

University of East London

Submission to the Lambert review of Business-University Collaboration

Introduction

This submission to the Lambert Review is from:

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Richard Wheeler has both an HE knowledge transfer management and commercial management background. He has led the great majority of the implementation work described below, moving from prior concept development to the generation of a wide range of business-facing activity. John Lock has developed much of UEL's third leg thinking, sourced much funding for TGTC projects and with Richard undertakes strategic liaison with key partners such as LDA and Thames Gateway Strategic Executive (ODPM). The submission firstly reviews how TGTC was set up and how it is now working (RW). It then draws a number of conclusions from this experience which may be of value to the review (JL).

In responding to the Review, this submission presents how we have gone about setting up a new knowledge transfer operation, targeting business in the east of London (mainly SMEs), from a very limited base of prior activity. Key focii are knowledge transfer in a regeneration context and targeting a specific geographical area. We hope it provides a useful comparator for the Review and would be happy to provide further input.

1. Background

In 1989, from the perspective of productive and income-generating work with business, the polytechnic shortly to become the University of East London (UEL) at the point of separation from local government control inherited a position that might broadly be summarised thus:

- No high quality building
- No discrete business liaison staff capacity
- No track record of local technology transfer or support for innovation
- No track record of business start-up
- No picture of work with business and poor corporate communications to business
- Extensive legacy of under-investment in technology and equipment
- No analysis of our economic role in our sub-region
- No management information about work with business
- No institutional development plans for working with business
- No active support for staff enterprise
- Little income derived from work with business.

UEL was a strong teaching institution, with a proven commitment to access, but placing less emphasis on development of research and or a commensurate economic development role. Research quality existed, but in isolation from business except where individual academics

generated projects. In consequence, UEL was not taken seriously as a knowledge transfer agency. The major exceptions to this were a longstanding educational programme relationship with the Ford Motor Company and projects within some departments generated outside of any programme of institutional support.

2. Turning Point

The Government's decision in 1996 to commit £7.8 million from the Single Regeneration Budget (SRB) Challenge Fund to the Thames Gateway Technology Centre (TGTC) put in place the first element of the financing for Phase I of UEL's new Docklands Campus. This generated capital leverage of £10.9m on the TGTC and £32.6m on the campus as a whole., with £2m loan finance from the Clydesdale Bank to establish the Royal Docks Business Centre (RDBC) including business incubation units. The TGTC concept also attracted \$0.5m from the Ford Foundation.

There were particular aspects to the development process that were set in train as a result:

- It was justified by a) an analysis of the regeneration needs of East London, both economically and in relation to local residents — the population from which UEL has drawn the majority of its students, b) a description of how higher education expertise could play a transforming role in local prospects if organised appropriately — recognising that such a transformation could in turn assist UEL to manage its own transformation.
- Staffing, equipment and related development costs were very largely generated by external fund raising through recourse to UK/European regeneration programmes.
- The nature of this funding placed an obligation on UEL, through the TGTC, to satisfy external development outcomes, then to manage an exit strategy from the funding stream, and then to secure direct benefit for UEL. These development outcomes include jobs created, business start-ups, training weeks delivered, collaborative projects with business— they are demanding and compulsory.
- The development strategy envisaged a 10+ year process, firstly establishing the TGTC as a stable operation with a growing reputation, then developing specialist roles and capacities, then securing a major economic role and generating significant income. The TGTC is currently in transition from the first to the second of these three phases. We are cognisant therefore that, while we believe that we have made real and significant strides, according to our own analysis we have further progress to make.

3. The Thames Gateway Technology Centre

The TGTC has grown into a successful knowledge transfer centre for the Thames Gateway sub region. The TGTC provides a professional and accessible interface between our university and the business community, as well as providing a wide-ranging project management service. It has done this through the development of a coherent and sustainable portfolio of initiatives. Each initiative has synergy with others and provides a strategic contribution to the development of 3rd leg funding for our university. At the same time, each contributes to local regeneration and improves the competitiveness of local, regional and national SMEs and larger organisations.

The TGTC's aim is to develop the means for academics, other staff and students to work with employers to mutual benefit. These benefits include: knowledge of the skills required in the market place leading to curriculum development; enhanced teaching credibility and university

reputation; improved student employability and recruitment; more opportunities for consultancy and contract research; income generation; local regeneration and job creation.

TGTC operates as UEL's core of knowledge transfer expertise, growing internal and external partnerships to facilitate knowledge transfer. An operational portfolio of projects and services now exists. The brand created to badge this range of projects is 'Knowledge Dock'. Knowledge Dock presents a diverse and growing set of expert centres, services, facilities and networks. TGTC manages Knowledge Dock and most but not all of the expert centres, either directly or in collaboration with academic staff.

The theme driving the 'expert centre' concept, which has evolved with experience of working with small business, is that most smaller companies cannot afford the kinds of investment in R&D and the technologies used in R&D that corporates routinely procure. However, if an expert host institution makes facilities available (eg the Mimaki textile printer which Fabric Print and Design Bureau [FABPAD] has, see below) and the expertise to operate them, then small businesses and individual entrepreneurs can use them at a commercial but affordable rate. Hence, members of Mazorca's network of designers and makers (see Knowledge Dock Network below) can make use of FABPAD's leading edge design and print facilities – for prototyping, on a bureau basis, for training – and achieve a higher quality of product with faster time to market. This can be supported by UEL academic expertise (FABPAD is managed by a former student, as is the Product Design Lab, see below) and students can make use of it for their projects so they gain experience of working in commercial standard environment.

TGTC has supported the following kinds of output, in order of volume:

- Businesses advised of help we (or another partner) can offer
- Projects with business tackling a problem of whatever kind faced by the business
- Students given real life employability experience
- Training of whatever kind for business staff
- Business start-ups and jobs created
- IPR exploited.

3. Knowledge Dock

The Knowledge Dock portfolio (largely managed by TGTC) at present encompasses the following:

- Knowledge Dock Network
- Royal Docks Business Centre
- TCS Centre
- Enterprise Bureau operating the Enterprise Associates Programme
- 1-2-3 Programme (environmental audit expert centre)
- Pipeline Technology Centre
- Manufactured Aggregates Research Centre
- TLMH (multimedia and games expert centre)
- Product Design Lab
- Fabric, Print and Design Bureau
- GIS Centre
- Thames Gateway Manufacturing Centre
- East London Inventors Club
- SMART Centre
- East London STEP Agency

- Kane Thompson Knowledge Forum
- London Enterprise 2003

Other centres are in development at the moment

- Network Lab (using HEFCE NTI programme funds)
- SME Lab (ditto)
- Simulation Lab (partnership with Rockwell Automation using ERDF monies)
- Scanning Electron Microscopy Centre (equpt. externally funded)
- Games Lab
- Sustainability Technologies Centre
- Enterprise and Entrepreneurship Centre.

The last three are under discussion with London Development Agency as part of UEL's plans for the next phase of Docklands Campus development.

There are also discussions in hand with academic schools to reposition internal facilities to be more business facing, eg PCB Design Lab in the School of Computing & Technology.

Knowledge Dock Network

The Knowledge Dock Network offers member organisations the opportunity to promote their products and services as well as find business partners and specialists. It does this by providing a business support and communication network via the Internet as well as opportunities for networking face to face.

Members of the Knowledge Dock Network have direct access to a web-site www.knowledgedock.com where they can upload their own press articles and services, job vacancies and events. There is a Technology Exchange where members can promote new technologies or specialist skills and identify potential commercialisation partners. There is also a Business Support Zone that provides general business support and learning opportunities on-line.

The on-line networking activity is supported by a series of face to face networking opportunities, including business breakfasts and topical seminars.

National and international networking opportunities exist for members and partners through the extensive global network of contacts that the Thames Gateway Technology Centre has developed as part of the Knowledge Dock operation.

- Malaysia Multimedia Super Corridor, Kuala Lumpur
- Thailand's Software Park, Nonthaburi
- Port of Technology, Philadelphia
- Ministry of Science and Technology, Moscow
- Cambridge Network
- Wales for Innovation
- Go4Gain (Birmingham)
- Munich Network, Germany
- IP City, Ipswich
- Suffolk Network
- OxIT Network (Oxford)
- Leuven Inc, Belgium
- Sciencepark Net (Warwick)

- UCL Business Systems Engineering (London)
- Taiwan Britain Business Council

This is in addition to many local networking opportunities that can be arranged through organisations such as:

- Benefits 4 Business (a web-enabled contact-sharing 'club' for business support agencies operating in outer East London including Business Link)
- London Chamber of Commerce & Industry/East London Chamber
- Borough chambers of commerce
- Partnership for Profit
- Mazorca Hidden Art (London's largest network of designers and makers)
- Knowledge College
- London Fashion Forum
- Knowledge Bridge
- London E-Business Club
- Docklands Business Club
- East London Business Alliance
- Canning Town Business Partnership.

Royal Docks Business Centre

The RDBC was funded by a commercial loan as part of the phase one Docklands Campus development. It was opened in September 1999. The TGTC has direct management responsibility for 16 business units of varying sizes, allowing the start-up of micro businesses and SMEs, as well as providing internal move-on space as and when suitable units become vacant. We currently have 18 tenants occupying a total of 7,681 sq ft. This is a profitable incubation centre and receives no subsidy from our university whilst at the same time paying rent and management fees.

TCS Centre

TCS is now regarded as DTI's premier knowledge transfer programme. We have established a successful Centre, recognised by the TTI Ltd (formerly Teaching Company Directorate). From a base of no TCSs, we have gained 6 new schemes, including the first known TCS between a local East London SME and an East London university. We have targets to grow the number of TCSs to 30 by 2004/05.

Enterprise Associates Programme and Enterprise Bureau

In essence, these are mini 'TCS' programmes, but are 12 weeks long instead of 2/3years. With supervision of the students (Enterprise Associates) from both academic and host supervisors, this is not only easier for local SMEs to cope with, but also allows the cultural change necessary for TCS development to occur both externally and internally. We expect a high proportion to lead to new TCSs.

A pilot was successful and continuation funding has been gained from the Heart of Thames Gateway SRB programme and more recently the London Development Agency and ERDF (both subject to contract). The latter funding will facilitate collaboration between UEL, Brunel, Greenwich, Queen Mary and London Metropolitan Universities, Business Link for London, East London Business Alliance, Gateway to Industry and Made in London. There will be 83 Enterprise Associates projects in total plus local networks. Such collaboration has been unusual in London.

A critical element in the establishment of EB and EA programme was the realisation that students frequently possess enough expertise to solve a business problem if supervised appropriately. They are interested in projects, for both CV and money reasons (virtually all UEL students work, even if doing full time degrees), and they will work to SME timescales (ie now!) whereas academic staff may not have the flexibility or interest to do this. The Associates concept has been used in other projects, eg 'creative associates' in TLMH and will be developed further.

1-2-3

The London Environment Centre at London Metropolitan University leads a partnership with UEL and Business Link, among others, to deliver environmental audit services to business. This is externally funded by SRB and ERDF.

Pipeline Technology Centre

The PTC was transferred to the management of the TGTC on the 1st August 2001. The Centre provides a valuable commercial and research centre to UEL. It is one of the country's leading test centre for plastic and metal pipes that carry clean/foul water, gas, air or other materials. It can test for durability and analyse or ascertain the reasons for corrosion, fractures and leaks.

In addition to the income, the PTC also provides a very valuable resource for PhD students and undergraduates.

Manufactured Aggregates Research Centre

This unique project is funded under the ENTRUST Landfill Tax Credit Scheme with a £400,000 grant from the RMC Environment Fund. It provides a national facility available to all those intending to manufacture aggregates. The Pilot Plant is situated at the Manufactured Aggregate Research Centre (MARC), University of East London (managed by Darryl Newport). The pilot plant has been designed and manufactured using state-of-the-art technology and is an upgrade of a pilot-scale plant previously operated at Tilbury by RTAL Limited for the development of manufactured aggregates. The pilot plant has taken 12 months to commission, and is now fully operational.

TLMH/Media Ventures

Production of lens-based and digital media, such as film, radio broadcast, and web-sites together with games software design. TLMH has SRB, ERDF and HEIF monies. It has led to significantly more generation of business and income to UEL.

Product Design Lab

Consultancy services for product design related activities, including:

- 2D/3D CAD modelling
- Rapid Prototyping
- 3D Scanning & Reverse Engineering
- End-user focused and ergonomic design
- Finite Element Analysis
- Training.

PDL is linked to UEL's Industrial Design Centre which has worked extensively with business.

Fabric Print & Design Bureau (FABPAD)

Print and Textile Design based activities, including:

- Printing on fabric or paper up to 1½ metres wide
- Posters, exhibition panels and advertising banners
- Design service
- Training Suite
- Short courses in design-based software

GIS Centre

Though not managed by TGTC, this has a similar background to Pipeline Technology Centre – an area of expertise which teaching-based income was no longer sustaining and for which insufficient mainstream research income existed. The Centre now works with clients such as Metropolitan Police and major corporates.

Thames Gateway Manufacturing Centre

TGMC was set up by the TGTC as a contract manufacturing venture. It operates as an independent commercial company, but also works with UEL. For example, a project was recently undertaken for a business customer where printed circuit board design experts in Computing & Technology undertook work for a project managed through Product Design Lab and TGMC manufactured the electronics for the prototype.

East London Inventors Club

This TGTC initiative was launched in March 2003 by Trevor Baylis and Bola Olabisi and attracted over 93 delegates. There was extensive local and national press coverage together with a satellite TV interview. We have subsequently had 80 applications for membership, drawn from SMEs and the community in the region, academics, undergraduates and post-graduates. It will provide a club for inventors and entrepreneurs with regular monthly meetings, newsletter, business support, training and access to UEL facilities. This has the support of the Small Business Service, Business Link 4 London, the East London Business Alliance and the Trevor Baylis Foundation. We will also be working with Kingston University to develop courses in entrepreneurship.

SMART Centre

Linking primarily into the Inventors Club, the TGTC will be facilitating the achievement of DTI SMART awards to members from the university and the regional community who wish to develop their IPR. This work will involve liaising with Business Link 4 London to filter candidates, providing advice and support, and facilitating the creation of virtual companies to attract relevant expertise. This is an important means of generating entrepreneurship, improving business competitiveness, contributing to the business birth-rate as well as bringing R & D funding into the university.

East London STEP Agency

We have recently won funding from Business Link 4 London for the contract to provide 20 programmes in East London. STEP, Enterprise Bureau and TCS together are intended to comprise a suite of student-based project services, with business collaborations operating at

various timescales from two months to two years. The aim is to provide a kind of knowledge transfer conveyor belt whereby companies can move from low commitment, small resource (£5k or less), low risk projects (in effect, proof of product for working with a university) to bigger more ambitious schemes (£100k). It will take some years to evolve this approach to the point where it is robust and generating a significant scale of progression of companies, but we believe it has considerable potential as it gives companies a choice of starting point and a means of growing a relationship more at their own pace. It should be noted that the approach, we know, demands considerable relationship managements skills of TGTC staff as they have to put together and own projects taking into account variable flows of company interest, student availability and academic availability.

The Kane Thompson Knowledge Forum

This is a new proposal that links the TGTC/UEL with the Information Systems Research Centre (ISRC) at the Merrick School of Business at the University of Baltimore.

The Kane - Thompson Forum provides a structured partnership and a platform for business and educational entities to discuss critical issues in the use of information technology (IT). Through a programme of seminars and roundtable discussions, the Forum seeks to encourage discussion among Chief Executives and corporate IT decision-makers on topics of strategic, organisational, and technological importance. The Forum will benefit the University by developing a strategic alliance with member companies. In addition, the alliance allows faculty and students to participate in actual cases of current IT utilisation. A further benefit would be an international partnership with the University of Baltimore for knowledge exchange.

The model for the Forum was established at the ISRC in Baltimore five years ago. It is now a Centre of Excellence, bringing together business and government executives to: interact with academia on essential management and technology issues to business; education and training for major corporations; and the development of graduates in the business arena. The need for the Forum in the UK is dramatised by the changing business climate and the major role that is played by information technology in any business. The importance for universities to be involved in this trend can bring far-reaching benefits to the faculty and students.

Initially, four major areas of activity would launch the Forum:

Executive Seminars: - focused on providing an in-depth overview of significant managerial and technology challenges facing Information Systems executives;

Roundtable Discussions: - for Chief Executives and Chief Information Officers to exchange information on critical issues facing them in meeting the needs of their organisations where IT does or could play a role.

Technology Sessions: - directed to particular technological issues where managerial staff can exchange development and implementation details; e.g. wireless issues.

Research Development: - where discussions identify projects, which would be carried out by the university in whole or part, as appropriate.

Corporate membership, sponsorship, and outside funding would provide financial support, for launching the Forum and for the participation of academics and students. Participation in research and other projects, generated by the needs of the members and sponsors, would provide ongoing funding.

The London Enterprise 2003

The TGTC was approached by the organisers of VentureFest in Oxford to help to organise a new annual event. This will be the first 2-day conference and exhibition to showcase the opportunities, funding and resources in London and the Thames Gateway that are available to all sizes of business. Hosted by UEL and the TGTC, it will be sponsorship-led but free to visitors (500 per day expected). London HEIs will be encouraged to participate.

5. Some Conclusions

The above describes what we are doing on the basis of the work of the last five or so years. We believe we have been successful in generating a new and evolving set of relationships between our University and local business which have the potential to produce considerable economic benefit in the future. We believe we have ‘proof of product’ and the basis of transition to a major part of the ‘innovation infrastructure’ working in and for London. We acknowledge we are not yet at the point where we can say ‘this has worked for 10-15 years and has brought about substantial transformation’. However, that is our ambition. The conclusions that follow here are less aimed at describing our track record to date and more at iterating our experience of working through particular funding systems. The intention is to illustrate problems and challenges for policy, rather than to blow our trumpet, as we feel that a ‘warts and all’ description may be more useful to the Review.

TGTC and its Knowledge Dock portfolio of expert centres, networks and services were established entirely with external funds, most of them sourced from outside the HE/research economy. The serendipity, as it were, of UEL’s location in an area with significant access to regeneration monies was critical to setting up a business-facing knowledge transfer operation. In many other locations, for an institution like UEL with little cash to invest in non-mainstream academic activity, this would not have occurred. In a sense, regeneration cash represented an asset base we could bid into. Our view is that without such an asset base, whether in institutional ownership or brought about by some other means, it would be extremely difficult to establish a knowledge transfer operation of any scale or impact.

Our University’s formal commitment to the regeneration of its area – both to contribute to and gain from renewal – was the initial primary driver as this route could be used to fund knowledge transfer. UEL lacked a sufficient base of easily commercialisable IPR or existing immediate business potential to set up a conventional HE industrial liaison unit and focus on actions essentially premised on benefit to our University. Further differentiators resulted from the regeneration focus, ie the commitment to see economic benefit to our region. The regeneration route prompted decisions to work through a diversity of local and other partnerships, pulling in expertise where we did not possess it rather than do nothing and referring enquiries on where we could not assist. We saw both as achieving a win-win, ie an outcome for the area or customer and reputation-building for UEL. We have worked with this ethos for five years now, with good results in terms of attracting resources to take forward new developments.

Further, we were aware that UEL’s research base, and likely income from research council/EU RTD Framework monies, was unlikely to be such that it could support extensive knowledge transfer processes as a by-product. If the comparative flexibilities of that kind of funding (eg the kinds of overhead which can be carried), and of funding from corporates for more open-ended research, were realistically not going to be available, we had to find alternative sources. Regeneration and general economic development funds, given our location, provided an answer. It also provided a business focus, ie towards small and medium sized enterprises (SMEs), the

majority of whom conventionally invest little in knowledge transfer relationships with HE. This presented two challenges: delivery to a market unfamiliar with our product and sustainability through income generation from that market or further public investment. Our experience to date suggests the first is achievable, but time-consuming, while the second is likely to be addressed through a mixed economy of income generation and continued public investment if we are to address more of the SME market.

We closely examined other knowledge transfer models, particularly Warwick Manufacturing Group and the University of Twente in the Netherlands. These two examples strongly influenced our view that establishing a successful knowledge transfer operation was a longterm venture and required both extensive external networking and a strongly entrepreneurial approach. Networking is essential because knowledge transfer is not a simple, linear, programmatic process – much bread may have to be thrown onto the waters to generate partnerships with business. Entrepreneurship is essential, partly because it is in itself a selling point to business and partly to support income generation. Hence, a standing intermediary set-up such as the TGTC was necessary. It wouldn't emerge from academic schools of its own volition, other than the actions of individuals and small groups, because the dedicated resource and time did not exist for this to happen. This isn't to suggest that individual academic excellence does not exist, rather that it is difficult for individuals to attract working capital to set up knowledge transfer ventures. In practice, we believe that a universities in general possess rather more research excellence than lower RAE scores for schools suggest – what is missing is the critical mass of action to support and exploit pockets of expertise.

The use of regeneration funding – a wide variety and scale of grant-aid from a range of sources – meant that knowledge transfer actions operated according to an approximate three stage model:

- obtain the external investment which would not otherwise have occurred and use the resource that the investment pays for to deliver the project's external accountabilities
- ramp up income generation to cover ongoing core costs so that the project is viable beyond the period of external investment
- embed successful projects in mainstream academic and commercial activity as part of continuous development of that mainstream activity.

We have made this approach work to date; however, it is exceptionally demanding on management and staff. Firstly, there are few people in the market with the range of technology expertise, business support skills and funding accountability knowledge necessary, so this approach creates its own steep learning curve which unavoidably exerts stress on the knowledge transfer process. It also opens up additional risks, unrelated to the actual process of knowledge transfer. For example, a project may be delayed for a good reason, but then fall outside of a particular span of time. From the business perspective, the project still occurs and delivers a result while from the funding point of view an output was not generated because it did not occur by a certain deadline. That funding point of view exerts an impact across every funding stream we have used, whether directly purposed to knowledge transfer (LDA) or not (SRB). Its effect is to divert attention from, say, working with companies where a big result is possible but not in a short timescale to businesses which can offer project opportunities compliant with funding deadlines – even if less benefit may result.

Secondly, without continuing public investment, it has high dependency on being able to charge for knowledge transfer services at a rate of build-up driven by funding replacement. This undoubtedly has a positive effect in that it promotes a business-like focus on income generation and cost minimisation. However, notwithstanding this, evidence to date suggests this is a tough proposition. Further, an obvious negative effect would be that there is no buffer were events such

as a downturn in the business cycle to affect the ability to generate income. The outcome then is that the public sector invests in creating a project which becomes unsustainable because of events outside our control. A more patient and strategic form of investment than 2-3 year funding timelines could offset this, providing a core which is justified by aiming at the longterm proposition of impacting on the SME market.

The nature of our model is that there is a strong focus on accountabilities facing into the public sector to be maintained while aiming to face out to business customers. Whilst possible – because we have done it! – this is a time-consuming and complicated way of setting up knowledge transfer operations. It cannot simply be business-led and operate at business timescales, because it works within a quarterly reporting framework and annualised accounting and there is a constant need to generate ‘match funding’. This means, for example, that the pace of resource commitment (public sector demand) and business development need (private sector requirement) are not always in synch. Throw in a few more variables, eg availability of staff or students to support projects, and it is clear that more tensions will exist continually than would ideally be the case. We are conscious that policy has paid more attention to date to funding system efficiencies than to effectiveness in the sense of ‘what works for business’.

We have been able to build HEFCE (HEROBAC, HERO, HEIF) and LDA grant-aid into this model. LDA’s regime, required by DTI and, ultimately, the Treasury, does not diminish the complication, however, nor are its accountability requirements any less onerous. It operates in the same way as other funds, ie it requires output delivery to be predicted within a framework of assessment driven not least by the funder hitting its own accountabilities upwards. These obviously do not exclude business outcomes, but funders’ own targets are not driven by local assessment of actual business need which makes it difficult for local funded bodies to operate from the premise of business needs alone. HEFCE has the lightest touch of any of the funders whose resources we have used, which is perhaps to be expected as it will have the greatest understanding of HE operations. However, like all the other funds we have accessed, HEFCE’s is limited term and project based. Despite all the public policy emphasis on third leg activity since the first competitiveness white paper, there is no core strand of mainstream funding from anywhere to support knowledge transfer between HE and business.

This is important for two broad reasons:

- In areas like the Thames Gateway, one major reason for economic decline and a major necessary factor in renewal, is the (non)existence of sufficient business-facing ‘innovation infrastructure’. Such infrastructure is not self-catalysing, nor will it be established quickly at the scale where major gains are to be realised, nor has the funding existed for such scale of activity to occur. The potential for it exists, in public sector terms, more in the HE system than anywhere else – there are over ten HEIs serving the Gateway area – but historically not the policy understanding, will or resource (or even HEI commitment). Regeneration policy has in the past failed to understand the central importance of innovation and knowledge transfer to economic renewal; HE, research and competitiveness policy has embraced little or no spatial understanding of the different characters and needs of different areas. So, much of that potential to create innovation infrastructure, net of a succession of limited life projects, has fallen between two stools.
- Mainstream funding is required to make it work. There are exceptions, like Warwick Manufacturing Group being driven by an unusual individual who was able to tap into a major opportunity, ie automotive OEMs at a key point of industry transition, and create something self-financing (though WMG has used public monies as well). However, it is a little unlikely that every HEI in the UK will generate its own WMG. And, even if they

did, this would still bypass the great majority of smaller UK companies who cannot afford the kind of investment in R&D that WMG has needed to prosper and return benefits to its clients. Doing knowledge transfer with SMEs is a time-consuming activity which may bring little financial reward until well into a relationship, eg until a TCS is secured, for example. But, again, TCS is public sector cash catalysing limited business investment. Also, any national strategy premised on not working with SMEs because it is not cost-effective, say, avoids the problem defined by DTI of the need to impact on the performance of the 'long tail' of less competitive, less innovative, less productive companies.

Hence, there is a form of persistent market failure, if it can be so described, which has existed both spatially in parts of the UK and generally in respect of much smaller business, which policy has attempted to tackle through:

- A succession of limited-life funds whose focii and criteria shift every few years and whose accountabilities in general tend to become more not less complicated.
- A plethora of sources of grant aid in some areas, far fewer in others, which can be used successfully for knowledge transfer but whose accountabilities at best 'tax' that activity in terms of extensive due process and at worst actively impede or frustrate it.
- A consequent approach to supporting knowledge transfer which companies find incomprehensible and which leads to projects making competing demands on them to secure outputs (the Benefits4Business project referred to above is an attempt to mitigate this in one part of East London).

It would be wrong to say that this can't work and doesn't produce benefits. It can, but it could work a lot better. TCS, for example, has operated through the dedicated TTI Ltd agency for nearly thirty years with continuing DTI support and minimal interference in operation – and TCS is recognised as perhaps the most successful policy-driven instrument of knowledge transfer to SMEs in the UK. From a company point of view, subject to compliance and a worthwhile project, TCS is available when desired. From an HE point of view, a sufficient rolling portfolio of TCS represents an income stream which can support a core of staff to operate knowledge transfer with no other criterion than achieving successful TCS knowledge transfer outcomes. This is different to moving from this project funded by this fund, to that project funded by that fund (let alone trying to create one project from several funds), while continuing to try and maintain a constant identity and service to business. Each project will likely enough have its own value, but whether those values add up to sustained cumulative outcomes and a different scale of innovation infrastructure after time is a different matter.

A further dimension is the capacity to provide incentives to academic staff. Academe has ceased to be a well-paid profession while simultaneously placing more demands on staff as the unit of resource in HE per student has almost halved over the last 20 years. TCS funds academic supervision of projects and has in it the flexibility to make the time commitment manageable. More prescriptive regimes are harder to operate to offer attractive opportunities, particularly those with substantial audit trail requirements.

We would not want to be seen as ungrateful for the monies – and trust – funders including the LDA have invested in us! And, equally, we absolutely acknowledge the need for proven probity in use of public funds. However, it is reasonable to conclude that few of the funding streams which we have used to support development of innovation infrastructure and longterm knowledge transfer actions have been designed specifically to support these purposes or operate with a

ground-up ethos from companies back to the public purse rather than the other way round. The latter, in our view, is directly implied by any focus on innovation because, by definition, innovation is not the repeated provision of a broadly uniform service (where a degree of prescription is reasonable and viable) but a development activity whose parameters shift.

The issue for Government, we believe, is to enable increased interaction between HE and business which is driven by demands that HE-company relationships identify directly and propose to meet using local or very flexible solutions (eg TCS) that need not be further referenced to detailed funding criteria stemming from continually shifting policy. The aim should be to enable the patient build up of working relationships and, in particular, extended support to business which is enabled by trust. Trust can't be prescribed and it can't be regimented easily to fit a short-life funding framework. Yet it is what is most lacking in HE-business relationships for the simple reason that most businesses have little knowledge of what they could gain from working with HE, let alone how to go about instigating it, because there has never been any dedicated, structured, sustained on-the-ground approach to bringing this about. Trust is missing because the basic knowledge and capacity to initiate relationships is missing, not for any more negative reason.

This applies to business support agencies. Business Link, for example, is in terms of the ratio of on the ground staff to numbers of businesses a small operation. It does not possess the resource, let alone the liberty from Government, to invest a lot of time in learning about HEIs in local areas to be able to sell their expertise to their clients. On the other side, HEIs are not funded to liaise and communicate in common terms which fit the needs of Business Link staff! Change and joint development does take place, and we have good working relationships with BL4L staff. It is just that collaborative working moves at a fairly slow pace because no-one is funded to engage in a planned sequence of preparatory actions which would engage a series of players in a commonly-understood process prior to launching new strands of knowledge transfer action.

This leads to our last point. There is high level general policy, eg CWPs and HE white paper. There are multiple funding criteria regimes. There are rafts of strategies produced by individual organisations, eg by LDA, because they are required to. There much less deliberate *shared* strategy at the operational level between organisations, only emergent strategy where individuals in organisations are working with each other. This is an effect, at least in part, of a lack of understanding that real transformation in the scope and scale of knowledge transfer would be more likely to be effect in 1-2 decades as opposed to years. That was certainly our lesson from the WMG and Twente examples.

For example, there was no innovation infrastructure in East London when we first started planning a new campus and knowledge transfer activity, net of the East London Small Business Centre, then a very small agency. There is now much more activity, and all five HEIs in the Thames Gateway London area are active locally which they weren't then. However, it is all relatively immature and as an infrastructure scarcely robust – it simply hasn't been there long enough. There is now being developed a concept, potentially fundable by ODPM's Communities Plan Thames Gateway budget line and the proposed Knowledge Exchange Fund, to initiate a step change in this. If the Lambert Review was interested in this concept – still at an 'early days' stage of development – we would be happy to discuss and provide information.

Achieving better integration, in our view, requires acceptance that knowledge transfer can't simply be directed as service delivery might be via the management of a range of delivery units through a performance management framework – increasingly emerging as the national model for public sector governance. There are too many bodies and the demand side is compliant with such an approach only to a limited degree. For example, ill people will positively want to access the

NHS which means that policy is acting on a strong supply-demand relationship. By contrast, knowledge transfer activity is still being developed in a weak supply-demand relationship and intensification can't just be directed, it has to be incentivized at both ends through measures appropriate to both.

By implication, Government will not succeed in increasing knowledge transfer through exerting more control, eg via a hierarchy such as project-HEI-RDA-DTI, which piles accountability on top of accountability and puts companies at the bottom. Rather, a 'less is more' philosophy is required. If that conundrum can be resolved in a way that is acceptable to Government, workable by HEIs and attractive to business then a great deal could be achieved in the next twenty years – locally, sufficient to have a very big impact on the fortunes of the Thames Gateway. If it can't, then adding more and more policy at the national and regional level may make little difference.