gave rise to these works. I aim to show how the latter work in particular arises out of and through complex reciprocal processes. Ingold uses the word 'improvisation', but avoiding this rather loaded musical term, I would describe these processes as a reciprocal joining and weaving with, a travelling along and being caught up by, the threads and knots of a collaborative relationship with materials that are sonorous, gestural-motoric, perceptual, inscriptive and inter-social, and which arrive out of the wider 'life-worlds' of the participants. The musical work that arises is both fruit and archive of the traces of those reciprocations and iterations.

Central to my compositional language has been a concern to work with the grain of materials in a close listening to the 'inner world' of sounds and to compose in a way that emphasises the tactile and haptic. The kinaesthetic dimension of the performer's touch on the instrument is a key part of the musical information for it is through the haptic sense that one comes into contact with the grain of the sound.

This aspect of a primacy of the kinaesthetic level in the music can be seen quite clearly in the solo 'cello work, *Invisibility*.

Ex. 2 video of Séverine Ballon/ Lim: *Invisibility* (2009) for solo 'cello

<http://vimeo.com/13411678>

Invisibility uses an unusual scordatura tuning (Bflat-F-D-Dsharp) and both a normal and a prepared bow to create an irregular 'topology' for the performer that feels quite different 'under the fingers' from the standard 'cello set-up. The 'cello bow is altered with the bow hair wrapped around the wooden stick creating an irregularly serrated surface.

Ex. 3 prepared 'cello bow ('guiro bow')



With the retuning, each string on the 'cello has different resonance properties or torsions, and the guiro bow has an inherently complex mechanics of sudden accelerations, glitches and slippages as the undulating surface of alternating hair and wood passes over a string. I composed the music to deliberately amplify these 'chaotic' and unpredictable qualities. If one imagines the vertical strings of the instrument as the 'warp' of the music, the horizontal bow movements weave an irregular 'weft' in which sonic knots of varied intensity and quality are literally 'caught by' and 'caught on' the strings through the interaction of actions that arise directly from the materiality of skin, bow hair, wood and tensile metal.

Ex. 4 Score of *Invisibility*, bars 45-49 showing warp-weft pattern of composed slippages and glitches around fixed strings

The image displays three staves of handwritten musical notation for a cello. The notation is dense and complex, featuring numerous triplets, slurs, and dynamic markings. The first staff (bars 45-47) includes markings for 'II', 'I', and 'III' above the notes, and dynamics of *pp* and *mp*. The second staff (bars 47-48) features a *mf* dynamic and a *h. sul pont.* marking. The third staff (bars 48-49) includes a *mf* dynamic, a *sim.* marking, and various fingering indications like 'II', 'I', 'III', 'IV', 'III', 'II', 'III', and 'IV'. The notation is characterized by irregular rhythms and complex groupings, reflecting the 'warp-weft' pattern described in the text.

Because of the non-standardised nature of the sounds I use (often focussed on fluctuating, morphing qualities) and the unusual techniques required to produce them, my work does often necessitate close collaboration with performers. This process of collaboration to explore so-called 'extended techniques' has become quite standard practice since the mid-twentieth century. There are well-known partnerships such as between flautist Pierre Yves Artaud and Brian Ferneyhough; the Arditti String Quartet and Helmut Lachenmann; Rebecca Saunders and members of musikFabrik.

However, whilst performers have in many cases received due recognition as the innovators of new technical knowledge, in some cases publishing books of contemporary techniques⁸, their contribution has also often been partitioned off as ‘technical resource’ when it comes to examining and analyzing a musical work.

Going back to Marco Blaauw’s division of roles between artisan-performer providing the resources of sonic ‘bricks’ with which the architect-composer builds, I want to see in what sense one can shift the perception of technical ‘bricks’ as static objects towards a more open sense of them as ‘things’, that is ‘a gathering of currents’ to bring back Ingold’s differentiation. I want to ask in what ways these ‘things’, understood as ‘dynamic currents’, might fundamentally shape my perception and lead me to flow in formation with them. The difference in the second scenario is that I go below the surface of the material and, rather than my acting upon it to create the music, **it becomes the tool of perception** itself; I align myself to the ‘behaviours’ and close-grained qualities of the material in a creative partnership. There is already a strong element of that in a work like *Invisibility* in which I translate perceived qualities of the material into structural principles but I wanted to take this empathetic process further. By forging a partnership with things (materials) as forces and currents rather than building blocks, I imagine a different order of architectural thinking that will also be characterised by metamorphosis and flux.

Axis Mundi

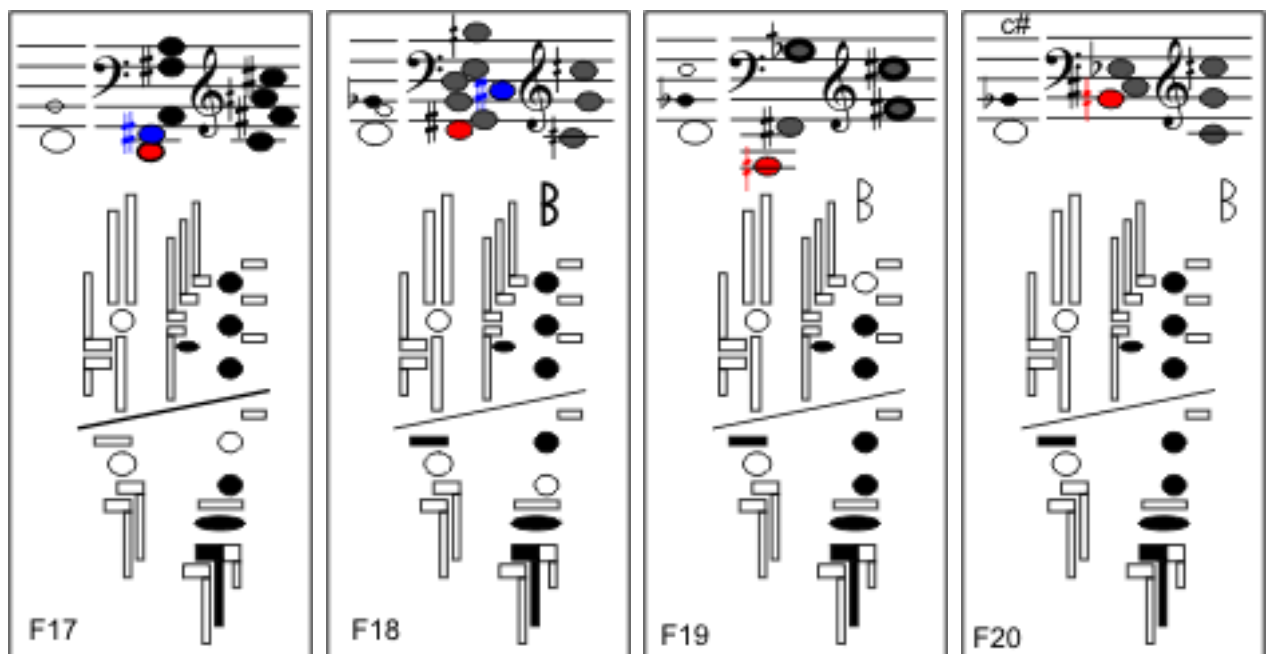
This way of thinking was uppermost in my collaboration with the bassoonist of Ensemble musikFabrik, Alban Wesly, who asked me to write a solo work.

The bassoon as an instrument is a long wooden tube that doubles back on itself, punctuated by a great number of holes covered by an extensive key system. The holes and the metal keys, which extend the limited reach of a musician’s hands and fingers, might be thought of as a quite complex ‘management system’ to resolve a natural out-of-tuneness in the instrument. But it was precisely the irregularities of intonation and colour in the bassoon that attracted my attention and became the focus of Alban’s and my study. A corollary to this is one of the key problems faced by composers and performers: there are many books of charts of multiphonic techniques showing details of fingerings, lip pressure and position with the results notated as pitch complexes, but this is an extremely inexact science and factors such

⁸ See Bärenreiter’s ‘The Techniques of...’ series.

as tiny alterations in reed position and air pressure can radically affect the resultant sound. Differences between instruments or makes of instrument, between types of reeds and crooks, and environmental conditions of temperature and humidity can also make a mockery of a table of apparently stable and carefully researched multiphonic fingerings.⁹ As illustrated below, the fingering charts can also be hell to read when a composer uses many different multiphonics in rapid succession in a work.

Ex. 5 Bassoon Multiphonic fingering chart prepared by Leslie Ross¹⁰



Ex. 6 Video of Alban Wesley discussing the challenged of finding ways to organise and notate these alternate colour fingerings and multiphonics.

[https://www.dropbox.com/s/cqkhqkelg917p2t/Axis%20Mundi%20Short%20Video.mo](https://www.dropbox.com/s/cqkhqkelg917p2t/Axis%20Mundi%20Short%20Video.mov)
[v](#)

As Alban says in the video, we focussed on a quite simple approach to exploring multiphonics and colours and as far as I know, this approach has not particularly been exploited on the bassoon.

⁹ Also see discussion about these problems in McLaughlin, S. & Harrison, I. (2011) *Multiphonics in composition and varying approaches to multiphonic notation*. Unpublished conference paper. SPEEC Conference: Building an Instrument, Oxford, 6 January 2011.

¹⁰ Ross, L. (2010) *Multiphonics for Modern Bassoon*. [accessed online 10/3/13: <http://www.leslieross.net/multiphonics.html>]

There is a class of special ‘colour fingerings’ found in wind instruments created by venting a hole in the top section of the instrument whilst continuing to use ‘normal’ scale fingerings below that point. The typical result is a sequence of microtonal deviations around a tone that one hears as a fluctuation of tone colour as well as pitch. Salvatore Sciarrino has exploited these as sliding trilling effects on the flute and clarinet in works such as *Il Silenzio degli Oracoli* for wind quintet.¹¹ Richard Barrett has explored the peculiarly compressed microtonal scales that arise from these fingerings in the clarinet part of his *Opening of the Mouth* cycle¹² and I have also worked with these techniques in a solo for clarinet called *Sonorous Body*.¹³

As Alban shows in the video, by using a traditional scale fingering and venting a hole higher up in the instrument, one can easily access a sequence of differently sized microtonal intervals and changing sonic ‘behaviours’. There are very distinct timbres from bright to dark to fuzzy, and complex multiphonics ranging from highly dissonant rolling tones and roaring frictions to consonant harmonies. Some of the sounds are highly localised, gloriously emerging from the bell at the top of the bassoon or circulating in quite specific regions of the tube. What’s useful about the ‘scale’ organisation is that it is relatively easy for the player to orient themselves within a collection of very diverse materials and it provided a ready-made system of organisation for the composition.

The nature of this material is to be open to variation. Because of the unpredictable nature of these scales, I felt I could not rely on them as a fixed resource (as object-like building blocks) with which to create the music. The scales are made up of ‘moving targets’ as their qualities are subject to great variation even whilst falling into a certain category of sonic behaviour. As I said earlier, I consciously looked at the material as a ‘tool of perception’. Instead of regarding the lack of fixity as a problem, these qualities led Alban and myself through a search for solutions to notation and performance that would align with the grain or fabric of this unstable instrument-musician complex. What we arrived at is a fairly simple and user-friendly solution to notation which is a form of tablature: diamond-shaped note-heads show a notional ‘normal’ pitch fingering with the vented hole indicated above the staff in letters.

¹¹ Sciarrino, S. (1989) *Il Silenzio degli Oracoli*, for wind quintet. Milan: Casa Ricordi.

¹² Barrett, R. (1997) *Opening of the Mouth*, ensemble work for 2 singers, 10 instruments and electronics. London: UMP.

¹³ Lim, L. (2008) *Sonorous Body*, solo clarinet. London: Ricordi London.

Ex. 7 *Axis Mundi* sketches notating 'colour scales' in early exploration with performer

The image shows two pages of handwritten musical sketches. The left page features a staff with notes and stems, annotated with 'gradually stronger distortion' and 'fuzzy veiled'. Below the staff, there are notes like 'rolling unstable dissonant' and 'distortion in middle section of instrument'. The right page continues the sketches with notes and stems, annotated with 'rich top register, rolling' and 'sand emerges from the top'. There are also notes like 'magical consonant' and 'relatively isolated cff'. The sketches include various musical symbols, including notes, stems, and dynamic markings like 'p', 'mf', and 'f'.

Ex. 8 score excerpt from opening bars, *Axis Mundi*

The image shows a handwritten musical score excerpt. It starts with a 5/4 time signature and a tempo marking of 50. The notation includes notes, stems, and dynamic markings like 'p', 'mf', and 'f'. There are annotations such as 'changing density (multiphonic)' and 'c'. The score is written on a single staff with a treble clef.

The score does not notate precise results in terms of pitch and timbre, but offers a contoured landscape of continually morphing sonic shapes through which the performer travels anew in each iteration. This is a music made up of matter in continuous flux: it's made up of morphing, irregular colours, sound caught up on a node of resistance before splitting into a complex multiphonic.

The *Axis Mundi* of the title refers to ideas connected to shamanic journeying, touching on the very ancient idea of sound as a vehicle for communication with other worlds or for enabling altered states. An intense dream¹⁴ I had in 2011 gave me some points of orientation for the work in which I aligned the fluctuating qualities of the bassoon sounds with an exploration of morphologies that belong to dream states – episodic slices in time, organic elaborations of details that bifurcate in unexpected ways.

Because of the nature of the materials, I found it impossible to work with a pre-fabricated architectural plan or a systematized method that ‘logically’ determined the details. The details of the sounds are, after all, a shifting and unpredictable territory. Instead I worked slowly, in a labour-intensive way that paralleled the initial hesitant exploratory search for sounds and relied on further stages of feedback from the performer in relation to choices of sounds and how these would be notated. This working process involves a micro-level participation in observing the material in terms of weighing qualities of flux rather than a delegation of decision-making to an overriding organizational system. It is about ‘attention’, ‘wanting’, ‘receiving’, ‘deciding’, ‘making’ and also involves redundancy, failure and wasted effort. What I found interesting about the element of failure in this slow process is the way traces of discarded efforts still found their way into the work – there is a reverse archaeological dimension to the process of composition whereby earlier ‘ruins’ are recycled to build up new forms.

The Finnish architect Alvar Aalto has spoken about ‘sympathetic error’ in which so-called mistakes lead to new design solutions as well as leaving their traces on whatever eventually surfaces.¹⁵ Similarly, his fellow architect Juhani Pallasmaa has celebrated a fragile architecture of imperfections, differences and discontinuities over one of unifying logic. In his article ‘Hapticity and Time: Notes on a Fragile Architecture’, Pallasmaa quotes John Ruskin in his search for new approaches to making a sensuous, haptic architecture:

¹⁴ *Images came to me in a dream: I saw a dead tree with desiccated bark and as I watched, the cracks and hollows filled with insects and larvae. Birds began feeding and breeding until the whole tree was a singing mass of fluttering creatures.* Discussed in Lim, L. (2012) ‘sympathetic error’, *fragile architecture*. Blogpost online: [accessed 10/2/13 <http://lizalimcomposer.wordpress.com/2012/12/13/sympathetic-error-fragile-architecture/>]

¹⁵ Pallasmaa, J. (2000) *Hapticity and Time: Notes on Fragile Architecture*. [accessed online 10/3/19, <http://iris.nyit.edu/~rcody/Thesis/Readings/Pallasmaa%20-%20Hapticity%20and%20Time.pdf>], p.8

Imperfection is in some sort essential to all that we know of life. It is the sign of life in a mortal body, that is to say, of a state of process and change. Nothing that lives is, or can be, rigidly perfect; part of it is decaying, part nascent... And in all things that live there are certain irregularities and deficiencies, which are not only signs of life but sources of beauty.¹⁶

Ruskin's description which recognises the beauty of imperfection and irregularity as signs of life could well be applied to a mycelial system – one thinks of the role of fungi in processes of decay as well as renewal and even bio-remediation (removing pollutants from an environment).

This form of mycelial 'aliveness' is characterized by change or metamorphosis, by heterogeneity and a type of diffuse interconnection between what seem to be quite different categories of materials. In my collaboration with Alban we prioritized an engagement with the heterogeneous qualities of sonic materials, as opposed to the homogenizing impulse of 'classical' instrumental virtuosity. A different manner of virtuosity ensues as the performer negotiates more unfamiliar combinations of touch and breath to coax out a result. Close listening to so-called 'imperfections' where sounds catch, distort, break and breathe guides a sensual process of creating a music which has the fragile metamorphosing architecture of dream states.

The musical world of *Axis Mundi* enmeshes aspects of my being, my dream states and sensibilities as a composer with Alban Wesly's being, performative history, and sensitivities to and imagination of musical culture. It is a world of multiply intertwining threads that have become activated through a collaborative proximity or attunement. In this ecological view of creative distribution, the boundaries between people, roles, tools and notations become more permeable; aspects of any level of the functioning of these things can communicate in very subtle and unexpected ways. Fragile sonic materials are allied with fragile working processes in which the definition of both 'solutions' and 'failures' are somewhat blurred as materials are taken up, partially discarded and partially recycled.

The understanding of creative activity and creative ownership is also affected in this way of working. The creative 'DNA' of the performer is an intimate part of the compositional work just as the compositional work becomes part of the life-history of the performer's technical apparatus and musical functioning. Whilst the notated score

¹⁶ Pallasmaa, J. (2000), p. 8.

still gives a certain creative primacy to the composer, albeit with acknowledgements to the performer in the working process, the work in performance 'belongs' to the musician in a myriad subtle and obvious ways – the music is quite strikingly made out of the 'matter' of the performer's world in the wider sense.

Rather than speaking about a performer-composer collaboration in which the structure of creative exchange is apportioned or pre-determined via a role (performer offers techniques; composer acts upon these to make a piece), a mycelial model points to a view of collaboration as the current that carries the participants into an intertwining world of practice in which each weaves together information from a whole host of sources making different components, or the nutrients of insights and ideas, available to each other in new ways.

Liza Lim

10 March 2013