



## **OPAALS PROJECT**

Contract n° IST-034824

### **WP11**

#### **Bridging Digital Ecosystems Research to Regional Development and Innovation in the Knowledge Economy**

**The Impact of New IP Legislation on Corporate  
Behaviour, SME Opportunities and Global Markets for  
Protected Innovations  
and  
The Presentation of a Formal Copyright Model**

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|  <p><b>Information Society</b><br/>Technologies</p> | Project funded by the European Community under the "Information Society Technology" Programme |
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**Contract Number:** IST-034824

**Project Acronym:** OPAALS

**Deliverable N°:** 11.12

**Due date:** May 31<sup>st</sup> 2010

**Delivery Date:** September 23<sup>rd</sup> 2010

**Short Description:**

Catalysis was conducted on behalf of OPAALS in the East of England, seeking means to support SMEs via DE introduction to the regional and local authorities and their agencies. The Deliverable identifies factors promulgated in central and regional government policies which are antithetic to SME interests.

The main finding was that the possession of IPRs by powerful corporations is only one weapon in the armoury of that sector. It emerged that the legal development having the greatest impact on the UK SMEs is the proliferation of Public Private Partnerships (PPPs), coupled to procurement rules governing bidding for public sector contracts. We draw the conclusion that the public sector's use of aggregated contracts with major consortia as the supplier partners is the most formidable threat to the aspirations we in OPAALS have for the public sector's mutually supportive interaction with collectivities of SMEs.

The unfortunate result of PPPs has been to *lock-out SMEs* from public sector work. The Deliverable identified both *technological* (interoperability) reasons for exclusion and *contractual* disadvantaging of SMEs and their relegation to a sub-contracting role with loss of contractual benefits. The nature of the current UK local authority procurement process is described and analysed in the Deliverable. In addition, the cluster of effects deleterious to small companies includes the UK fiscal debt, which has trimmed the budgets of the public sector agencies supposed to support the small businesses. Add to this the poor loan terms offered by the banks to SMEs, and we see the weakening of the commercial health of local communities.

The Deliverable ends with a review of problems with end user license agreements (EULAs), which can have deleterious effects on SMEs. An

ontology of copyright - the legal instrument which supports the EULAs - is presented, together with the sentiment that copyright's philosophy must be *ontologically* deconstructed (then reconstructed) before its legislative image can be overhauled with any confidence.

**Author:** Jo Stanley

**Partners contributed:**

**Made available to:** All

#### VERSIONING

| VERSION | DATE       | NAME, ORGANIZATION               |
|---------|------------|----------------------------------|
| 1       | 28/06/2010 | STANLEY, UNIVERSITY OF CAMBRIDGE |
| 2       | 05/07/2010 | STANLEY, UNIVERSITY OF CAMBRIDGE |
| 3       | 20/07/2010 | STANLEY, UNIVERSITY OF CAMBRIDGE |
| 4       | 24/08/2010 | STANLEY, UNIVERSITY OF CAMBRIDGE |
| 5       | 10/09/2010 | STANLEY, UNIVERSITY OF CAMBRIDGE |

#### Quality check

**Internal Reviewers:** Antonella Passani, Maha Shaikh and Pedro Bueso Guillen.

### Dependencies:

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| <p><b>Achievement</b><br/>*</p> | <p>I was hopeful that the Deliverable could <u>align OPAALS sustainability properties</u> with regional interests (1) in the environmental industries that we were told were clustering in Peterborough, with its aspirations to be the Environmental Capital of UK, and (2) The Cambridge Technopole.</p> <p>In Peterborough it transpired the aspirations present a false picture; the true position is not as <i>Opportunity Peterborough</i> advertises. The environmental sector there was found to be insufficiently established to study as a sector. Peterborough yielded poor research information (reasons given) and weak opportunities for catalysis, though some DE introduction was achieved.</p> <p>In Cambridge investment shows a plateau or decline. This has led to chilling even in environmental R&amp;D advances from the research engine of the University and associated Science Park SMEs. The University itself is under financial pressure even in the vital science sector, due to government cuts. DE catalysis in Cambridge was thus sidelined by other worries.</p> <p>What was attempted was DE introduction to the Huntingdon District Council in the hope that it would act as both a saving of resources, and a focal point for propagation to the SMEs via the local SME support agencies. This enterprise was to a certain extent frustrated by the dominance of UK government's centralised policies and hence the inability of the local hubs to make truly <i>local</i> decisions. The knowledge and benefits of a DE approach were however presented, and the Council may well revisit the scheme at a future date.</p> <p>The key finding in this report was not anticipated at the outset of Phase 3. It was <u>the rise of Public Private Partnerships as a means to deliver local goods and services, including ICT</u>. PPPs now dominate public sector procurement notably in ICT (with poor results); the UK has the largest PPP market globally. The confidentiality clauses in PPP contracts exclude the release of valuable information to researchers.</p> <p>The prospects for ICT SMEs in public sector employment are found to be bleak owing to supply of services by huge consortia rather than collectivities of SMEs. Examples are given of such contracts and the shrinkage of the public sector work force, which might have led in OSS solutions, as in municipalities across Europe. Of the traditional SME supports, (1) the RDAs are to be abolished, and (2) Business Link has been reduced to one third its earlier size in the East</p> |
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|                      | <p>of England.</p> <p>The copyright work for the Deliverable (Chapter 3) provides an ontological framework to use as a lens for viewing and assessing proposals for long anticipated reform of copyright legislation (both US and UK), which currently barely reflects or keeps pace with the demands of a modern digital society.</p>   |
| <b>Work Packages</b> | <p><u>For Current and Future Interactions amongst WPs in OPAALS</u></p> <p><u>Joint work</u> was carried out (January through March 2010) by Briscoe (LSE) and Stanley (CAM) to piece together selected technological and legal findings from DBE/OPAALS to present a general reader portrait of the scope of the DE and its possibilities to integrate into the commercial life of the nation. (See <i>The ABC of Digital Business Ecosystems</i>, 2010, published in Communications Law Journal).</p> <p>Within <u>WP 11</u>: A comparison of the UK's experiences with those of for example, Aragon, in the field of <i>Public Private Partnerships</i> (PPPs). A theorisation of a future role for OPAALS-OKS aligned with the localised, self-organising constructs as encouraged by the UK Coalition Government since its election in June 2010.</p> <p><u>WP 12</u>: D 12.12 (governance) and 12.13 (OSS):<br/>OPAALS-OKS should seek influence in a political science developmental progression from the philosophical position expressed in the WP 12 Deliverables.<br/>All UK political parties (governing and opposition), are moving into radically new philosophical positions where communitarian and sustainable elements will be essential.<br/>All the OPAALS goals, concretised in the built DE, should be regarded as potential technological and theoretical inputs to new political thinking, most notably in the promotion of free media, and opposition to any impoverishment of SME prospects.</p> |
| <b>Partners</b>      | Regional (WP11) partners and all DE technology building partners.  |
| <b>Domains</b>       | <ol style="list-style-type: none"> <li>1. Regional SME developments, and regional governance</li> <li>2. Ontology of copyright and assessment of copyright's place as IPR protection of digital objects.</li> </ol>  |
| <b>Targets</b>       | Most important recipients of this knowledge and the knowledge pointed to in this Deliverable are (1) public sector policy makers and administrators. (2) the legal community of IPR researchers.   |
| <b>Publications*</b> | <ul style="list-style-type: none"> <li>➤ Stanley, Jo and Briscoe, Gerard <i>The ABC of Digital Business Ecosystems</i>, Communications Law (2010).</li> <li>➤ Stanley, Jo <i>Invention and Representation: Freedoms and</i></li> </ul>   |

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|   | <i>Ownership in a Time of Intellectual Property Rights.</i><br>Submission of textbook to Edward Elgar. Forthcoming.   |
| <b>PhD Students*</b>                    | Gerard Briscoe worked on the paper (above) shortly after obtaining his PhD. His contribution springs from his DE work for OPAALS.   |
| <b>Outstanding features*</b>            | The copyright section impacts new thinking in the global IPR community. This work has been submitted to Aharonian, G for review in the Internet Patent News.<br>The regional findings will be submitted to the Director of the European Services Strategy Unit for inclusion in the indexes of PPP projects in UK cities, and their outcomes. |
| <b>Disciplinary domains of authors*</b> | Jo Stanley, CAM, is a computer scientist and specialist in IPRs in new technologies. She also has a record of work in the use of computation in Very Small Businesses.  |

*The information marked with an asterisk (\*) is provided in order to address Recommendation n. 4 from the Year 2 review report*



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## Table of Contents

### **Part 1 DE Support for Knowledge Stewardship: Legal Aspects**

#### **Chapter 1: Digital Platforms in Regional and Local Authority Hubs**

1. Introduction: The Fifth Freedom, Digital Platforms and Knowledge Delivery
  - 1.1 Lessons Learned from DE Introduction to European Regional SMEs
2. A Digital Ecosystem Culture to Support the SMEs via Local Authority Hubs
  - 2.1 Procurement of Goods and Services by the Local Authorities
  - 2.2 The Public Provisioning of Knowledge Platforms
  - 2.3 Mappings between the Local Authorities, their Agencies and the SMEs
  - 2.4 Conclusion from the Tracking of Inter-agency Links
3. Changes in Local Authorities and their Procurement Policies over the Last Decade
  - 3.1 The Structure of Local Government
  - 3.2 Local Authority Funding Sources
4. Strategies the Public Sector Might Adopt in ICT Provisioning
  - 4.1 Early History of Procurement of Goods and Services in the Public Sector
  - 4.2 Recent History of Local Authority Procurement
  - 4.3 Procurement and Aggregation by Local Authorities and their Agency Support
    - 4.3.1 Aggregation or Coordination of Demand
    - 4.3.2 Aggregation of Supply
  - 4.4 The Role of Private Finance Initiatives in ICT Procurement
5. The Buying Power of the Public Sector
  - 5.1 The Transaction Costs of Public Sector Procurement
  - 5.2 Instances Where Barriers are erected against SMEs by Procurement Policies
  - 5.3 Conclusion on Current Public Sector Procurement Policy

#### **Chapter 2: Two Sectors Failed by Current ICT Provisioning Policy**

0. Background: Current Financial Crisis Conditions
1. The East of England; A Regional Study in Knowledge and Skills Stewardship
  - 1.1 Instance 1: A Broad ICT Project Governance Framework Proposal to HDC
    - 1.1.1 Methodology and Stimulus to Develop the Study
    - 1.1.2 The Team's Approach to the Project
    - 1.1.3 Content of the Advice for Sustainable ICT Provision
    - 1.1.4 Power in the Market
    - 1.1.5 The Response to the Suggested Framework from the Scrutiny Panel
    - 1.1.6 The Bedfordshire PFI Case: a Warning
  - 1.2 Instance 2: Platforms for Consumption of Knowledge in the Schools Sector
    - 1.2.0 The Financialisation and Commodification of Learning
    - 1.2.1 The Costs of ICT Software Platforms for School Learning Activities
    - 1.2.2 Content Interoperability in a Learning Environment; SME Exclusion
    - 1.2.3 Contracts for Schools
    - 1.2.4 The Building Schools for the Future (BSF) Programme
    - 1.2.5 The Public Sector Structure and Context of the LEP
    - 1.2.6 The Contractual Structure of the LEP
    - 1.2.7 The Implications of the LEP
  - 1.3 Instance 3: Local Authority ICT Provision in the Administrative Hubs

- 1.3.1 Peterborough Unitary Authority, the Freedom of Information Act Releases
  - 1.3.2 Cambridge County Council Releases under the Freedom of Information Act
  - 1.3.3 Huntingdon District Council Freedom of Information Responses to Requests
- 2. Conclusions Drawn from the Regional Study
  - C.1 Practicalities and Pragmatics: Why OSS are Less Important than Open Standards
  - C.2 The Role of OSS in the Public Sector in General
  - C.3 Public Sector Policy Advice on the Use of OSS in General
- 3. Conclusions to Part 1

## **Part 2 The Protection of Digital Objects by Copyright: History, Anomalies and a New Ontology**

### Chapter 3: The Ontology of Copyright; Damned Bad Metaphysics

#### Introduction

- 1. Scope and Similarity
- 2. A Question of Levels: The Ideas Expression Dichotomy
- 3. The Tangibility of an Expression
- 4. Should a Computer Program be Protectable by Copyright at All?
- 5. A Question of Parts: Shards of Protectable Text
- 6. A Model for the Abstract Objects of Copyright Law
  - 6.1 Type and Token Theory
  - 6.2 Works of Language Modelled as the Type 'Representation'
  - 6.3 User's Use and Taker's Use of Expressions
  - 6.4 Abstract Data Type *Representation* and its Behaviour
- 7. The Similarity Determination in Copyright Law
- 8. Copyright and Technology in the Courts
  - 8.1 *Computer Associates Inc. v Altai*
  - 8.2 Conclusion on the Technological Challenge for the Courts
- 9. Return to Ontological Considerations:
  - 9.1 Loss of Numerical Identity Amongst Copyright Objects
  - 9.2 Copyright's Privileged Operations
- 10. The Ideas/Expression Dichotomy Revisited
  - 10.1 The Disconnect between Levels in a Work
  - 10.2 The Body-less Mummy Metaphor
- 11. Merger
- 12. Words and Devices
- 13. Languages: Biological and Natural

#### Conclusion to Part 2

### **Part 3 The Retreat of the State**

#### **References to Part 1**

#### **References to Part 2**

#### **Amendments to the DOW**



# **The Impact of New IP Legislation on Corporate Behaviour, SME Opportunities and Global Markets for Protected Innovations**

## **and**

### **The Presentation of a Formal Copyright Model**

#### **Introduction: Regional Environment Conditions Which Directed the Path of this Study**

As the regional study developed it became clear that although the IPR-based software licensing system presents a drain on the resources of SMEs and confirmed the desirability of OSS platforms, this aspect fades to the level of 'small arms support' by contrast to the heavy artillery of escalating numbers of long-term contracts ('partnerships') for delivery of public services forged between massive private sector consortia and state entities. The regional study therefore shifted towards finding the effects of these developments on regional SMEs.

The UK currently has the largest Public Private Partnership (PPP) programme in the world<sup>1</sup>; over 70% of PPP ICT contracts fail and the UK Treasury has at last begun to brief against them. PPP contracts sideline the long tail of innovative and agile SMEs (chapter 2 below). These contracts are unlikely to use Open Source software, since further contracts made with the dominant software publishers frequently attract a discount, which can be partially passed on to government entities, with a margin for profit.

Private consortial partners customarily tightly couple a finance partner, a construction firm (building and 'hard' services) and a 'soft services' supplier (includes software). Research into the complex legal instruments that implement these contracts indicate that they contain a 90:10 debt-to-equity ratio. The very financial constructs that led to the current financial crisis (debt securitisation) seem to map onto the financial aspects of PPPs. There is a global *secondary market* in these debts, thus the debts ('assets') may fetch up in any sovereign state or business's holdings, and come to lie beyond the territorial boundaries of the initial procurer of the PPP.

These findings are discussed in Part 1 of this Deliverable.

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<sup>1</sup> Institute of Fiscal Studies [2008] [www.ifs.org.uk](http://www.ifs.org.uk) .

## Chapter 1: Digital Platforms in Regional and Local Authority Hubs

### 1. Introduction: The Fifth Freedom, Digital Platforms and Knowledge Delivery

In European Union law, a set of treaty provisions, secondary legislation and court decisions established *Four Freedoms*. These are: free movement of *goods*, free movement of *capital*, free movement of *services* and free movement of *persons*. In promoting the free movement of knowledge and innovation across the single market a "*fifth freedom*" is projected<sup>2</sup>.

In the Phase 2 Deliverable 11.3, I discussed *kinds* of knowledge, especially the protection of knowledge with utility by patent IPR. The Phase 3 Deliverable focuses on the digital platforms that support and present knowledge.

In Part 1 the use of digital architectures is addressed in three sectors in the East of England, the local authorities, the educational sector and the software SMEs. The study is based on work done with Huntingdonshire District Council, Peterborough Unitary Authority, Cambridgeshire County Council, The Interoperability Standards Adviser to Becta, the schools sector ICT strategy body. The dimensions chosen are the development of human capital and regional growth<sup>3</sup>.

The reasons for the way this study was conducted are these:

OPAALS' primary mission is to introduce DEs as support for the SMEs, notably for software SMEs<sup>4</sup>. It is therefore mandatory to include some study of the companies here. However, SME studies in both DBE and OPAALS show that the companies' propensity to adopt DEs is weak.

On the other hand, municipalities, hospitals, police forces and schools across Europe have adopted OSS. Some municipalities have embraced glocalisation. Both these goals come under the DE umbrella. In the UK the local authorities (county and district councils) are rapidly replacing the regional entities (notably the RDAs) in the role of business mentors to the SMEs. It is the premise of this study that leadership in DE-style platforms must come from these local hubs which by their own internal adoption of the paradigm would rapidly advance OPAALS' goals. To this end East of England councils, and district authorities were introduced to DEs and their response is chronicled here. Since the DE is not yet fully implemented in its totality the approach taken was at two levels: (1) the conceptual DE, and (2) use-ready OSS. The idea is to work towards a DE mind set while at the same time recommending putting an open digital platform in place.

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<sup>2</sup> *A single market for 21st century Europe*, communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the committee of the Regions. Final: Brussels, 20.11.2007COM(2007) 724 final, visited April 2010.  
[http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007\\_0724en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0724en01.pdf)

<sup>3</sup> Bertrand Russell defines *social knowledge* as – 'what the community knows ... in its *collective* capacity' as distinct from *individual knowledge*<sup>3</sup>. Individual knowledge may, of course be duplicated across a community, rendering the notion of 'social knowledge' redundant. This corresponds to Joel Mokyr's notion of *aggregate knowledge*. *The Lever of Riches: Technology, Creativity and Economic Progress* [1990].

<sup>4</sup> Stanley, Jo and Briscoe, Gerard *The ABC of Digital Business Ecosystems* Communications Law (2010).

Lastly the schools and colleges are where the digital culture is set; the students will in their turn conduct the business life of the nation, transporting their accustomed digital skills and environment into the business sectors. A study was made of the rapidly changing framework in which the digital paradigm is set.

Part 2 of the Deliverable dissects the performance of copyright law in the field of ICT. Copyright grounds software licensing, and must be taken into account even in OSS offerings. It enables proprietary licensors to exploit the public sector (chapter 2, Part 1), and erodes SME resources in terms of upgrade time and money, and necessitates speeding up the hardware replacement cycle.

The most unexpected finding was that amongst the legal threats to communitarian enterprises such as DBE/OPAALS and OSS, copyright in digital platforms can be estimated as 'small arms support' by contrast to the heavy artillery of escalating numbers of long-term contracts ('partnerships') for delivery of public services forged between massive consortia and States. These arrangements render public goods, including IP-bearing innovation, victims of short-time profiteering. They decimate the ability of the state to plan infrastructural frameworks long-term, and they cripple the ability of communities, including SME business communities, to adapt and self-organise where this is needed for a healthy balanced ecosystem.

## 1.1 Lessons Learned from DE Introduction to European Regional SMEs

The earlier DBE and OPAALS approach to DE introduction was to explain the benefits of adoption to the regional SMEs, and incentivise take-up. However, Botto has reported difficulties with this strategy, not least at conceptual level and with the term *Digital Business Ecosystem* itself. The present author has witnessed similar difficulties, together with the handicap engendered by lack of a demonstrator system for the companies to trial.

The approach adopted here presents instead the principle of *Piloted Adoption* of DE/OSS by *central hubs* such as local authorities and regional development bodies<sup>5</sup>. The aim is for local leadership from the hubs to propagate DE ideas, skills and tools to the SMEs.

Such a manner of adoption would imply a *centrally led* cultural change. However, the UK Coalition Government's continual appeals to the notion of '*The Big Society*' suggest that the *self-organising* and local aspects of DEs might be welcome as a paradigm. In addition, one would anticipate that in a time of budgetary constraints, OSS aspects of DEs might resonate with hard-pressed local and regional government entities requiring *sustainable ICT provision* during a period of slow economic recovery and public sector cuts.

The surprisingly refractory nature of response to a policy of *Piloted Adoption* is chronicled in this chapter and the one that follows.

The chapter explores what local authorities and regional bodies exist in the East of England, their links to one another and their relationship with national and European

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<sup>5</sup> The present Phase 3 study derives part of its reference literature from what was learned by the author in Phase 2 in two cities and one provincial town in the East of England<sup>5</sup>. It also relies on work done and lessons learned in the DBE project (see for example, F. Botto, Passani A., (2008). *Community Networks and Digital Ecosystems Relationships*, Proceedings of OPAALS, 7--8 October 2008, Tampere, Finland, pp. 37--46, D12.10).

entities. It then sets about finding out how these publicly-funded institutions procure their goods and services, most notably ICT. Public Sector procurement is now harmonised across the Union. The history of this process is briefly examined together with its effects in the East of England (as a representative UK regional picture). This information provides the context for the likelihood of OSS/DE adoption, and strategies for the promotion of OPAALS goals.

During the course of the DBE/OPAALS projects around 30 SMEs used the DBE platform in Aragon. These companies developed services on the DBE having received 15K Euro contributions to establish use and incentivise testing of such services. Together with CAM's findings in Cambridge, Huntingdon and Peterborough the study shows indications that there are substantial barriers to the adoption of DEs by individual SMEs.

This work seeks to arrive at a consonance between the adoption model as conceptualised by Passani and Botto, notably in the DBE project, and the work done at the corresponding stages in the East of England. The first 4 steps required by the model were satisfied in the CAM partner's work. The next 6 steps were difficult to achieve without a prototype DE to show policy-makers and potential users<sup>6</sup>

**Table 1. The Adoption Model<sup>7</sup>**

| <b><u>Step, According to the Model</u></b>      | <b><u>Corresponding Work Done, East of England</u></b>   |
|---|--|
| DE concept dissemination and awareness building | <ul style="list-style-type: none"> <li>➤ Paper: <i>The ABC of Digital Business Ecosystems</i>, Journal: Communications Law Peer reviewed and published 2010. (See also FiNES publication)</li> <li>➤ Breakfast seminar by CAM on the DE for software SMEs at Peterborough Eco-Innovation Centre</li> <li>➤ Proposed paper for <i>The Fabian Society</i> on the reasons for failure of support for the software SMEs in the UK</li> <li>➤ Papers given on DE concepts to SME conferences: ISBE, Nov 2009, and Harrogate Convention Nov 2009</li> <li>➤ Meetings and correspondence with local MPs and their ICT advisors, and local councillors in the East of England</li> <li>➤ Exchanges of views with members of the Huntingdonshire Business Network.</li> <li>➤ The CAM partner, as a member of an SME Consortium, acted as DE advisor for a defence industry bid: January - February 2010</li> <li>➤ Proposal and presentation before Hunts District Council Scrutiny Committee entitled: <i>A Governance Framework for Public Sector Software Projects</i></li> <li>➤ Proposal to ISBE for RAKE funding to study the suitability of current public sector ICT procurement policy in the context of the increasing loss of contracts by ICT SMEs to large consortia. (Members of the bid were 2 software SMEs and 2 partners in OPAALS)</li> </ul> |

<sup>6</sup> As explained in D11.3, section 2: *Challenge for a Regional Catalyst*.

<sup>7</sup> Taken from D12.10, 6.3.1

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|  | <p>➤ Reporting of OPAALS regional results to the local Member of Parliament, who reported to the UK Cabinet Office one result concerning expenditure of £6B on proprietary computer upgrade for central government departments..</p>   |
| Socio-economic Regional Analysis: Regional/ territorial Maturity Grade | See D11.3, chapters 3 (Cambridge Technopole), and 4 (Peterborough's environmental industries).   |
| Regional Catalyst definition and engagement                            | <p>Quotes from D 11.3 Chapter 2: <b>The Meaning of 'Catalyst'</b></p> <p><b>A Regional Catalyst</b> is an individual or collectivity studying a particular region to determine the feasibility and acceptability of introducing a European model DE to support regional companies.</p> <p><b>A catalyst</b> speeds up the rate of a (chemical) reaction. It takes the reaction to its native equilibrium point <i>faster</i>; it does not alter the inherent nature of that reaction nor its equilibrium point. This implies that the catalyst can only achieve <i>what the nature of its reaction environment will bear</i>. The catalyst does, however, reduce the need for the application of drastic amounts of other conditions.</p> <p>Where the project itself supplies one reactant (<i>DBE</i>) and the region supplies the other (<i>SMEs with an unmet need for a community computer platform</i>), the Regional Catalyst raises awareness of the possibilities of adoption (<i>the reaction</i>).</p> <p>The most important impact of the work of the Regional Catalyst may be to elicit an <b>autocatalytic</b> response in terms of driver adopting SMEs (<i>the reaction product</i>). Here the classic definition of the process is that one of the products of a reaction (a <i>converted SME</i> in this instance) may accelerate the conversion of other companies to the use of the DE platform .</p> <p>In this deliverable the autocatalytic concept is broadened to propose the regional hubs as adopters and, via their links with the SMEs, propagators of a DE-based scheme to the regional SMEs</p> |
| Industry/sector/community definition                                   | <p><u>Phase 2:</u> The Cambridge High Tech cluster, and the Peterborough environmental/eco-industry embryonic cluster.</p> <p><u>Phase 3:</u> The public sector, notably local government and the education sector, the interplay between these and the Sees in the ICT sector</p>   |

## 2.0 A Digital Ecosystem Culture to Support SMEs via Local Authority Hubs

Since 1997 the [UK] government's programme sought to place local government's role in a more prominent position in economic development partnerships by trying to encourage local authorities (LAs) to act as the 'cornerstone of community leadership'<sup>8</sup>. This involves the need to revisit, clarify and detail historical links between public sector bodies in the UK (East of England studied) and their SME constituency.

<sup>8</sup> Bennett *et al.*: *Local Government and Local Economic Development In Britain* [2004] at P211. Citing DETR [1998], Social Exclusion Unit, [2001] Stewart, [2003].

As will be shown, LA business support services for SMEs have, by successive waves of legislation and initiatives become fragmented<sup>9</sup>, distributed, and finally decimated<sup>10</sup>. This section explores the interfaces between local government, the agencies, the SMEs and the education sector.

## 2.1 Procurement of Goods and Services by the Local Authorities

What is happening in the regions of the UK is that fashionable *demand-side aggregation* is used in procurement. This triggers a response from large consortia able to instigate *supply-side aggregated* bids. These bids are frequently *across sectors*, thereby cutting out the sector-specific software SMEs<sup>11</sup>. The adoption of OSS by the large consortial bidders is unlikely for reasons discussed below.

### 2.1.1 Some Examples

The educational sector advisor<sup>12</sup> to the second case study described in chapter 2<sup>13</sup> maintains that very large-scale aggregated procurement on behalf of the public sector stifles innovation. This view is fortified by the 3 decades of work by Dexter Whitfield, Director of the European Services Strategy Unit<sup>14</sup> in his of 2010<sup>15</sup>.

An absence of use of OSS platforms by suppliers of systems to schools means that students are not initiated into the OSS culture, and consequently cannot carry that culture forward into the work place. The Building Schools for the Future (BSF) programme<sup>16</sup>, introduced by the last (New Labour) UK Government in 2004 is notorious for bundling ICT provision and services (frequently on a 30 year contract) with the new build of the school itself. This constitutes both *contractual and technological lock-in* for the school. (Experiences from the sector are recorded in chapter 2 below).

A side effect is that software SMEs are effectively locked out from supplying the public sector in perpetuity. A few local authorities and schools have bucked the trend, providing themselves with OSS, but they are in a minority, and in the education sector any school deviating from an aggregated contract must find the funding for itself – ie lose the state subsidy.

## 2.2 The Public Provisioning of Knowledge Platforms

This section provides a mapping of relationships between the local authorities and their agencies, and as far as is relevant the changes in these over the last decade, plus the

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<sup>9</sup> Business Link established 1993 has replaced the drop-in surgery model by peripatetic advisors.

<sup>10</sup> Business Link (BL) offices in the East of England were cut from 6 to 2 in 2007, to the dismay of local SMEs (special meetings of the HBN with BL representatives). The model is now one of peripatetic advisors visiting individual SMEs rather than local drop-in clinics. The one in Huntingdon itself was closed; only Peterborough and Cambridge remain in the EEDA six counties.

<sup>11</sup> Crispin Weston of alphaLearning; David Craig, *Plundering the Public Sector*, chapters 9, 10, [2006].

<sup>12</sup> Crispin Weston, advisor to Becta: the schools ICT advisory body, who wishes to be named in this report. The UK Coalition government has now abolished Becta.

<sup>13</sup> See interview 14, correspondence, allied reports, and the complaint brought by Weston before Neelie Kroes in the European Commission.

<sup>14</sup> Previously the Centre for Public Services.

<sup>15</sup> *Global Auction of Public Assets*, Spokesman Books.

<sup>16</sup> Now being reviewed for value for money by the UK Coalition government.

relationships between the agencies and the SMEs.

The successes of the DBE project in purely SME or mixed SME and academic environments have been limited<sup>17</sup>. The approach used here was to expose LAs and agencies to DE ideas (via presentations, events, papers and discussions), and reciprocally find out their thinking on ICT issues, most notably OSS and the outsourcing of ICT provision.

Key issues arising are: (1) vendor lock-in due to *de facto* standardisation in the ICT platform market, (2) contractual lock-in, caused by pressure on local government from central government to use PFI (Private Finance Initiative) solutions<sup>18</sup>, and the behaviours of the very large providers participating in such contracts (3) the use of OSS, and knowledge-sharing with the building of local/regional knowledge repositories and skills registers.

### 2.3 Mappings between the Local Authorities, their Agencies and the SMEs

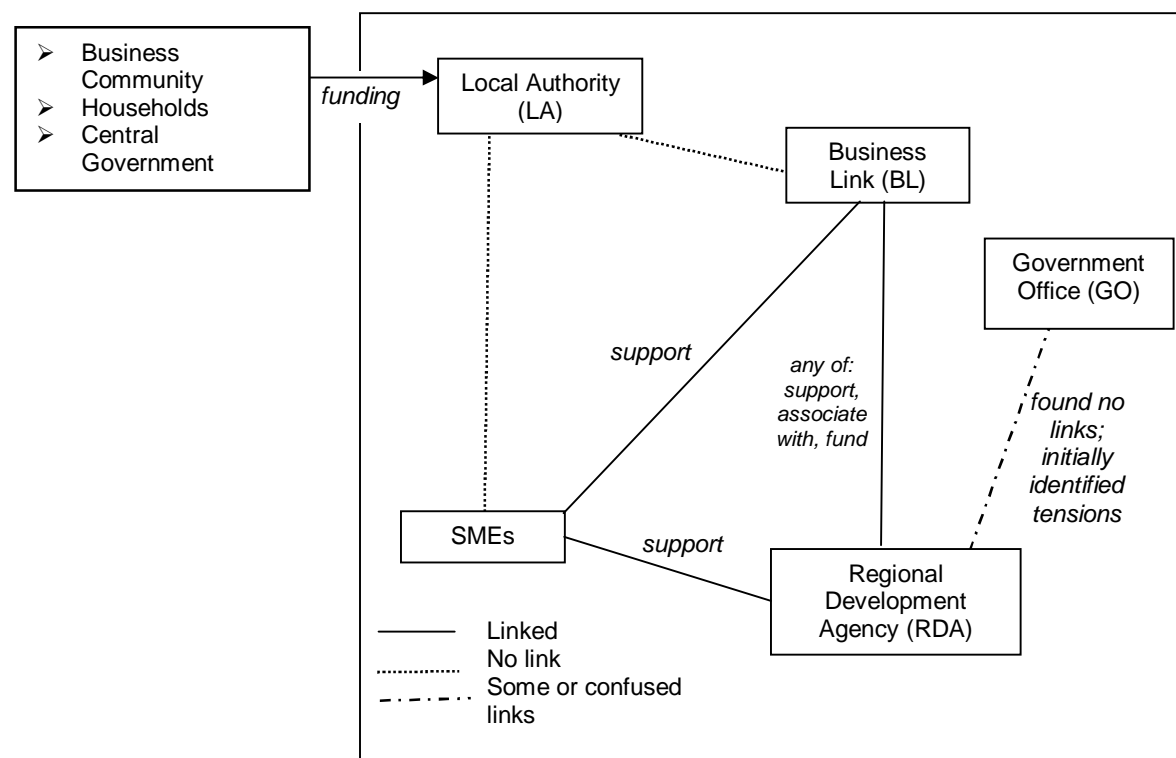


Figure1a Main Local Authority and Agency Support Links to SMEs

<sup>17</sup> Passani: no users of the DBE project remain in the regions, though 30 SMEs did trial and participate in the developmental stages of the project.

<sup>18</sup> PFIs are a sub species of Public Private Partnerships (PPPs). PFI Credits represent a commitment on the part of the Government to provide a certain level of revenue support to a local authority, (under the *Local Government (Capital Finance) Regulations 1997*). The government makes an annual payment to the local authority (which contracts with the private sector to provide facilities) for that element of the contract price that relates to the repayment and servicing of funds borrowed to provide the facilities. The revenue support acts as a contribution to the unitary charge that the local authority will be contractually committed to paying to its PFI contractor.

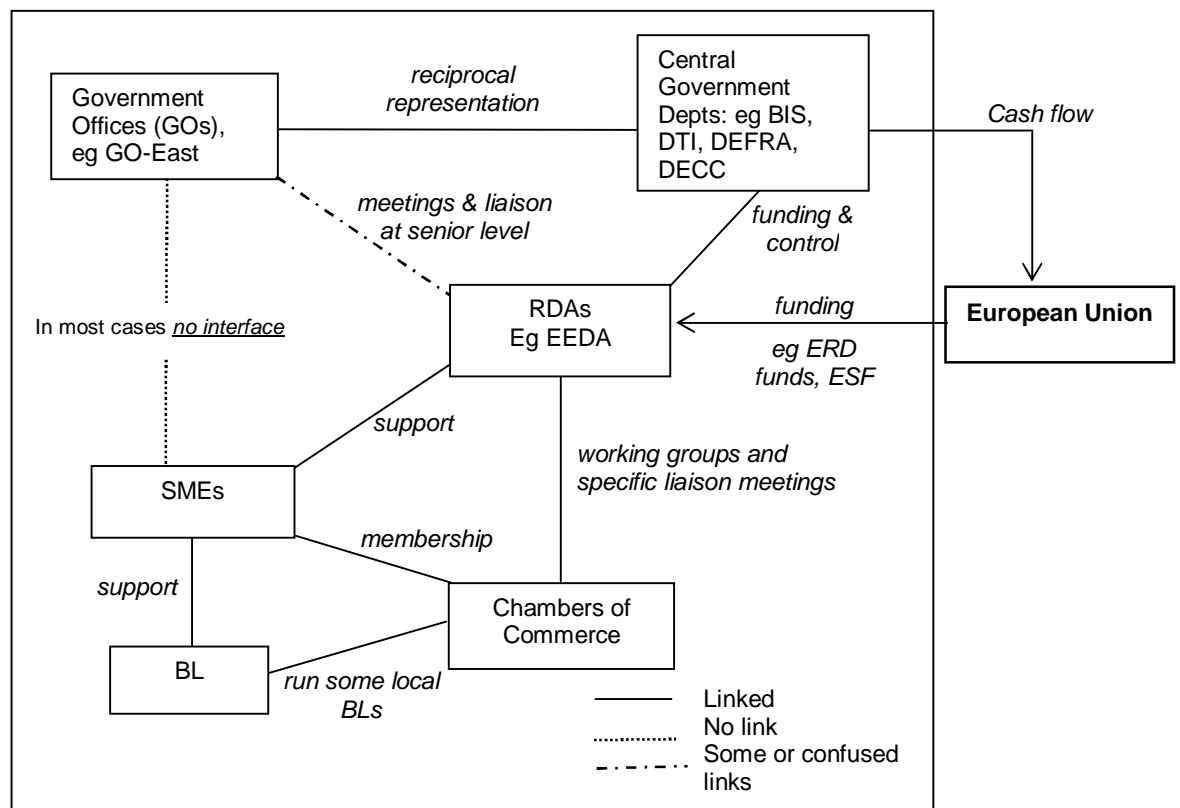


Figure 1b: as 1a with National and European Links Added

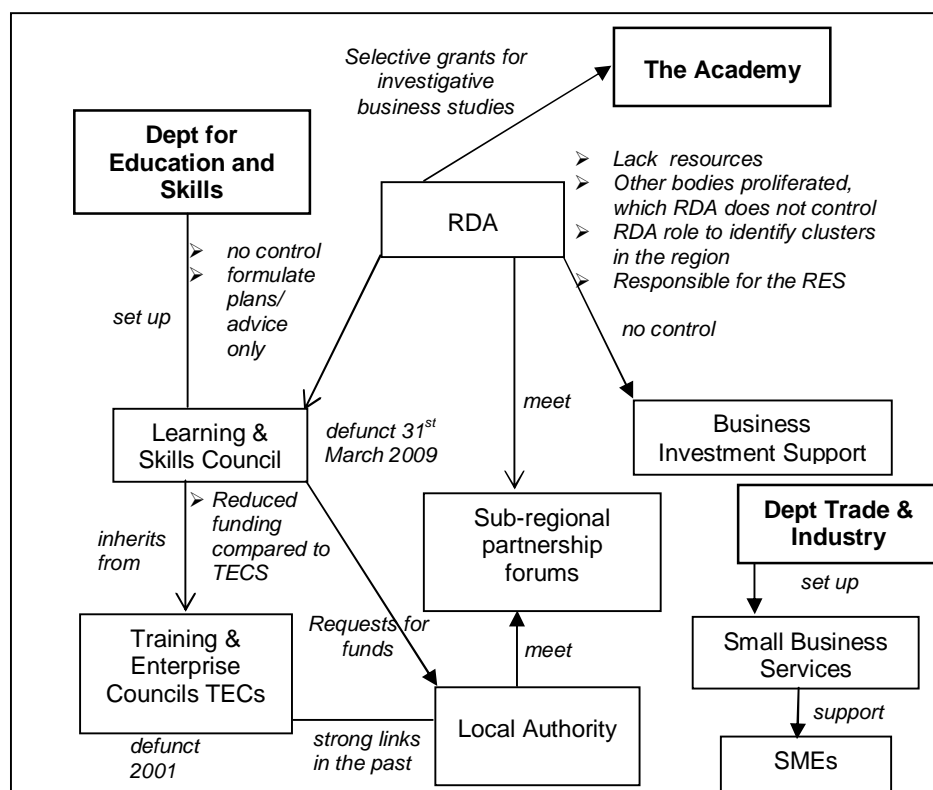


Figure 1c: Links Focused on Education, Training and Government Involvement



## Amplification of Roles of the Entities in Figure 1

The TECs and Business Link were/are classified as 'sub-regional partnerships'.

The RDA is responsible for the Regional Economic Strategy (RES). The current Coalition government in UK plans to cut the RDAs in the (prosperous) south-eastern UK while retaining them in the needier north of the country. This move is in contention since the Secretary of State for Communities and Local Government, Eric Pickles, would prefer to see the RDAs in all regions stripped of yet more powers<sup>19</sup>, whereas the Secretary of State for Business, Innovation and Skills, Vince Cable wants any action on a case-by-case basis<sup>20</sup>.

What follows are boxed reports on two selected agencies: the former is what has come to be known as a 'quango', a non-departmental agency. Quangos are not politically popular, the coalition government (formed May 13<sup>th</sup> 2010) proposes cutting many or most of these. The quangos have a reputation of spending large amounts of public money with concomitantly small sign of democratic (public) control, and in some cases offering little contribution for their existence<sup>21</sup>.

The current status of the second agency discussed here, Business Link, is a non-profit company with the remit to assist the SMEs.

### **The Learning and Skills Council (LSC)**

A non-departmental government body formed in April 2001. Until June 2007, sponsored by to the former *Department for Education and Skills*, it had a larger budget than the RDAs. It is now defunct, its abolition announced 17 March 2008.

The LSC replaced the 72 Training and Enterprise Councils (the TECs) and the *Further Education Funding Council* for England. In 2006 it had an annual budget of £10.4B, and was described as Britain's largest quango. By the time of its closure it had a £2.7 billion debt, with 144 college building contracts having to be terminated abruptly, leaving many colleges with huge financial penalties for breach of contract with civil engineering companies.

23 colleges had debts of more than 40% of their annual income, with some facing possible financial collapse. The re-building programme has renovated over half of England's colleges since 2001. The LSC CEO resigned with some commentators signalling that this may have protected a government minister with responsibility for the failure.

The funding responsibilities of the LSC were redistributed between Young People's Learning Agency and the Skills Funding Agency

- 16–19 year old learners transfer to local education authorities.
- The new *Skills Funding Agency* is to distribute funding for adult learners in Further Education colleges.

<sup>19</sup> Financial Times report, 06 07 2010.

<sup>20</sup> Vince Cable, reported in The Financial Times 21<sup>st</sup> May 2010.

<sup>21</sup> Michael Gove, Secretary of State for Education, when abolishing Becta, June 2010.

### **Business Link (BL)**

In 1992 the Conservative government launched plans to open 54 Business Links across the UK, their brief to set up training and advice for SMEs. By the end of 1993, a year in which the government spent some £3m on the programme, only three branches of the service had been formed. Initially BL offered business support and courses, and in some areas the possibility of government funding. There was some functional overlap in control with certain of the Chambers of Commerce, running local Business Links. Five years after the launch of the Business Link concept, a network of 89 Business Links had been established. Reportedly 10,000 SMEs in England used their services. 650 personal business advisers were employed and the BLs were funded by the RDA.

Dissatisfaction with Business Link seems focused mainly on the £190m of tax-payers money that funds the service each year, which, despite employing around 1,500 staff, seems to simply provide a referral service rather than informed direct advice. This view is confirmed by a Seminar held with BL at the Hunts Business Network, where members also expressed disappointment with BL's new, reduced powers.

The recent report cited below suggests:

“We believe that Business Link is failing in its task. Many surveys show that only a small proportion of businesses use it, and those that do are dissatisfied with the service they receive”.

<http://www.officebroker.com/Closing-Time-for-Business-Link%3F.obart>

A different response is demonstrated in a number of comments left on the [realbusiness.co.uk](http://realbusiness.co.uk) website. These report extremely positive experiences using the service. This is in kilter with the experience of consultants to SMEs. **Field Note** The offerings of BL across the East of England were referred to as 'uneven, patchy' by the participants (eg interview for EEDA with 'Mac' 2007), good in some areas, very poor in others; verified by discussions with members of Hunts Business Network over the last 4 years.

If the service were to disappear *there is a possibility of an information void, requiring the payment of private companies to access information*. This in turn would put many smaller companies at a severe disadvantage or force them to employ costly services that would be an extra drain on their limited resources.

## **2.4 Conclusion from the Tracking of Inter-agency Links**

What we see from the three diagrams and the two agency reports is the flux of entities, with a dispersal of function as one entity inherits (partially) the responsibilities and funding of a previous one. Two things become clear: not only are the relationships between the new entities frequently ill-defined or undefined - left to fend for themselves – but also the newly cast entities themselves may be set an aspiration which may not translate into a clear brief for their anticipated activities.

Not surprisingly, this can lead to functional redundancy. For example: who controls BL? In certain cases it is the Chambers of Commerce, in other cases the RDA. This in turn leads to organisations characterised by competitive cultures which consequently set up tensions

between themselves to the detriment of the service they offer to the target SMEs. The springing up of new agencies has led to underfunding in some cases, and overly complex, multiple-source funding in others (the County Councils), also disparity of funding. An example of the latter is the way that the Learning and Skills Council at one point had a larger budget than the Regional Development Agency, which agency had a far wider brief.

This statement encapsulates the vagaries described above:

‘Government Offices (GOs) work with the nine Regional Development Agencies (RDAs) on behalf of the Department for Business, Innovation and Skills (BIS)’<sup>22</sup>. The GO North-east says that ‘We have worked closely with One North East (an RDA) in developing and taken forward the review of the existing Regional Economic Strategy (RES) on behalf of North East England’<sup>23</sup>.

Other reports wax tense on the lack of measurable cooperation between the GOs and the RDAs.

Dexter Whitfield confirms the impression derived from these findings: that the vernacular of *the market* is being imported into the public sector<sup>24</sup>, language is ‘transformed’, functions are redefined<sup>25</sup>. He identifies power struggles between policy makers and managers, and managers and professionals seeking to maintain traditional standards of ‘public service first’<sup>26</sup>.

The heavy price that is paid in the ICT sector is the wholesale overriding of existing local authority or public body ICT provision, and introduction of ‘transformed’ systems of such large scope as to lock out the specialist software SMEs, and impose heavy, sometimes unnecessary, costs on taxpayers.

An example at national level is the UK NHS centralised computer record system for patients. In 2006 Craig reported the cost of this project at £12.4B, with a projection of £20B to ‘complete’ a ‘deeply flawed’ system<sup>27</sup>. The key problem seems to stem from a failure to gather views and use cases from all potential users, to erect a properly validated problem definition, and thence a correct requirement specification.

### **3. Changes in Local Authorities and their Procurement Policies over the Last Decade**

The relevance of the following section to DE is that the increasing complexity and transformation of ICT provision renders it hard to locate which entities to approach with

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<sup>22</sup> <http://www.gos.gov.uk/gone/economy/rda/>

<sup>23</sup> [www.gos.gov.uk/gone/economy/rda/?a=4](http://www.gos.gov.uk/gone/economy/rda/?a=4)

<sup>24</sup> <http://www.european-services-strategy.org.uk/outsourcing-library/pfi-ppp/the-marketisation-of-teaching/pfi-journal-52-marketisation-teaching.pdf>

<sup>25</sup> For example, Dexter Whitfield, *New Labour's Attack on Public Services* [2006].

<sup>26</sup> Chapter 3 *Public Services or Corporate Welfare*, Dexter Whitfield [2001], see also his *Global Auction of Public Assets: Public sector alternatives to the infrastructure market and Public Private Partnerships* [2010].

<sup>27</sup> This extreme example is described by David Craig, *Plundering the Public Sector*, discussing the progress of the ‘Connecting for Health’ initiative.

the DE philosophy for the public sector and SME constituency. This is summarised in a methodological note in the conclusion to part 1.

### 3.1 The Structure of Local Government

The local Authorities studied here are *Cambridgeshire County Council*; *Huntingdon District Council*, and *Peterborough Unitary Authority*. (See also the Phase 2 OPAALS study, notably on Peterborough).

Cambridgeshire is a Shire County under the control of a County Council; Huntingdon has a District Council which is at the level below the Shire, as has Ely. Both serve smallish local areas. Peterborough and its locale, on the other hand is a Unitary authority controlled by a Town Council, where functions which would otherwise be distributed across Shire and District are subsumed by the Unitary entity<sup>28</sup>. The split in responsibility for the most important functions follows:

- **Unitary:** education, housing, waste management, waste collection, council tax collection, libraries, social services, transport, planning, consumer protection, licensing, cemeteries and crematoria
- **Shire:** education, libraries, social services, transport, strategic planning, consumer protection, waste management
- **District:** housing, waste collection, council tax collection, local planning, licensing, cemeteries and crematoria

### 3.2 Local Authority Funding Sources<sup>29</sup>

Funding sources are: (1) Central Government grants, (2) Council Tax (a locally set tax based on home value and the number of adults in occupation), (3) Business Rates, which used to be agreed between the local authority and local business representatives annually, but are now set by a central formula<sup>30</sup>, and (4) fees and charges from certain services such as public parking, which contribute very little. Council Tax is collected at district-level council or unitary authority level<sup>31</sup>.

## 4. Strategies the Public Sector Might Adopt in ICT Provisioning

During the late 1990s and 2000s there was a striking move in local government towards letting large contracts for goods and services, aggregated on the demand side due to local policy decisions, often prompted by central government<sup>32</sup>. The result was that large

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<sup>28</sup> See D11.3, Ch 4.

<sup>29</sup> All information in this section is derived from Local Authority web sites.

<sup>30</sup> Premises that are subject to business rates are given a rateable value by the Valuation Office Agency (VOA). Local authorities use the VOA's assessment of a property's rateable value to calculate business rates bills. The rateable value is based on the likely annual open market rent for the premises at a particular date.

<sup>31</sup> Below the *district* level come the *parishes*, whose responsibilities can include provision of local halls, Recreation grounds, parks, children's play areas, playing fields and swimming baths maintenance of rights of way, public clocks and war memorials.

<sup>32</sup> There would always be some cases in which the contracts were inherently large due to the scope of the task.

consortial bidders on the supply side found the contracts attractive. We focus here on *local* government contracts but note that many *national* government contracts are of immense size<sup>33</sup>.

For ICT provisioning, *logical choices* could be (1) to use licensed proprietary software with corporate Help Desk and some in-house staff. (2) to use OSS with an in-house ICT maintenance team, perhaps retraining existing staff<sup>34</sup>. (3) OSS via an independent software SME. That same supplier may or may not acquire the maintenance contract, (could use an annual review for a contract renewal model), since the *open code* allows flexibility to appoint a new provider if prudent to do so: ie no lock-in. (4) outsource the entire ICT contract, paying directly through rates and tax revenue. (5) Outsource using a PFI and 'arms length management'. The latter is increasingly used as the option of choice, despite high failure rates of ICT PFIs. It was chosen by Peterborough Unitary Authority as recently as 2009, Serco being used as provider.

This section assesses the outcomes of these choices for the stakeholders, in consonance with the OPAALS 4 *economic accounts* policy: (1) the ratepayers *value* for money (2) regional benefit – local employment (in SMEs and the public sector) and local wealth creation (3) return on rate-payers investment for the future (4) public services to the user-public which is able to rank the quality of the ICT interfaces – the social account.

#### 4.1 Early History of Procurement of Goods and Services in the Public Sector

*The Single European Act (SEA)*<sup>35</sup> was the first major revision of the 1957 Treaty of Rome, and formed the bedrock of subsequent procurement policy<sup>36</sup>. Here the focus was liberalisation of the market, *opening bidding for public sector contracts across the single market*. Clearly this framework militates against any purely local agenda on the supply side<sup>37</sup>.

Public procurement law regulates purchasing by public sector bodies and certain utility sector bodies of contracts for goods, works or services<sup>38</sup>. The law is designed to open up the EU's

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<sup>33</sup> 'Connecting for Health' the NHS patient records system is well reported by Alyson Pollock in numerous papers, and by David Craig in *Plundering the Public Sector*.

<sup>34</sup> There are rare examples of this: Newcastle, which specifically excluded soft services, including the ICT contract from BSF/PFI contracts, working with the partnership of the public sector workers union, Unison. See the Centre for Public Services report: *How to Exclude Support Services from Building Schools for the Future and PFI Projects*.

<sup>35</sup> Based on the 1985 EC Commission White Paper.

<sup>36</sup> [http://wapedia.mobi/en/Government\\_procurement\\_in\\_the\\_European\\_Union#1](http://wapedia.mobi/en/Government_procurement_in_the_European_Union#1).

<sup>37</sup> Andrew Moravcsik provides an historical treatment of SEA's ontology in *Negotiating the Single European Act: national interests and conventional statecraft in the European Community*, International Organization 45, 1, [Winter 1991], Massachusetts Institute of Technology.

He writes: 'Previous attempts to set detailed and uniform European standards for domestic regulations ("harmonization") *had proven time-consuming and fruitless*. With this in mind, the 1985 EC Commission White Paper [on which SEA is based] called for a "new approach" based on "mutual recognition" - *a less invasive form of liberalization whereby only minimal standards would be harmonized*. His hopes for minimal interference at national level seem not to have come to fruition in the field of public procurement in the UK.

<sup>38</sup> Law on Outsourced Projects is governed by the EC Directive and member state regulations:

1. Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts
2. Public Contracts Regulations 2006.

public procurement market to competition, and to prevent "buy national" policies thereby promoting free movement of goods and services (the first three freedoms)<sup>39</sup>.

#### 4.2 Recent History of UK Local Authority Procurement

The UK Conservative Government, elected in 1979 required the public sector to use compulsory competition for 60 percent of building works, highway maintenance and general building<sup>40</sup>. Local authority maintenance employees were still permitted to carry out the remaining 40 percent of the work under the Act.

From the early 1980s, specified local authority services were subject to Compulsory Competitive Tendering (CCT)<sup>41</sup>. This compelled public bodies to seek external tenders for specified services, under specified criteria of competition. If a public entity was considering in-house provision, there was a requirement to cost this provision for comparison to bids from external contractors; the '*In-house Comparator*'<sup>42</sup>.

Initially, CCT covered only 'blue-collar' services such as construction and maintenance; others such as refuse collection, street cleaning etc were added in 1988, and in 1995 a number of white-collar services were added (Audit Commission, 2002).

CCT was meant to bring about cost savings and efficiency gains as a result of putting competitive pressure on the provision of public services. However, the majority of Local Authorities perceived it as a threat to in-house service provision and a threat of worsened employment conditions for public sector workers<sup>43</sup>.

Contracts were let for the '*most economically advantageous offer*' in the terminology of the EU Directives. The '*value for money*' policy used in central government has its equivalent for local authorities termed '*best value*'. Best value replaced compulsory competitive tendering (CCT) as a policy in 1999<sup>44</sup>. It meant:

"making arrangements to secure continuous improvement in the way in which [the organisation's] functions are exercised, having regard to a combination of *economy, efficiency and effectiveness*".

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These rules apply when the estimated value of the contract (net of VAT) equals or exceeds the relevant financial threshold. These rules expressly prohibit deliberately splitting contracts to bring them below the thresholds. This is likely to disadvantage the SMEs. The current thresholds are: £3,927,260 (€4,845,000) for the procurement of *works*; and £156,442 (€193,000) for the procurement of supplies and *services* by public sector bodies other than central government.

<sup>39</sup> Pinsent Masons, the law firm supporting the OUT-LAW.COM web site, which is cited here.

<sup>40</sup> Local Government Planning and Land Act (LGPLA, 1982)

<sup>41</sup> *Testing the market: competitive tendering for government services in Britain and abroad*, Robert Carnaghan and Barry Bracewell-Milnes.

<sup>42</sup> The Comparator is reported to have been wrongly estimated (too expensive) in documented cases: Unison is the public sector labour trades union.

<sup>43</sup> *The Rise of the "Public Services Industry"* – A report for UNISON by Paul Gosling, Sept [2008]. Unison is the public sector workers trade union.

<sup>44</sup> The Local Government Act.

Reviews of the results of these changes are considered 'methodologically flawed'<sup>45</sup>, leading to the conclusion that neither the case for CCT nor the case for its replacement by 'best value' requirements are proven, based on solid empirical and theoretical foundations.

The Julius Report on the private supply of public sector services<sup>46</sup> makes the recommendation for protection of the SME sector shown in the boxed section.

**Recommendation 3: Competitive Neutrality**

Commissioning processes and bid evaluation should strive for a level playing field ('competitive neutrality') between public, private and third sector bidders.

- Her Majesty's Treasury should continue to provide guidance to Commissioners on how to consider the following factors when evaluating bids: tax treatment – including income tax, VAT and investment tax reliefs; and pension obligations and costs.
- Commissioners should ensure that this guidance is followed and also that:
  - pre-qualification and bid criteria do not unnecessarily restrict SMEs or third sector enterprises;
  - information on current service levels and costs is provided to all potential bidders to avoid favouring incumbents; and
  - the costs of transition from incumbent to a new provider are clearly considered when comparing bids.

*Para 4.31 at page 47*

EC papers on the subject and UK Office for Government Commerce (OGC) advice indicate a need to open contract bidding to SMEs. For example, disaggregation of contracts into smaller, tuned *lots* by councils can be contemplated on this basis:

1.1. Sub-dividing contracts into lots. Public Procurement Directives allow contracts to be awarded in the form of separate lots. The sub-division of public purchases into lots clearly facilitates access by SMEs, both quantitatively (the size of the lots may better correspond to the productive capacity of the SME) and qualitatively (the content of the lots may correspond more closely to the specialised sector of the SME)<sup>47</sup>.

By the time of the Julius report, (which incidentally so vigorously commends the PFI model that it advocates marketing it as an exportable service), Ovum had estimated the sales of the top 20 software and IT services suppliers to the public sector to be worth £9.2bn [2007], up 10 per cent on the previous year, and representing 49 per cent of their total sales<sup>48</sup>.

The OGC estimated a public expenditure of £12.4B on ICT in the same period.

Business Process outsourcing can be added to this expenditure since it frequently harbours

<sup>45</sup> Boyne, G A, *Competitive Tendering in Local Government: A Review of Theory and Evidence*, Public Administration, (1998), 76, pp. 695-712.

<sup>46</sup> DeAnne Julius *Understanding the Public Services Industry: How big, how good, where next?* Report for BERR [2008].

<sup>47</sup> *European Code of Best Practices Facilitating Access by SMEs to Public Procurement Contracts*, 14/10/2008:

[http://ec.europa.eu/internal\\_market/publicprocurement/docs/sme\\_code\\_of\\_best\\_practices\\_en.pdf](http://ec.europa.eu/internal_market/publicprocurement/docs/sme_code_of_best_practices_en.pdf)

<sup>48</sup> Ovum, (a trusted reporting firm) *Player Rankings, UK Public Sector*, 04 April 2008.

an IT component. The estimates given by Kable commercial intelligence company in this sector for a total spend by the UK public sector [2007] is £5.3B, projected to rise to £7.5B by 2012.

### 4.3 Procurement and Aggregation by Local Authorities and their Agency Support

In this section we define the meaning of supply- and demand-side aggregation in ICT procurement and examine its role in SME access to public sector contracts. We also examine policy evolution and the rate of change in procurement policy across time.

#### 4.3.1 Aggregation or Coordination of Demand<sup>49</sup>

These terms imply that local authorities, departments within them, or groups of local authorities together consider:

- *analysing* historical purchasing data to assess purchasing practices and trends
- *drawing together* information on common or similar current or future requirements
- *assessing the potential for collaborating with other business units* within an organisation, or with other organisations.

The obvious argument is that aggregating requirements can strengthen entities' negotiating position in contracting with their suppliers. In addition, opportunities to achieve economies of scale can be exploited, including enabling smaller organisations to benefit from the same advantageous deals achieved by larger ones if a contract is set up to allow multi-access. These are the demand-side benefits.

#### 4.3.2 Aggregation of Supply

Demand-side aggregation means that when the aggregated order is presented in a consolidated way to the market, *a single supplier, or fewer suppliers than before*, may respond.

Section 4 of the OGC document (referenced *supra*) points out that reduction of the number of suppliers qualified to bid is a two-edged sword: although transaction costs may be reduced, a critical level of bidders is required for the competitive health of the process<sup>50</sup>. In Peterborough the ICT contract was let on an out-source basis [2009]; there were only two bidders. The successful bidder is a very large non-specialist contractor, the other bidder's name is not given<sup>51</sup>.

Yet pressures to reduce costs bias the choice of the LA towards a *reduction* in the number of bids considered. The SMEs are beginning to be excluded under this regime by the daunting heft of aggregate contracts presented to the market.

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<sup>49</sup> *Aggregation: is bigger always better?* [UK] Office of Government Commerce (OGC) [2004].

<sup>50</sup> At p4 of the report

<sup>51</sup> Report on this contract from the EU Official Journal 211/2009, #303077-2009. Contrast with the Hunts DC process case study chapter 2, admittedly a construction enterprise, which took 6 bids. In both cases transparency was defeated by contract confidentiality.



The SME response strategy can be to form a consortium<sup>52</sup>.

This author has dealt with such a situation personally in the process of bidding for an RDA defence contract. Our consortium was to provide a high security ICT platform for collaborating companies participating in high tech defence work. Although this bid passed many of its hurdles on the strength of the knowledge and skills of its lead members in the aircraft industry, it finally failed on the criterion of 'not knowing the procuring authority's region well enough'. A large consortium would almost certainly have interests in many/most UK regions and consequently would likely pass this test, which our consortium failed.

The magnitude of contracts leads to consolidation in the '*public service industries*' (PSI), as they have now been christened<sup>53</sup>. Although the OGC advice is even-handed, defining stages in the decision process of procurement with options to disaggregate the contract at nearly every stage of the bidding process, there is a logical inevitability that large contracts attract large bidders<sup>54</sup>. The final result has been the rise of trans-sector giant consortia that acquire a contract then divide the bid into subcontracts, when SMEs may receive poor sub-contract terms<sup>55</sup>.

There are two factors intertwined here: (1) loss of value by the public sector in adopting SME solutions and retaining control, for example on an OPAALS '4 accounts' analysis. The regional growth account (SME health) loses, as does a social accounting that takes cognisance of the accumulation of human and social capital. (2) The pathological turn taken in the emergence of newly cast capitalistic structures and patterns of behaviour in the large firms of the public sector industries. These behaviours have both the power to reduce local opportunity on the supply side and to deplete the funding available to the public sector by minimising the taxes many of them return to the UK Exchequer<sup>56</sup>. Prem Sikka, Professor of Accountancy at Essex University, has analysed the impact of PFIs on UK tax revenues via the off-shoring of investors, who fail to pay taxes on moneys earned in the UK<sup>57</sup>.

Those contracts that are deemed suitable for SMEs are the ones let via *direct award* from

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<sup>52</sup> Report from Hobbs and Smith for the SBS, untitled at <http://archive.cabinetoffice.gov.uk/brc/upload/assets/www.brc.gov.uk/smeprocurement.pdf>

<sup>53</sup> Julius report for BERR [2008].

<sup>54</sup> The dread of the LA itself having to do with vertical integration complexities is enough to prompt for the arms length management strategies which complement the larger bids.

<sup>55</sup> Interview 15, and report by Peter Smith and Adam Hobbs, for the Small Business Service: <http://www.bis.gov.uk/files/file38305.pdf>: They say this:

There are some strong factors and trends working against SMEs who wish to sell to the public sector. Many of these are not likely to change; indeed, some reflect desirable trends such as the consolidation of purchasing activities into more economically efficient packages. In conclusion, the outlook for SMEs that do not offer any real differentiation (innovation, service, quality, specialist skills) compared to their larger competitors is not good.

<sup>56</sup> *All Offshore – The Sprat, The Mackerel, Accounting Firms And The State In Globalization*, Prem Sikka University of Essex Accounting Dept, Hugh Willmott University of Cardiff.

<sup>57</sup> In *The Chartist* [2006]. See also Prem Sikka, Hugh Willmott. *The dark side of transfer pricing: Its role in tax avoidance and wealth retentiveness*, to be published by Elsevier 2010. (Copy on file with present author).

councils. That is, councils not using *framework agreements*<sup>58</sup> which involve using buying intermediaries<sup>59</sup>. Contracts suited to SMEs, says the OGC, should have the properties of low value, though innovative approach, and requiring *local* delivery. Though sensible, this approach gives a sense that SMEs will be welcome only to bid for residual pieces. The OGC also points out the catch that there is little point in flagging a contract as SME-suited if its Annexe contains insurmountable hurdles by way of pre-requisites.

If PFI solutions are used, then consortia of large players are the usual bidders. One such bidder typically comprises *a Bank, a Constructor, and a Management Company*. Funds come from the private sector and are serviced by an annual rental payment from the Local Authority<sup>60</sup>. The scale of the contracts has enabled the UK government to make popular improvements to services *rapidly*. The relationship between a PFI solution and the burgeoning fiscal debt crisis are pointed up by this article fragment written as early as 2005<sup>61</sup>.

The value of PFI deals already signed is £43bn, with a further £12bn or so in the pipeline in the next couple of years. Some of the liabilities are currently 'off-balance sheet', an accounting advantage that has allowed public sector managers to secure big projects.

Reclassifying these liabilities 'on-balance sheet' would push public sector net debt closer to the 40% limit specified by the Chancellor's Sustainable Investment Rule. Net debt is already creeping higher, rising from 32.5% to 34.2% of gross domestic product over the past year.

The new financial year got off to a rocky start, with money in the Treasury's coffers down almost 30% on a year ago. Official figures showed the public finances £1.6bn in the black in April, down from £2.2bn in the same month last year. Despite a rise in tax receipts, Government spending soared by nearly 7%.

#### 4.4 The Role of Private Finance Initiatives in ICT Procurement

In PFIs the private sector is viewed as a 'partner' to the state<sup>62</sup>. This section briefly investigates the role PFIs in local authority procurement. The thesis is this:

The conjunction of (1) aggregation of both supply and demand side procurement (2) cumulative legislation to coerce an increasing degree of open tender for public sector projects, and (3) a welter of environmental and other constraining regulations as pre-requisites on bidders has progressively marginalised the ICT SMEs from obtaining public sector work, propagating a monoculture of very large corporate bidders, and rendering the goal of OSS deployment ever more remote.

<sup>58</sup> Framework agreements, details and implications at: [http://www.ogc.gov.uk/documents/OGC\\_Guidance\\_on\\_Framework\\_AgreementsSept\\_08.pdf](http://www.ogc.gov.uk/documents/OGC_Guidance_on_Framework_AgreementsSept_08.pdf) and [http://www.ogc.gov.uk/documents/Framework\\_Agreements\\_and\\_EC\\_Developments.doc](http://www.ogc.gov.uk/documents/Framework_Agreements_and_EC_Developments.doc)

<sup>59</sup> The OGC offers advice to local authorities that let their own contracts, without the use of a framework where an intermediary known as a Professional Buying Organisation (PBO), such as *Buying Solutions* is used. [http://www.ogc.gov.uk/documents/Contract\\_Flagging.pdf](http://www.ogc.gov.uk/documents/Contract_Flagging.pdf) January 2010

<sup>60</sup> Prem Sikka's papers *supra*.

<sup>61</sup> Jane Padgham, Evening Standard 20 May 2005.

<sup>62</sup> A term seen as fallacious by Dexter Whitfield. March New Left Project site.

An excellent definition and context for PFIs is provided by Hellowell and Pollock<sup>63</sup>:

Public facilities and infrastructure are *leased* by a public authority from a private sector *Special Purpose Vehicle (SPV)* for periods of 30 to 60 years. The SPV is a company owned by a number of private sector shareholders, *typically a building contractor, a service contractor and an institutional investor*. This company provides around 10% of the investment cost through equity and subordinated debt, with the rest coming from banks or the capital markets. The SPV is paid an annual fee for the duration of the contract by the public authority.

What is known is that private sector borrowing demands higher interest rates than loans to the public sector. PFIs do not register against the *Public Sector Borrowing Requirement*, and in that sense constitute a 'silent mortgage' on public sector assets. They were introduced into the UK in 1992 by John Major's Conservative administration, with initial contracts to build roads and bridges only. The model has subsequently been transferred to education, ICT and nearly all other public services. The scale of the industry is global as Dexter Whitfield describes in chapter 1 of his 2010 book (*supra*).

In 1994 even the Labour Party withdrew opposition to PFIs, though by 1997 when Tony Blair's New Labour came to power few contracts had been signed. The greatest acceleration in PFI solutions from that time has been in the Health and Local Government sectors. In 1999 the OGC<sup>64</sup> took control of the PFI *policy arm*; later this was transferred to the Her Majesty's Treasury. The *projects arm* has been part-privatised (Partnerships UK – PUK) with the Treasury retaining a 49% stake. By 2007 the total value of UK PFI contracts signed across the whole public sector was £56.9B.

Pollock *et al* have cast doubt on the validity of reviews as to whether these PFIs are actually 'value for money'. This report later presents evidence of major failures in ICT out-sourced projects, to the extent that the Treasury now briefs against them. Yet recently a contract from the procurement agency of the Treasury, *Buying Solutions*<sup>65</sup> awarded a £6B contract to outsource central government office ICT provisioning<sup>66</sup>. This report cites Dexter Whitfield's analysis of the serial failure of the ICT PFIs<sup>67</sup>. The names of the same few huge bidding consortia recur throughout the statistics on failure and these reappear in the £6B bid, and it is clear that the 'public services industry' sector is becoming highly concentrated.

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<sup>63</sup> Mark Hellowell, Alysson Pollock *Written Evidence to the National Assembly for Wales Finance Committee with regards to its Enquiry into PPPs* [Dec 2007].

<sup>64</sup> Office of Government Commerce.

<sup>65</sup> *Buying Solutions* is the *national procurement partner* for UK public services. It was established in 2001, as a result of the Gershon Report, through a merger of the procurement functions of *The Buying Agency* and *The Central Computer and Telecommunications Agency* (CCTA). It is an Executive Agency of the Office of Government Commerce (OGC) in the Treasury.

<sup>66</sup> This author has sent details via the MP to the UK Cabinet Office, which is currently reviewing all contracts to assess value for money.

<sup>67</sup> <http://www.european-services-strategy.org.uk/outsourcing-library/strategic-partnerships/ppp-database/ppp-database.doc>, 2009 edition available.

Buying Solutions purports to maximise the value for money obtained by Government departments and other public bodies through the procurement and supply of goods and services. It is a Trading Fund which is run on commercial lines, with responsibility for generating income to cover its costs and make a return to the Treasury. It is the largest of over 40 Professional Buying Organisations (PBO) in the wider public sector<sup>68</sup>.

**March 26, 2010**

**Report, Computerworld**

Buying Solutions, the government's procurement arm, *has awarded a £6 billion framework contract for desktop hardware, IT infrastructure, software and related services.*

Computacenter, Fujitsu, Specialist Computer Center and Insight Direct (UK), won the four-year deals for all three lots of work for the pan-government framework agreement.

The framework will be available for use by a range of government departments, including central government, NHS bodies and local authorities. Some of the work will also be delivered to UK Ministry of Defence bases located overseas.

The latest framework will replace the IT Goods and Associated (ITGAS) Framework Agreement, which ends on 30 April.

Equanet, Ergo Computing, European Electronique, Kelway UK, Misco, Probrand, Stone Computers and Viglen were also awarded contracts for desktop hardware.

Meanwhile, CSA (Waverley), Ergo Computing, European Electronique, ANS Group, Bull Information Systems, Kelway UK, Misco, Softcat and Viglen will provide IT infrastructure hardware. Civica Services, Equanet, Phoenix Software, Softcat, Software Box and Trustmarque Solutions will provide software.

A £4.5 billion Desktop 21 framework contract, which also includes printing and networking services and serves large government departments, was signed with HP Services (formerly EDS), Atos Origin and Fujitsu earlier this month.

Meanwhile, Buying Solutions and HM Revenue & Customs have renewed their 'Sprint' IT contract with Specialist Computer Center, under a new £500 million Sprint II agreement.

The agreement covers PCs, laptops, peripherals and other hardware, as well as networking kit, maintenance and software upgrades.

#### **Addendum**

Inquiries via the author's MP elicited the request I should emphasise that the £6B contract is a framework agreement, and call-offs (requests to the companies to implement) will not necessarily ever occur.

The point is dealt with below, but here does not detract from the enormity of the potential scope for private gain in the public sector industries.

In the late summer of 2009 Peterborough outsourced all its ICT, cutting in-house ICT jobs from 47 to 1<sup>69</sup>. There was an embargo on news of this bid during its progress. No-one in the Town Council was available for comment to the present author until spring 2010, although I had approached the Council's Leader in May of 2009 with an offer to present OPAALS ideas before the Council's Scrutiny Committees with respect to the benefits to the public sector and regional SMEs of OSS adoption in a DE context.

I revisited the issue in February of 2010 with the Councillor in charge of the project, but he

<sup>68</sup> These grew out of local authority purchasing consortia (some of which were privatised during the 1980s), one per region, some serve a number of regions.

<sup>69</sup> Information released to the author under the Freedom of Information Act. See also Chapter 2.

was disinclined to meet with me, and I suspect that considerable lock-in to the contract was by then well established. Chapter 2 treats the study in Peterborough in more detail.

## 5. The Buying Power of the Public Sector

EC Directives compliance shackles the public sector to a greater extent than the private sector. Whereas customers of private firms are normally able to seek out alternative suppliers if any particular firm cannot deliver, this option does not normally exist in the case of public services. Bent on avoidance of failure, the public procurer thus tends towards conservatism, and bias in favour of the contract incumbent. In addition, the public sector favours the appointment of 'the large and reputable firms', thus creating stagnation rather than innovation in deployments, lock-in to incumbents, and lock out for SMEs.

This section weighs the merits and demerits of current public procurement strategies for buying bundled services. The effect on SMEs and the health of a competitive market are examined.

On 3 March 2010, Kable reported a UK government '*Desktop 21 framework contract*' with Atos Origin, Fujitsu Services; finally Hewlett Packard joined. Desktop21 is the second lot of a collaborative procurement with the Department for Work and Pensions.

The first lot was awarded to Fujitsu in Feb 2010, and is worth at least £200m over six years.

Kable commented that 'It is disappointing not to see a wider range of suppliers in the framework, given that HP is the current provider and Fujitsu will be the future provider for desktop services within DWP'.

In January 2010 the UK government unveiled its new ICT strategy document: Government ICT Strategy: Smarter, Cheaper, Greener. Here lip service is again paid to Open Source and reusable software, yet as we describe above, PFI solutions were subsequently implemented towards the end of the New Labour administration in May 2010.

### 5.1 The Transaction Costs of Public Sector Procurement

It seems desirable for the number of bidders for public sector work to be limited for these reasons:

- (1) Evaluating bids is costly, especially where the contract is complex. There is a trade-off between the higher costs of assessing a larger number of bids and any possible advantage in choosing the cheaper one.
- (2) The conservative option is to limit the number of bidders on the basis of criteria such as reputation and a 'proven ability' to meet the particular requirements. This may be efficient in cases where the characteristics of the goods or services are difficult to define contractually.
- (3) *More bidders may not lead to lower prices.* Under certain conditions in which increasing the number of bidders can lead to higher prices because everyone bids more cautiously, a version of the 'Winner's curse'<sup>70</sup>.

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<sup>70</sup> The winner may have paid more than the asset is worth. This seems to be primarily a result of incomplete information; one can ask whether more transparency would generate more prudent assessment of worth?

## Bundling

Buying bundles of services across the value chain can provide advantages to vertically integrated suppliers, and influence decisions of firms to integrate vertically. Conversely, by insisting on purchasing services unbundled, the public sector may remove or weaken incentives towards vertical integration.

### 5.2 Instances Where Barriers are Erected against SMEs by Procurement Policies

- SMEs are excluded where the buyer's requirements are ***subject to strong economies of scale or scope***, or where size and reputation are essential *from the perspective of the public sector buyer*. An OFT report in 2004 suggests that this 'would not significantly reduce competition'<sup>71</sup>.
- By contrast, where SMEs are in a comparable position to larger competitors, for instance where the focus is innovation, excluding small firms could reduce competition significantly.
- If entry barriers are low or absent, then it would not matter if unsuccessful bidders for a public tender were forced to leave the market – the threat of potential competition from new entrants would persist, and would constrain the power of firms in the market.
- If on the other hand, entry barriers are high, AND winning public contracts is crucial to a firms' survival, then the public sector could affect market structure by awarding contracts to a larger or smaller number of firms.

## Incumbency

The Treasury report *supra* notes that:

Even without changing the number of suppliers in the market, public procurement can have long-term effects on competitiveness by increasing the gap between market leaders and other suppliers, or by creating incumbency advantages for public contractors in future tenders. The privileged condition of the incumbent lies in having built up know-how of the task, and having an investment yielding cost advantage in future bids.

In short, the old 'installed-base' arguments apply, and incentives for would-be market entrants are discouraged by this knowledge.

### 5.3 Conclusion on Current Public Sector Procurement Policy

Dexter Whitfield identifies a key problem as the procurement process itself<sup>72</sup>. Whereas this used to be simply the process defined under EU/UK law starting from the 'formal contract notice' on the award of a contract, it now embraces options appraisal and preparation of a business case.

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<sup>71</sup> *Assessing the impact of public sector procurement on competition* Volume 1: main report September 2004, at <http://www.hm-treasury.gov.uk/d/oft742b.pdf>, at P10, s1.23.

<sup>72</sup> Pers comms and *Options Appraisal Criteria and Matrix*, Dexter Whitfield, European Services Strategy Unit, research report no 2, [June 2007].

A core issue, reports Whitfield, is that projects can be framed up and decided on *before the options appraisal process is complete*. A symptom is the prior limiting of options and the describing of examples; these then effectively act as pointers to 'pre-selected solutions'. Technical advice seems to emanate from the habitually-used consultants that midwife the procurement process. ICT consultants with the requisite full technical knowledge plus independence, enter the frame only at bid evaluation stage, when the requirements have already been framed up. This is highlighted by our own experiences when introducing DEs to the Hunts District Council, described fully in chapter 2.

In accord with the advice offered by the OPAALS/SME team to HDC (Ch2, study part 1 below) Whitfield believes that the answer to the procurement problem lies in opening up the options appraisal process to make this more rigorous and comprehensive *before* a business case is commenced.

The actual sequence of events and timeline seems to be this:

- the methods of aggregation and bundling attract the activity of very large companies. These then acquire a reputation as 'experienced in the field'. This can entrench incumbency and bias future awards of contract.
- Successful bidding firms' mutual interests lead them to then construct complex networks of relationships, and to focus on the retention of wealth. Strategies such as transfer pricing and off-shore registration favour this goal.

The open single market of the European Union has unfortunately operated against the interests of the small and local (regional) bidders. Further, the major contractors who are dominating the ICT supply side in the public sector are unlikely adopters of OSS.

*If DE and OSS concepts are to encapsulate a way forward in ICT provisioning of the public sector, they need to be repackaged in such a way as to be compliant with the single market, yet also competitive in a free market of immense resource and methodological power.*

If de-aggregation is seriously contemplated for Local Authorities in their ICT provisioning, and if OSS systems introduction with the attendant conservation of scarce resources is to be realised, then two elements need to be present,

- Firstly, independent *qualified technologists*' advice is needed from the inception of public sector ICT procurement, and throughout the project life cycle. Both technologies and legal requirements change continually, therefore the Councils' CIOs and the advisors must be represented at all the meetings where the CEO and CFO expect to be present<sup>73</sup>.
- Secondly, the goals of DE/OSS structure must comport with the social goals within the

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<sup>73</sup> Refer to the HDC case study below.



purlieu of the Local Authority and therefore able to attract consensual acceptance both at a policy level, and at popular voter level.

## Chapter 2 Two Sectors Failed by Current ICT Provisioning Policy

This chapter describes a three-part study of public sector provision in the East of England. The instances cited traverse local authority administrative centres and the schools sector.

Throughout this work the goal has been to align three things: local public sector ICT requirements, what OPAALS/DE can offer to satisfy these requirements, and the UK government definition of the 'Big Society'<sup>74</sup>, which the local authorities have been told to bear in mind.

The first element in the study deals with the procurement of ICT goods and services for the small District Council of Huntingdon, and the scrutiny of these procurement strategies by an independent advisory panel.

Secondly, we examined the way knowledge platforms for schools are procured in UK almost entirely from major providers under complex Public Private Partnership (PPP) agreements. These agreements are made between local authorities and the large providers under a central government framework.

Thirdly we explain and develop a methodology to gather confirmatory evidence on the extent and effect of PPPs from the Local Authority hubs and the difficulties encountered in its application.

This chapter presents a blend of field work and supporting evidence from reports. It demonstrates that in both the educational sector and the local authority offices themselves (the hubs) waste of resource is growing to concerning proportions. The balance has tilted away from SME bids (all sectors) for local authority contracts towards bundled contracts, in for example school construction, where contracts frequently include ICT; the contracts can be of 30 years duration. The aggregation of schools' ICT provisioning incurs forfeit of funds should the school wish to develop its own ICT style (for example Open Source deployment, provision by small local companies).

Evidence is brought that the ICT provided is not actually tuned to the needs of the user institutions, but coerced under central government policy. It tends to be dispensed in bundles assembled by the major software publishers and unsuited to consumers needs.

### 0. Background: Current Financial Crisis Conditions

In the UK, during the 2007 *Comprehensive Spending Review* (CSR07) for the period 2008-09 to 2010-11, English councils were collectively required to achieve £4.9B cash-releasing efficiency gains. Delivering 'Value for Money' in Local Government set an expectation that nearly 60 per cent of this total (£2.8bn) would arise through '*smarter procurement*'<sup>75</sup>. Best practice must enable SMEs to participate in bids and is governed by

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<sup>74</sup> A key contributor to the development of Big Society tenets is Phillip Blond. See *The Ownership State: Restoring excellence, innovation and ethos to the public services*. NESTA, [Oct 2009].

<sup>75</sup> *Review of arrangements for efficiencies from 'smarter procurement' in local government*, Bill Roots, [Feb, 2009]. The National Procurement Strategy (NPS) was launched in [2003] to promote good practice in procurement for the public sector. Its key messages were that councils should build up their capacity; take up further opportunities for collaborative working; implement further steps on e-procurement; and stimulate markets. Aspirations both broad and vague. The report is descriptive of the

the *European Code Of Best Practices Facilitating Access By SMEs To Public Procurement Contracts*<sup>76</sup>.

This section examines the pressures on public services not fully funded from tax sources that have led to bundled procurement strategies, and to SME exclusion. The knowledge comes from being a member of a SME consortium bidding for public sector work (in the defence sector, contract offered by a north of England RDA), and web material on council sites outlining the requirements for the bids.

The current procurement procedure sets a gruelling questionnaire for bidders, which involves probing the *financial affairs* of the candidate supplier, their *experience* in the sector procuring, *insurance* (for at least £5M), and the demand that an active *quality assurance* process is in place together with a *written* Health and Safety policy (if more than 5 employees), an 'equal opportunities' policy, *environmental* policies (under the DEFRA rules and definitions), and a demonstration of being 'in good business standing'<sup>77</sup>.

In 2008 these pre-requisites were augmented by other conditions concerned with training, sustainability, and uptake of apprenticeships. Thus from a SME perspective, the desire to merge the social agenda of retaining the long tail of small companies (innovative, job creating) with the procurement process is ultimately out of balance and operates against the smaller firms.

This author participated (as DE advisor) in a bid by a SME consortium for a defence industry contract procured from a North of England RDA to build a shared software platform for the participant companies. The extensive requirements meant a considerable input of time to complete the documents by the bid leaders.

The Office of Fair Trading as early as 2004 concluded that the relentless pursuit of competition for public sector work was telling against the SMEs in the public sector procurement market<sup>78</sup>. The *Association of Chartered Certified Accountants* (ACCA) presented evidence to the Glover Committee<sup>79</sup> in August 2008 in which it pinpoints why it believes the SME share of local government contracts is levelling off, and their share of central government contracts is falling.

*The total procurement marketing the UK is worth about £160B per annum.* According to

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plethora of quangos and professional bodies operating across procurements, but the conclusions are trite and obvious: see p 15 *et seq* for example.

The Final Report was published: 9 April 2008:

<http://www.communities.gov.uk/localgovernment/efficiencybetter/nationalprocurementprogramme/nationalprocurementstrategy/>

<http://www.communities.gov.uk/documents/localgovernment/pdf/1151506.pdf>

<sup>76</sup> Brussels, 25.6.2008SEC (2008) 2193. Commission Staff Working Document.

<sup>77</sup> Almost two in five (37 per cent) of the SME employers that reported regulations to be an obstacle cited *Health & Safety regulations* as the main area of difficulty. BERR: *The Annual Survey of Small Businesses' Opinions 2006/07* (ASBS 2006/07). <http://www.berr.gov.uk/files/file42727.doc>

<sup>78</sup> [http://www.oft.gov.uk/shared\\_oftrreports/comp\\_policy/oft742b.pdf](http://www.oft.gov.uk/shared_oftrreports/comp_policy/oft742b.pdf)

<sup>79</sup> [http://www.paessex.gov.uk/pae/glover\\_report.pdf](http://www.paessex.gov.uk/pae/glover_report.pdf) *Accelerating the SME economic engine: through transparent, simple and strategic procurement*

ACCA, SMEs currently win about 59% of local government contracts and 27% overall.

ACCA diagnoses the lack of progress in the field by SMEs as due to framework contracts and preferred or approved suppliers lists held by public bodies. The solution, concludes ACCA, lies in the improvement of the procurement process itself, rather than any suspension of competition so that entry barriers for SMEs are reduced. The Local Government website news of 1st March 2005 issued the Small Business-Friendly Concordat<sup>80</sup>, but a disappointing number of councils signed up to it<sup>81</sup>.

In the ICT field, although there are SMEs that can tailor OSS for organisations, the major bidders are unlikely to use OSS for two reasons: firstly, contracts with dominant software vendors (publishers) can be *partially* passed on to the procurer, leaving room for profit to the supplier. Secondly, it is easier for the bidder to harmonise with *de facto* marketplace (monopoly) standards and pass at least part of the maintenance to the original vendor.

### Three Instances of Knowledge and Skills Stewardship in the East of England

The first instance is centred on the proposal made by a team of 2 OPAALS partners and a software SME to Huntingdonshire District Council for the introduction of a Governance Framework and independent technical advisory panel that took account of sustainable ICT procurement in tandem with the introduction of local skills pooling, apprenticeships and cooperative knowledge generation in the public sector across the Eastern Region of the UK, and amongst its local authorities. These aspirations are aligned with both OPAALS goals and the much vaunted 'Big Society' aims of the UK Coalition Government.

The second instance chronicles a timeline in the supply of ICT goods and services to the schools (in the public sector), with the progressive exclusion of the SMEs that supply educational content. It charts a concentration in the private sector suppliers market, with contracts let to major consortia, squeezing out efforts to introduce OSS.

The last instance chronicles ICT supply using long-duration PPPs<sup>82</sup>, their record of expenditure and failures, illustrated by the current budgets and strategies from the East of England and Dexter Whitfield's Review of ICT PPPs across the UK. It details such contracts information as is released under the Freedom of Information Act by Peterborough Town Council, Bedfordshire County Council, Huntingdon DC, Ely DC and Cambridgeshire CC, and the fate of public sector ICT jobs in these places.

### Methodological Note

Where participants were available, GTM techniques were used to elicit information. An initial *neutral question* was asked, and once participants had launched on their main concerns, prompts via ancillary questions could be used. Subsequent iterations from instance to concept were used and results were very satisfactory.

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<sup>80</sup> <http://www.communities.gov.uk/publications/localgovernment/smallbusinessfriendly>

<sup>81</sup> FSB report, *Public Sector Procurement: the small business perspective*. At <http://www.communities.gov.uk/localgovernment/efficiencybetter/nationalprocurementprogramme/nationalprocurementstrategy/smallbusinessfriendly/authoritieswhohave/>

<sup>82</sup> Public Private Partnerships.

This approach was in the main unsuccessful with public bodies. Key personnel were not available by phone in most cases, they did not answer emails, and were difficult to engage for appointments. This researcher finally resorted to acquiring information under the *UK Freedom of Information Act 2000*.

Under the Act information is requested using council interfaces, so that email tracking is not possible. There follows a wait of 1 month's elapsed time before, often minimal, answers to questions submitted are received. After one request, subsequent requests may be charged for. Some of the documents returned had no date stamp or heading and were in other respects unreliable. Above all, the parsimony of the information supplied made it very difficult to compile an organisation history (eg jobs lost in ICT departments when policies changed) by this means.

The CVs of councillors and public administrators are not accessible by ordinary searches, therefore the researcher remains largely in ignorance of any technical background any of the council participants may have. There may be some reference to their expertise in election literature, which would require special application to the council office for its release.

### 1.1 Instance 1: A Broad ICT Project Governance Framework Proposal to HDC

'The governance of the public service corporation must itself entrench pluralism. The supervisory board should be representative of a range of community interests. But it should act as a board, rather than as representatives of these interests<sup>83</sup>.

And it should be incapable of being captured by any one of these interests – whether local politicians or business people, members of any one political party, the people who work in that business, or who manage it.

And that board, like politicians themselves, must stay out of operational decisions. Reviewing strategy is fine, so long as it does not relieve executive management of responsibility – which is the reality, if not the legal fiction, of how large private sector businesses are run.

In the provision of public services, democracy should be about accountability, not about decisions. That accountability must be informed by external audit.' John Kay<sup>84</sup>.

John Kay's governance philosophy, quoted above, reflects the criteria the team developed for their proposal to HDC.

This section shows the choice of appropriate body to approach, and means of presentation of OPAALS/DBE ideals and benefits together with an effort to align these to the ICT needs of the local authority.

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<sup>83</sup> See also: Bell, D *Public Investment and Devolution*, FAI Quarterly Economic Commentary, [June 1999] FAI Quarterly Economic Commentary; Unison - *The Private Finance Initiative, A Strategic Response* April 1998. *Replacing the State? The Case for Third Sector Public Service Delivery* Association for Chief Executives of Voluntary Organisations (ACEVO) [2003].

<sup>84</sup> This introduction quotes the economist John Kay *A New Public Sector* 01 June 2001, Prospect essay. Kay adds this: The public-private partnerships we have today require users and taxpayers to pay a premium to the capital markets for a risk of financial failure which theoretically exists but probably does not arise in practice.

### 1.1.1 Methodology and Stimulus to Develop the Study

The present author located the current HDC ICT strategy document<sup>85</sup> while studying the fit of a DE or OSS with the Local Authority ICT procurement policy. At a preliminary interview with the Scrutiny Committee manager<sup>86</sup> the OPAALS team was invited to propose a study. We produced a critique of the ICT document and in so doing identified what we considered to be the most pressing need in Council ICT planning. From this we developed a proposal for an investigation into an *independent governance framework* for ICT projects, the framework to be adoptable by District Councils and their Agencies, initially Huntingdon. The framework would provide a fairer means to assess OSS adoption as compared to proprietary offerings

### 1.1.2 The Team's Approach to the Project

**KEY WORDS:** *independence, integrity, lock-in, long-term, collaboration, council co-operatives, overall ICT spend (TCO), OSS, local skills base and employment, not-for-profit, reach of influence, iteration of successful project models across the region, cost savings, costings.*

A team of 2 OPAALS partners<sup>87</sup> and an independent SME<sup>88</sup> specialising in tailoring OSS systems for charities and SMEs was formed. The team delivered the study proposal, which advocated the iterative assembly of a set of alerts and suggestions for a council contemplating ICT projects.

The group's suggested framework was this:

- An *external, independent* advisory panel of properly trained and experienced technologists shall be constituted.
- Their advice shall be intended *for Senior Council Managers, with no interference at operational level*, which the team considered to be the LA CIO's sole and defined function.

*The Nature of the Advice:* The goal of the team was to make the Council's *Scrutiny Committee* aware of pitfalls and benefits in the following categories: *technological* lock-in in the ICT sector, *contractual* lock-in.

Instead we put forward the concept of a division of labour across the region, using the co-operative tenets of a DE, including the possibility of generating modest revenue streams for one council from supplying the needs of another, either within or beyond the region.

For example, a specialist website designer, or an employee with special skills in database management in one council could provide a service that was lacking in another, thus reducing costs for the procuring council below the commercial market range and minimising transaction costs.

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<sup>85</sup> *ICT Strategy 2009-11*, Huntingdonshire District Council.

<sup>86</sup> Scrutiny Committee on Economic Well-being.

<sup>87</sup> CAM, Jo Stanley, and LSE, Gerard Briscoe.

<sup>88</sup> Jerome Josephraj of Bind Technology.

The group advised that an unconstrained check list be generated, for iterative revision and use, to assist ICT decision-making. The concept was that the list would be grounded in actual experience of the issues on the ground (emergent and self-organising) and not top-down coercion to fill generic requirements having poor fit to the project in hand.

### 1.1.3 Content of the Advice for Sustainable ICT Provision

#### Background

- Whereas most large organisations have a governance model, what the team believe is that there is the lack of a *structured method* to apply and evolve the governance model.
- What the Authority should aim at is realising these key values and principles: freedom, knowledge-sharing, and online community interaction.
- This can best be done by establishing an Independent Governance Panel outside the project, subject to no commercial pressures beyond the project, and no declarable interests within the project and ...
- Calling on the panel's advice very early in the project development process – even before *Requests for Expressions of Interest* are issued<sup>89</sup>.
- Having as a future goal the creation of an Expanded Governance Panel taking representation from a number of Local Authorities in the region for co-operative advantage
- Thus aiming to create a Local Knowledge and Skills Pool and Special Skills Register ...
- With a view to constructing an Online Community across regional local authorities to enrich the regional knowledge pool.
- Above all, enabling the governance model to mature reflexively, feeding back on the knowledge pool.

The group proposed these guidelines:

The Governance Panel shall act with these purposes:

- To steer the project from its inception, pointing out risks and opportunities, and remain as overseer right to the project's end, ie delivery and acceptance testing. The panel should formulate questions and considerations which the Authority needs to take into account when seeking projects or partners, and moving through the phases of the project.

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<sup>89</sup> A strategy vehemently supported by a Chief Planning Officer and experienced Councillor (T: Interviews 7 and 16). See also Whitfield's diagnosis.

- Importantly, to mature the governance model reflexively so that it can be applied across the region (in this case the EEDA region).
- To generate by iteration a reusable, cumulative list of considerations for the procurers of ICT projects. For example, projects and partnerships history for the region.

One of our concluding slides conveyed this message:

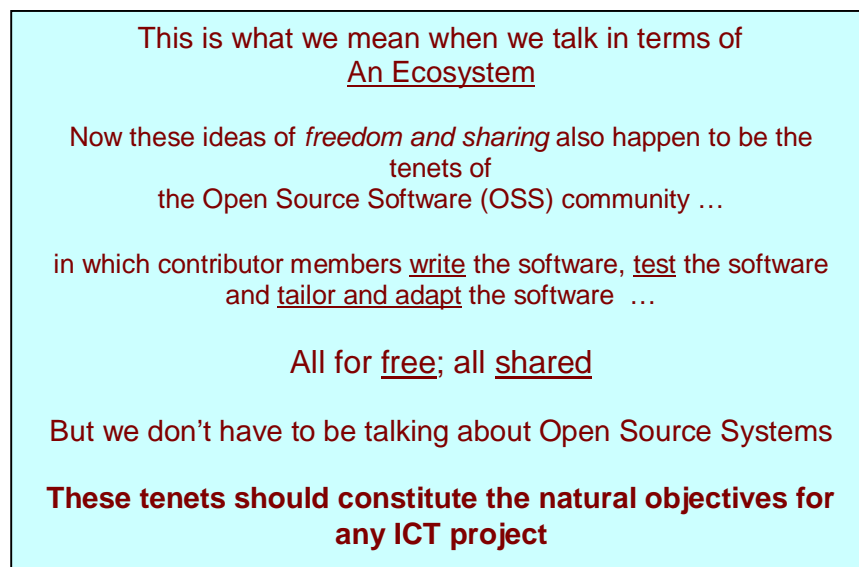


Figure 2 Presentation Slide for Hunts DC Scrutiny Committee

We stressed that the Local Authority was the negotiating party with the power when seeking contractual partners in procurement, and should by all means available ensure that all they needed was written into the contract, with option to review in light of changing requirements, legalities and technologies. These issues would in any case be ameliorated if (1) skilled workers on the project were in-house trusted employees and (2) there was no long-term lock-in by contract.

#### 1.1.4 Power in the Market

In this section we were mainly steered by OFT reports and Dexter Whitfield's findings at the European Services Strategy Unit reported in his of 2010<sup>90</sup>, and articles and reports previously cited in sections of this report.

We subsequently revised our ideas on power in the market once we realised the extent to which Central Government goals and initiatives on the outsourcing of projects influenced the local authorities, and the level to which the private sector ethos was becoming embedded into public sector culture<sup>91</sup>.

<sup>90</sup> *Global Auction of Public Assets*, Spokesman Books.

<sup>91</sup> Dexter Whitfield, *Cost overruns, delays and terminations: 105 outsourced public sector ICT projects* ESSU Research Report No. 3 [2007]. Also interview with Unison Trade Union (interview 17), and interview 14 with CW.



The [2004] Office of Fair Trading Report<sup>92</sup> stresses two key dynamics: (1) size of the public buyer's power relative to the size of the total market. Thus, in practical terms a powerful buyer is a buyer who is large relative to the total demand within a market. However, we have identified other factors. As the market concentrates, choice for the buyer is restricted to very large corporates and consortia. As the constraints in government funding become clear (and more urgent in 2010 with the advent of the Coalition Government's 'hard times' policies) the power of the suppliers to offer contracts in their best own interests grows. Key properties promoting the suppliers' interests are (1) external private ownership and lease-back to the public sector, (2) long contractual period.

The presentation from the team emphasised the 'Four Accounts' assessment strategy recommended by OPAALS/DBE for determining fair outcomes for all the stakeholders<sup>93</sup>.

**Further concrete and detailed suggestions to HDC were that:**

- A Spartan core of most commonly used software to be compiled: for example: email, Internet, word processor and spreadsheet should provide the focus of provision<sup>94</sup>.
- In relation to maintenance issues: a long term perspective on best value (TCO – total cost of ownership) should be taken. For example, commercial procurement can have unforeseen consequences: extra components may be required, not initially purchased or within the scope of the contract, with the requirement for council budget recalculation (upwards). Again, contracts drawn up on behalf of the local authority may be flawed yet accepted by the winning bidder, (an issue of quality of legal advice available to each of the contracting parties<sup>95</sup>). The result can be that the bidder/supplier can subsequently charge as extras for services not included in the flawed contract. Rents from the public sector body to the provider may increase beyond the public sector's ability to pay. Where will the assets be held in case of breach by non-payment of the procurer?

These considerations in turn pointed to (1) a modular approach to *policy*, *procurement* and *contract* at design level, (allowing for speedy update on legislative and other changes) and (2) a requirement to submit to the rules of reusable software and rapidly and efficiently maintainable code. That is, Open Code owned by the council preferred. Open Standards are desirable to accommodate specialist proprietary code as necessary. (See Study Part 2, for illustration).

### **1.1.5 The Response to the Suggested Framework from the Scrutiny Panel**

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<sup>92</sup> <http://www.hm-treasury.gov.uk/d/oft742b.pdf> at s1.10.

<sup>93</sup> Lorena Rivera Leon A *Cost-Benefit Analysis Framework for assessing the net benefits of Digital Business Ecosystems implementation in Europe* in *The DBE Book*.

<sup>94</sup> These four functionalities are estimated to constitute around 90% of the Council office requirements. Interview with JJ.

<sup>95</sup> Interview 4

The proposal was brought before the Economic Well-being Scrutiny Panel on 11<sup>th</sup> March 2010. The Scrutiny Committee comprised 10 councillor members and two independents. No members of the technical computing staff were present. There appeared to be no ICT specialist in the room (Confirmed by subsequent Fol release). CVs of the councillors are usually only found in their election literature, and getting this information would require a special request via the council office for information about each councillor, and the fervent hope that electioneering material has been preserved.

1. Members of the Scrutiny Panel appeared to be bent on reducing council jobs as a priority<sup>96</sup>, whereas we argued the long-term effects of a haemorrhage of local funds for proprietary licenses, and/or PPP contracts with large consortia. These were likely to impoverish local skills, shrink a sustainable local graduate job supply and offering of apprenticeships for school leavers; also reduce the knowledge share held in local repositories. One panel member stated, in relation to his own business: 'we replaced all our computers with Apple and were able to get rid of 10 people'. This appeared to him to be a laudable (commercial) goal, which might be transplanted into the public sector.
2. Members showed scepticism in regard to departure from the proprietary sources of software to the 'untried' realms of Open Source provision. 'If you want to leave Microsoft, then good luck to you'.
3. One member had managed a large organisation in his career and advocated parsimony in relation to the number of participants (including advisers) in any project as it 'slowed things down' in his experience. This particularly referred to proliferation of bidders and any increase in number of stages in the process. See the 'approved suppliers' list approach<sup>97</sup>, element 2 of the study.
4. Members were defensive regarding the current governance models they use, citing Prince2<sup>98</sup>. We pointed out that Prince2 covered project management *within* the project whereas the model of governance we described was a *fully independent one*, both broader than and *external* to the project.

## Addendum

The latest pronouncements of the Government in terms of ICT strategy are encapsulated here:

In its *Digital Britain* report the Government said that it wanted the public sector to reap the benefits of scalability, speed of provisioning and flexible pricing that it says cloud

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<sup>96</sup> Known to be a Central Government target. Government announcements

<sup>97</sup> These suppliers will have already filled in the *Pre-qualification Questionnaire* reinforcing incumbent bias when contracts are awarded.

<sup>98</sup> Prince2 is a *de facto* standard for project development, stage by stage. It is in the public domain, but requires substantial training, which is provided privately. A similar procedural prescription would be the older SSADM. In either of these cases any developer is entitled to develop their own set of *meta-rules* to supplement the Standard (Interview 12 with specialist Defence sector software developer).

computing can bring. While it consults with an IT trade body the Government has told all departments to make sure that all IT procurement from now on is compatible with cloud computing<sup>99</sup>.

"All those Government bodies likely to procure ICT services should look to do so on a scalable, cloud basis such that other public bodies can benefit from the new capability," said the report<sup>100</sup>.

This tells us that as technology advances there will be abundant opportunities for Capital to acquire public sector interests with yet more technology. However, our experience points to the fact that the fundamentals of wise governance informed by deep technological experience are absent from government assessment of new technologies as are appreciation of the implications in terms of true 'value for money' and sustainability.

### 1.1.6 The Bedfordshire PFI Case: a Warning<sup>101</sup>

The analysis here is the author's own. ***Cost category is recorded in capitals and square brackets.***

Documents released on application under the Freedom of Information (Fol) Act by Bedfordshire local authority indicate that the council was "deeply dissatisfied" with the performance of its PFI partner HBS<sup>102</sup>. The council terminated the contract for alleged breach<sup>103</sup>. The contract began in 2001, it was terminated in 2005. Bedfordshire later retrenched to avoid an expensive and protracted legal battle. Under the terms of the 'clean break' settlement it made, the council stated that HBS was *not* breach. The Council has now paid HBS total costs £7.7M. [COMPENSATION].

The Council also paid £949,784 for laptops which the company supplied to schools. [REDEMPTION OR REPLACEMENT OF ASSETS].

In addition, Bedfordshire was obliged to allocate £1m from its reserves to cover "transitional management and legal costs". [TRANSACTION COSTS].

The council has taken back many of the work force sent into the private sector under the contract. Their union, *Unison*, is very concerned about the erosion of workers' rights under this type of contract<sup>104</sup>. [EMPLOYMENT DISRUPTION, AND LOSS OF RIGHTS].

On HBS's website a statement reads:

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<sup>99</sup> Cloud computing is the use of massive central computing resources for IT work, with more modest computers connected to servers by networks. With the increasing ubiquity of broadband internet access cloud computing has become increasingly widespread.

<sup>100</sup> <http://www.out-law.com/page-10114> 23/06/2009.

<sup>101</sup> Bedfordshire County Council has paid the business service provider HBS £7.7m to terminate its £265m, 12-year outsourcing contract for ICT and other services prematurely. Details of the settlement were initially confidential, but were disclosed by the Council under the Freedom of Information Act. (Posted in IT Channel, 14th September 2005).

<sup>102</sup> Company details HBS website: <http://www.sap.com/uk/partners/categories/publicsector/hbs.epx>

<sup>103</sup> The public sector union UNISON produced a dossier of evidence to back up its claims that the quality of the council's services had suffered, not improved, as promised.

<sup>104</sup> Interview 17.

During the four years of the HBS-BCC<sup>105</sup> partnership, *HBS had an excellent track record in meeting key performance indicators and played a significant role in improving BCC's CPA rating*. HBS is proud that it made a positive difference to the quality of the service that the people of Bedfordshire received

The file wrapper 'document properties' field records '*a success story*'.

## 1.2 Instance 2: Platforms for Consumption of Knowledge in the Schools Sector

Here we develop a model of the *production and consumption of knowledge*. We explore the way that digitised educational content is supplied in the school sector and supported by proprietary software platforms. We reiterate the view that if OSS and Open Standards were part of the schools ICT culture, then this culture would be conveyed by the learners into the workplace where knowledge would be produced with OSS tools, and other OSS tools conceivably developed on this knowledge base.

This study examines (1) the current costs, merits and demerits of proprietary software provision across the UK schools estate, and (2) the plight of the SME knowledge content providers in a market dominated by very large contractors. What we concluded from this study was that (a) the software licenses were intrinsically expensive and a resource drain on the schools that increases over time (b) the proprietary licensing models had punitive conditions for schools wishing to exit contracts. Schools are thus caught in a bind of budgeting for expensive licenses, or meeting penalties for exit which are equally or even more unaffordable.

### 1.2.0 The Financialisation and Commodification<sup>106</sup> of Learning and its Ambience

If the environment in which students learn is circumscribed by proprietary products and units defined by commercial contracts then the mind set is determined for the students, who will eventually have responsibility for enterprise and the public sector.

The pattern of *use of private intermediaries under the Building Schools for the Future (BSF) programme had disadvantaging effects*: (1) contracts made between suppliers and the public sector bundles 'soft services', including ICT provision with physical asset construction and maintenance services ('hard services') when new schools were contemplated<sup>107</sup>. (2) The intermediaries used can acquire proprietary software under contracts with the software publishers on favourable conditions, and retain a profit margin when passing the discount on to schools. The primary stakeholders are the school staff and the learners, and though they are consulted, the bid leader in the school is usually the Head, who already carries a heavy workload. The problem of onerous paperwork and consultations add to the Head's customary

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<sup>105</sup> Bedfordshire County Council.

<sup>106</sup> In Dexter Whitfield's first major theorisation of PPPs and the destiny of the public sector [2010] *supra*, financialisation and commodification are the first steps in ascribing a pecuniary tag to all valued assets, including learning in children.

<sup>107</sup> All new schools in UK were projected to be built under such contracts under New Labour prior to May 2010. Now under the Coalition Government many contracts have been cancelled. It is unclear where the notion to bundle ICT with construction came from.

workload and means that it is hard to find either time or the relevant skills for the review task<sup>108</sup>.

We found evidence of substantial marketisation of educational content. A trend towards supply-side aggregation responds to the way demand-side aggregation in procurement has been encouraged by policy-makers. Under these conditions, the development of Open Standards can be deferred, since in the 'large single provider' case clearly within vendor, products are compatible. However that vendor can then control the operability protocol such that SMEs who provide content, much of it superior to and more innovative than the material from the large provider can find themselves locked out. The level of power this gives to companies that control the media, including the large publishers, is considered by SMEs disproportionate, and not surprisingly has been raised before the EC as a matter of Competition Law.

Crispin Weston, himself an SME content provider to schools emphasises that interoperability failures must be contemplated in the context of content interoperability; that is, not just as failure at generic ICT platform level – which OPAALS addresses as its mission - but also at application and content level, where inflexibility and lack of portability impact knowledge dissemination from teacher to student and across the teaching profession.

The SMEs are further disadvantaged at the bidding stage by (a) the scope and non-specialist nature of the bids, (b) increasing EU regulation in bid pre-requisites and (c) the increasing desire of Local Authorities to use 'arms length management' for service provision, which sits best with complete delegation to very large providers. Point (c) is not a surprising development in light of contract complexity, regulation, and the plethora of points at which litigation can be triggered.

This case study is based on interviews and correspondence with Crispin Weston<sup>109</sup>, his submission of a complaint to the EC, and his publications and discussions on technical requirements for a democratic Open Standards system for schools content. His initial criticisms of *The British Educational Communications and Technology Agency*, Becta ultimately led to his recent position as its technical advisor. The key interoperability document he provides is *The Requirements for a Content Packaging Profile*<sup>110</sup>. The study is flanked by reports on the adverse effects already in evidence, and seemingly inherent in proprietary software contracts.

Dexter Whitfield's extensive work on public sector procurement, including schools services under Public Private Partnership schemes, notably LEPs (below) is discussed. The work of Jean Shaoul in this field is also cited.

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<sup>108</sup> Typical experiences of a Head are reported: <http://www.teachingexpertise.com/articles/building-schools-future-personal-view-3911>.

<sup>109</sup> Interview 14, and subsequent extensive exchange of views and publications, and see the Saltis website.

<sup>110</sup> <http://www.saltis.org/papers.htm>.

### The Human Life Cycle: Knowledge Consumption and Production

School and college students are intensive learners – *knowledge consumers*. Maturity into the career stage of life is dominated by *knowledge contribution*, with a looping return to knowledge consumption to inform professional output. The creative – that is professional - phase can take place in academe, small or modest-sized companies, trade shops or large corporations, or in the public sector.

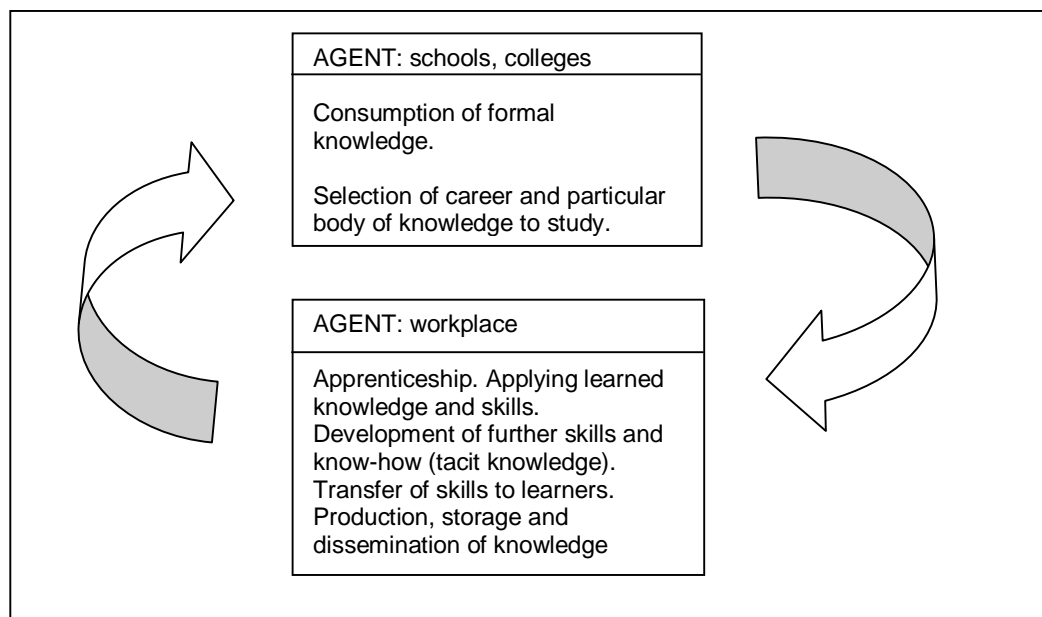


Figure 3: Principle Phases of Knowledge Production and Consumption

This model and its implication for the social and commercial health of a community forms the foundation for the discussion that follows:

#### **1.2.1 The Costs of ICT Software Platforms for School Learning Activities**

This section's content is derived from three Becta reports on the costs of provision and upgrade for the schools ICT estate in England and Wales. Issues analysed are set out after the relevant clauses in square brackets.

The findings here show the impact of retaining a marketised approach to ICT provision in schools on the total facilities schools can provide in times of declining support from the state.

From Becta's report: *Microsoft Vista and Office: Interim report with recommendations on adoption and deployment* [Jan 2007], section 1 come these costings:

1.13 Based on the size of the school ICT estate in England in 2004, indicative costs of deploying Vista [operating system] are some £160 million.

1.14 At the institution level the costing data indicates that for a typical primary school to deploy Vista across its ICT would cost in the region of £4,000. For a secondary school, the cost of a similar deployment would be around of £25,000.

The report's conclusion was that:

The new features of Vista add value but do not justify early deployment in the educational ICT estate. Educational institutions are strongly advised to consider the findings of Becta's final report on Vista before considering any wide-scale deployment.

In regard to the Office 2007 Suite:

Assuming that hardware upgrades would be necessary, the Oakleigh model<sup>111</sup> estimated the costs of deploying Office 2007 across the infrastructure of a primary school at some £4,000.

5.13 If hardware upgrades were necessary, then typical costs for a secondary school would be some £26,000.

5.14 Taking the school system in England as a whole it is estimated that to deploy Office 2007 across all schools if hardware upgrades were necessary would be in the region of £167 million.

The report recommended that:

Educational ICT suppliers should seek to facilitate **choice** to schools, ensuring that computers for this market are shipped with a choice of office productivity suites on the desktop. Ideally this choice should include **an open-source offering**.

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<sup>111</sup> Oakleigh wrote the report.

### 1.2.1.1 Lock-in and Exit from Proprietary Systems Acquired by Schools

The box summarises Becta's 2007 40-page report on the flaws of the licensing model for schools platforms. The analysis in the box, and in the subsequent discussion of recommendations is, is recorded as category of issue in square brackets and capitals.

#### **Becta Report, January 2007: Microsoft's Academic Licensing Programmes**

- Academic customers are disadvantaged compared to other customers.
- They have no access to a license category that automatically grants the right to use the software in perpetuity.
- To acquire these they must make an additional significant buy-out payment.
- The lack increases the potential for lock-in.
- This is considered as an incentive to renew the current agreements on an indefinite basis. [INCUMBENT, INSTALLED BASE ADVANTAGE].
- An e-survey's evidence indicates that very few respondents (under 5%) considered the costs of exiting from their Microsoft subscription agreements were 'easily affordable'.
- Evidence also suggested that the overwhelming reason that educational institutions choose one-year subscription licensing models was cost.
- Critically over 70% of the institutions in the review data seem not to have understood the buy-out penalties when they signed up [OBFUSCATION OF TERMS AND CONDITIONS].
- Educational institutions are therefore likely to find that they have accrued significant liabilities if they need to exit a Microsoft subscription licensing agreement.
- For a 'typical' secondary school using Microsoft's School Agreement subscription licensing under the arrangements pertaining at the time of our review, the buyout payment due to Microsoft on exiting School Agreement for a typical 'basket' of desktop products alone, would likely be equivalent to a new teacher's salary for one year.
- Schools tend to retain computer systems longer than other places; thus the total number of computers on which they must pay a subscription-based licence fee increases year on year. The 'elderly' nature of their ICT estate means that older PCs may not even be capable of running the new software. Under these arrangements, therefore, costs increase while the scope for using the new products across the entire estate decreases. [TCO IS HIGH, UNSUSTAINABLE DECLINE IN USABILITY].
- Every additional PC acquired by the school results in an increased subscription payment and higher buy-out charges. In the further education sector pricing is based on the number of staff not on the number of computers. [MARKET SEGMENTATION TO THE DISADVANTAGE OF SCHOOLS].
- Licenses are paid for platforms that will not run eg Apple software – important in many schools for graphics work. [INTEROPERABILITY FAILURE CAN REDUCE THE QUALITY OF LEARNING DELIVERY].

As a consequence of these findings the Report recommendations are:

1. Buy-out costs should reduce for each year an educational institution has been using the subscription model, to the point where after (say) three years of subscription payments, educational institutions acquire the right to use the licensed software in perpetuity. [AVOIDING THE TREADMILL OF RENEWING SUBSCRIPTIONS].



2. The educational institutions are guarded against lock-in to Microsoft subscription licensing agreements by a significant reduction in the scale of the buy-out costs associated with licenses. [EXIT PENALTY CLAUSE REVIEW]
3. Microsoft is urged to introduce effective arrangements to give all educational institutions easy access to the pricing of Academic Select licensing. This should go beyond the need to give better advice to the sector, and make structural changes to the licensing programmes to ensure wider access. [ELIMINATE OBFUSCATING PRICING INFORMATION].
4. Since Microsoft software bundles are frequently unsuited to schools' needs, it is advised to improve choice and value for money, offering versions of the platform bundle tailored to the needs of particular sectors or categories of users. [UNWANTED BUNDLING SHOULD BE TRANSFORMED INTO CUSTOMER-LED BUNDLES].

In the final Becta report of the series, the issue of a choice including OSS is emphasised as an essential<sup>112</sup>. A specific aspect of interoperability was the need for the student *to use his home machine* without problems in this category. The report says that Becta pledges to

*'work with the open-source community to develop an online catalogue of open-source software suitable for use in UK schools. The information available would include how to get support for open-source products and how to contribute to their future development. The catalogue would be published under a creative commons licence so that suppliers could repurpose it for their own use'*

It further notes:

*the significant opportunity that the move to open document standards holds for educators.*

And objects to:

*a lack of credible support by Microsoft for the ODF international document standard, which creates significant difficulties for non-technical users who want to use competitor products, and which has the potential to limit the uptake of such products and exacerbate the digital divide.*

The report scorns the clumsy format converters and complains of the:

*creation for non-technical users of a document-interoperability landscape which is highly complex and involved, which would absolutely defeat the original purpose of a move to open document standards.*

Savings from OSS implementations in the European schools sector are demonstrated by a Spanish regional example<sup>113</sup>. The initial costs were: software development €71,530,06, software technical support €11,000.00, total for servers: €111,032.78, so a total of

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<sup>112</sup> Microsoft Vista and Office 2007 Final report with recommendations on adoption, deployment and interoperability. Jan [2008].

<sup>113</sup> <http://www.osor.eu/studies/docs/floss-deployment-in-extremadura>. 2002 - 2003.

€193,562.84, calculated to save around €30M as compared to more closed or non-free software.

### 1.2.2 Content Interoperability in a Learning Environment; SME Exclusion

The majority of this part of the schools study comes from correspondence, interviews and exchanges of papers and ideas with Crispin Weston, initially proprietor of the SME *AlphaLearning*, an educational content provider. He now leads a movement for reform of content interoperability rules for the schools sector. Some of his work is available on the Saltis website, which he founded in 2007 and now chairs.

To understand how OPAALS/DE goals will be frustrated in the context of Open Standards for the education sector, it is necessary to appreciate the extent to which not only lower level IT platforms (core software), but also the lesson content, is currently being procured from the private sector. Without a possibility to port and adapt content across the schools estate, via open interoperability protocols, many innovative and specialist SME content providers find themselves locked out of the procurement process by monopolistic proprietary standards.

#### The Issues

Weston deplores the lack of appropriate technical expertise in Becta or in the Regional Broadband Consortia (RBCs) at policy-making level<sup>114</sup>, which confirms our experience with the local authorities we have studied for this deliverable:

Technical advisers with genuine knowledge of e-learning standards appear to have little or no input into policy formation<sup>115</sup>

His complaint to the EC Commissioner for Competition, Neelie Kroes, [5<sup>th</sup> January 2007] passes on to her the view of the Office of Government Commerce (OGC) that the award of *Framework Contracts*<sup>116</sup> to 10 companies providing content to schools was likely in breach of OJEU regulations<sup>117</sup>. A technical description of the breach is illustrated in diagram form in figure 3 below.

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<sup>114</sup> *A critique of Becta's policy on learning platforms*, Crispin Weston Alpha Learning 12th June 2006. Also interview 14 with CW.

<sup>115</sup> *A critique* Weston at P7.

<sup>116</sup> *Becta's Learning Platform Framework Agreement*.

See also [http://www.ogc.gov.uk/documents/guide\\_framework\\_agreements.pdf](http://www.ogc.gov.uk/documents/guide_framework_agreements.pdf).

*Framework Agreements OGC Guidance on Framework Agreements in the new procurement Regulations*.

<sup>117</sup> Contracts above a certain value must be advertised in the Official Journal of the EU. (OJEU).

### 1.2.2.1 Non-interoperability and the Exclusion of SMEs offering Educational Content

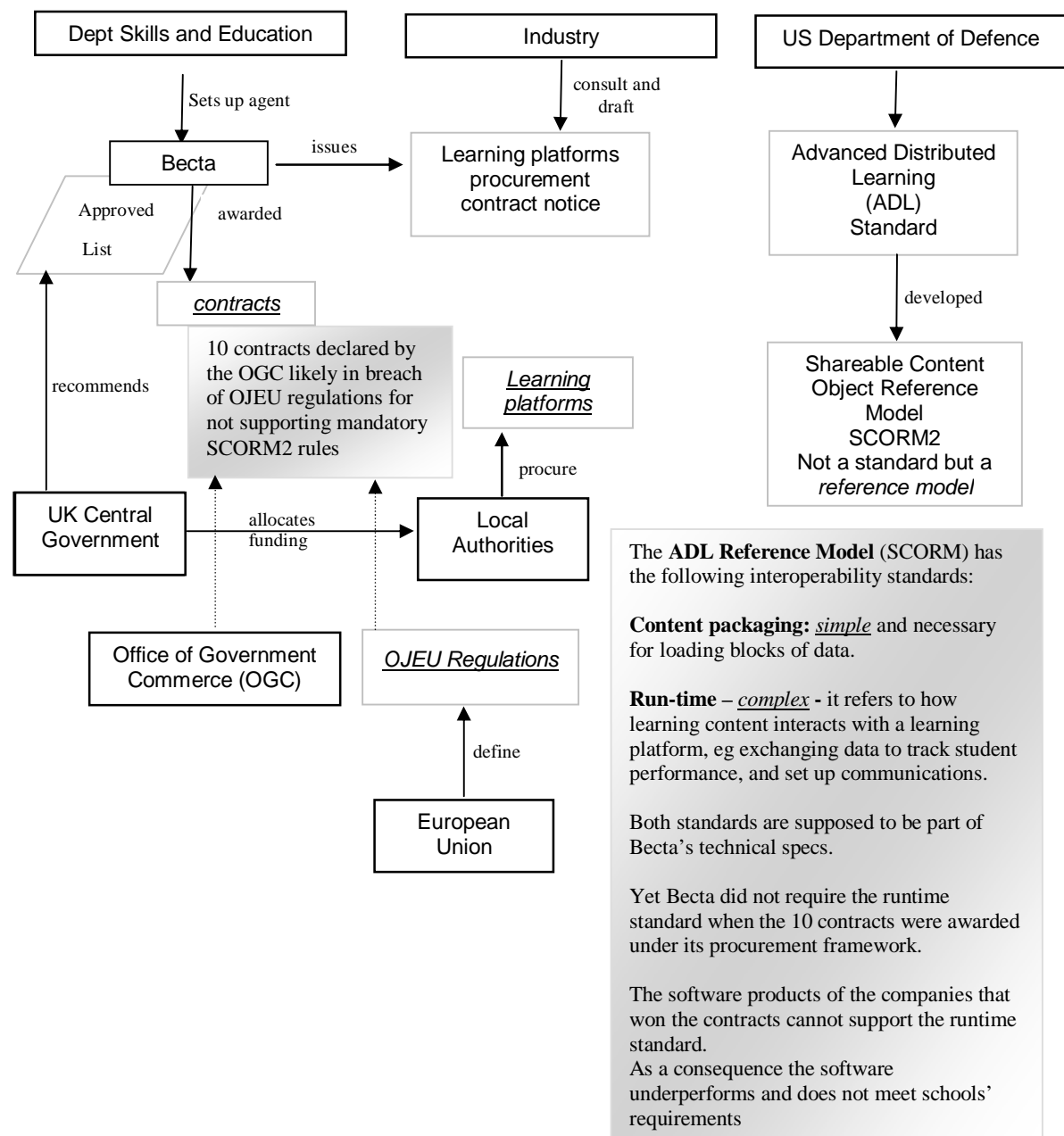


Figure 4 Interaction of Entities and Historical Context for Educational Content Supply

### 1.2.2.2 Government Action and Becta's Procurement Procedure

On 21st November 2008, an Early Day Motion (EDM) was submitted by John Pugh in the UK Parliament criticising the Becta's learning platform procurement framework (100 MPs supported the EDM). Pugh was lobbied to bring the motion by supporters of the Open Source platform Moodle<sup>118</sup> which, along with small companies, has been excluded from the educational procurement by (1) the financial criteria and (2) the requirement to provide a complete suite of tools.

Weston reckons Becta's refutation of this charge to be disingenuous, as it is clear that the injection of £40M into Local Authority budgets for explicit use under the framework will seriously disadvantage suppliers whose products are not on the framework (see framework agreements s1.2.3 below).

Becta used the argument that the major bidders were free to subcontract the work to the SMEs, but Weston remains sceptical that the major companies would want other than their own proprietary components with its existing interoperability wherein they control the protocol. This allows local monopolies and vendor lock-in to develop. The result, maintains Weston, is an anti-competitive environment. He comments:

Small suppliers are explicitly locked out of Becta's procurement strategy by the insistence that to tender, suppliers must have a D&B positive net worth of £700,000 to £1,499,999<sup>119</sup>. While it is understandable that smaller companies could not be expected to tender for large infrastructure projects, the procurement will disrupt the ability of small companies to prove their products on a smaller scale<sup>120</sup>.

Weston appreciates that content interoperability requires twinned inputs: the teacher content and ideas, coupled to industrial technical know-how to transfer effectively:

‘the experimental concept encapsulated in a form which the [technically] non-expert can use easily ‘out of the box’. This is what commercial companies do: they turn innovative concepts into useable commodities; in this case, into ‘content’<sup>121</sup>.

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<sup>118</sup> <http://www.oss-watch.ac.uk/resources/cs-oss-watch.xml>. See also the Jisc case studies.

<sup>119</sup> ‘*Dun and Bradstreet positive net worth*’, is defined as your net worth when your liabilities are subtracted from your assets. It is a snapshot monetary expression of how much you are worth at a given moment of time.

<sup>120</sup> *A critique*, at P20.

<sup>121</sup> *A critique*, at P8.

### 1.2.3 Contracts for Schools

As described above and explained in more detail below, building a new school is no longer a straightforward matter of design and build. These 'hard services' are bundled with many others, and contracts can last for 30 years, so that flexibility and control are lost not only to the school but also to the local authority.

Such is the scope of the work done that contractual complexity baffles the procurer more than the supplier and his lawyers. This asymmetry leads to a danger that the implications of signing up to these long-term and all-embracing contracts is not fully understood by the body that pays for the work out of the public purse.

#### 1.2.3.1 The Anatomy of a Framework Agreement (FA)

Framework agreements allow huge allocation of funds to projects of massive scope on the ground that call-offs (requests by the public sector body procuring to the supplier to implement elements of the agreement) may or may not be forthcoming. There is considerable blur as to whether FAs are legal contracts or not. In UK law they are.

This definition of a Framework Agreement is paraphrased from the OGC document:

An agreement with suppliers to establish the terms governing price and quantity etc of contracts to be awarded during a given period. A general term for agreements with providers setting out terms and conditions under which specific purchases (*call-offs*) can be made throughout the term of the agreement. The FA itself may be a contract to which the EU procurement rules apply. The public body is under no obligation to commission any call-offs at all.

The key is that a means of awarding contracts under framework agreements is provided for without need to re-advertise and re-apply the selection and award criteria.

This last statement indicates an inherent bias towards the large, sometimes incumbent, companies or consortia. The maintenance of 'approved lists' of large (national or multinational) companies produces a recursive exclusion of local SMEs. In January 2007 Weston claimed:

The British government is supplying £40 million to Local Authorities to acquire learning platforms, with the strong recommendation that they select successful candidates from Becta's approved list<sup>122</sup>. Schools wishing to use platforms not selected by their local authority are free to do so, but must find the money from other budgets<sup>123</sup>.

Weston argues that approved suppliers are required to provide a very wide range of different types of software across the school sector and that such a regime would exclude innovative solutions provided by small companies addressing particular niches only.

A key point is that the single provider solution may appear to ameliorate the issue of lacking

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<sup>122</sup> Approved lists have a higher likelihood to contain large companies (corporates) than SMEs due to stringent requirements for approval which SMEs find it difficult to meet with their limited resources.

<sup>123</sup> Complaint from Weston to Neelie Kroes, Competition Commissioner: 'I am writing to ask you to investigate a public sector procurement which I believe contravenes OJEU regulations and also stifles competition in the UK market for software in schools.' Letter dated 5<sup>th</sup> Jan 2007.

interoperability: transactions taking place within the ambit of one vendor organisation are naturally interoperable. In the long run however, this inhibits emergent innovations from the specialist SMEs, or even participation of the SMEs at all. He summarises:

*Without robust standards for interoperability, data exchange can only be achieved by using proprietary protocols.* These give *an anticompetitive advantage* to the company that controls the protocol. Teachers find themselves locked into inferior systems and small, innovative companies find themselves marginalised.

The National Audit Office report of March 2007<sup>124</sup> recommended that steps be taken to render bidding more competitive (more bidders).

### 1.2.3.2 *Building Schools for the Future* (BSF) Programme: Reports and Experiences

BSF is a massive school capital investment programme. The scheme is a creature of the earlier New Labour Government, whereby an ambitious programme of better schools are provided as new builds<sup>125</sup>. The recently elected UK Coalition government is now inspecting the programme with a view to freezing the expenditure (June 2010). Under BSF, the local authority is expected to find a private partner to deliver the capital building programme and soft and hard services. Local Education Partnerships, LEPs, which were introduced later now provide that partnership structure.

**Jean Shaoul**<sup>126</sup> concludes that (1) BSF expands the role of the private sector much further than the earlier PFI schemes, and (2) under the LEP model, local government will become *commissioners, not providers* of public services.

Shaoul comments on LEPs specifically: 'Firstly, *the LEP has the power to take over all the secondary and even primary schools in an area, not just those set to receive BSF investment*<sup>127</sup>. *The LEP may also replace the educational support services, previously provided by the local authority.* It will have a monopoly on all building and service projects within an area for at least 10 years, with an option to renew for a further five years.'

The new UK Coalition Government emphasises that it *will not stop building schools* but the wasteful BSF methodology will be halted where contracts have not reached close. It prefers *community members* (parents) should control school procurement, if they can make a case for a specific type of school in their area, (the Academy Programme). Certainly modest-sized schools have been built on this independent model to highest standards for reasonable sums (of the order of £1.5M). The model would also allow choice of ICT style, uncoupled from structural asset commissioning as was the case with BSF. This last 'communitarian' aspiration has received weak support from potential procurers.

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<sup>124</sup> *Improving the PFI tendering process* at

[http://www.nao.org.uk/publications/0607/improving\\_pfi\\_tendering.aspx](http://www.nao.org.uk/publications/0607/improving_pfi_tendering.aspx)

<sup>125</sup> Although there is some evidence that refurbishment would be a better and cheaper alternative.

<sup>126</sup> <http://www.wsws.org/articles/2010/mar2010/edu2-m27.shtml>, World Socialist website 27<sup>th</sup> March 2010.

<sup>127</sup> See also *BSF Economics of the LEP Guidance Note* p19, at [www.partnershipsforschools.org.uk/...](http://www.partnershipsforschools.org.uk/.../)

### 1.2.3.3 The Public Sector Structure and Context of the LEP

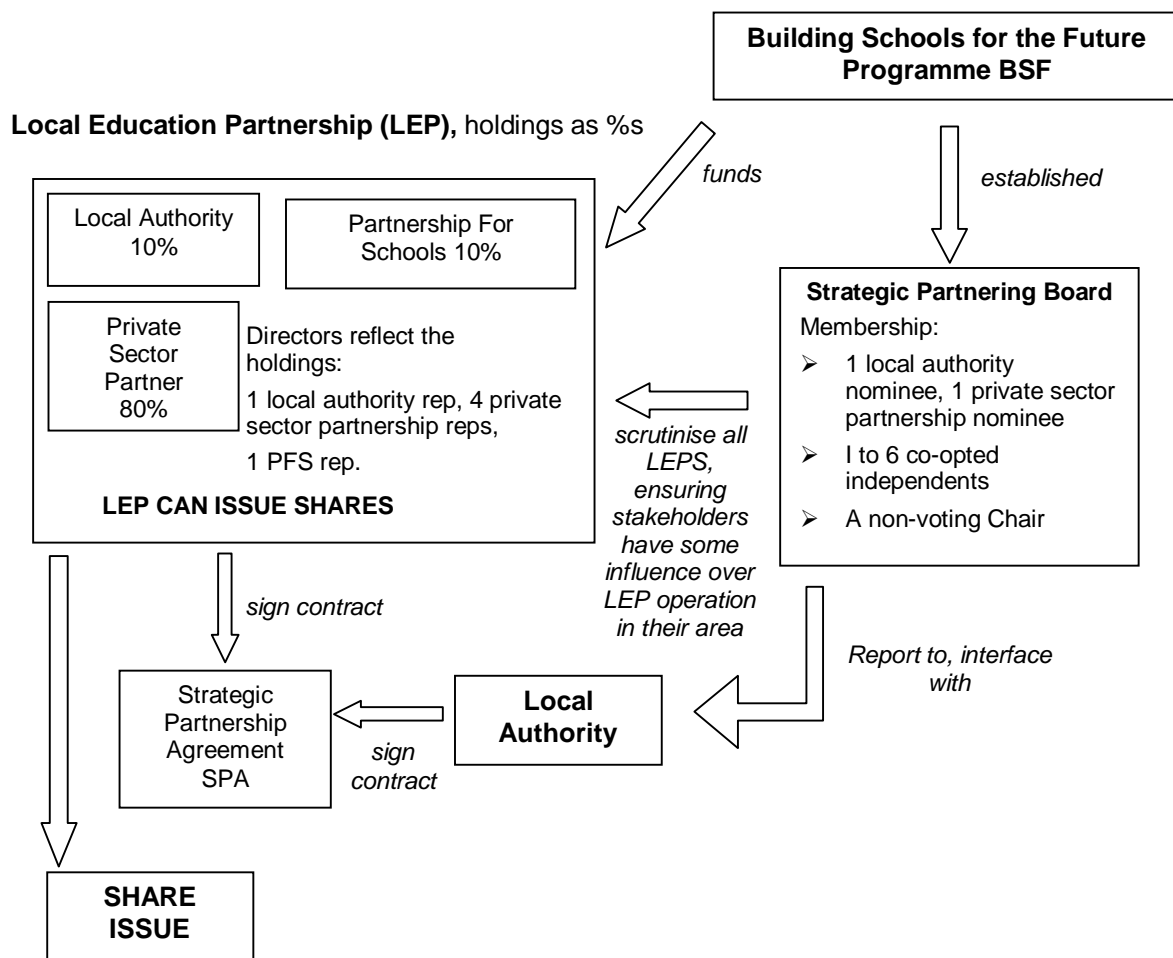


Fig 5 Commissioning and Supplying Processes in a LEP

#### Comments on the entities in Figure 4

Partnership for Schools (PfS) is a non-departmental public body – a quango - of the Department for Education (DfE). It has a monitoring and benchmarking brief over the LEP; whereas a *thick LEP* provides all services to schools, including ICT, a *thin LEP* provides 'hard services' only -ie building and structural maintenance. Schools can choose an intermediate version and mix the provision.

The Strategic Partnership Board is a scrutiny body over the operation of the LEP and monitoring of its performance. There are normally 6 members of the SPB, two Council representatives, a LEP Director and a representative Head teacher and Governor.

BSFI – Building Schools for the Future Investments LLP, is *the central investment vehicle* established by the Department for Education - DCSF/DfE (formerly Department for Education and Skills - DfES) and PUK. It will invest in each of the LEPs and any PFI SPVs. It is an example of the plethora of capital vehicles point to by Whitfield as '*financialising*' the public sector<sup>128</sup>.

<sup>128</sup> Whitfield [2010] *supra* at p66 *et seq.*

A Shareholders Agreement is the agreement between the shareholders in the LEP (the local authority, BSFI and the PSP) which provides the basis for joint working within the LEP, including the shareholders' individual rights and obligations.

### **The Complexity of Costing of BSF and the LEPs**

Costs for public private partnerships such as BSF and LEPs are quantified in Guidance Note *supra*, along with a non-BSF comparator quoted<sup>129</sup>. The costs are unconfirmed.

The LEP costs include these elements: the fixed overheads of running the company, the costs of managing the supply chain(s) for the D&B and ICT contracts, the costs of managing the PFI SPVs and the costs of developing new work in conjunction with the local authority. Experience on early schemes has indicated that the LEP set up costs are in the range of £400,000 to £1,200,000 depending on the size and scope of the LEP.

- LEP and PFI SPV running costs (including overheads) are between £100,000 to £300,000 per annum, for a standard LEP during the period of exclusivity with a flow of new projects.
- LEP development costs to financial close for new PFI projects are projected to reduce over the life of the LEP from a range of circa £1.5 million to £3 million on the first phase to a range of around £1 million to £2 million by the second and third phases, if some of the initial costs are deferred to later phases of the wave. For subsequent waves of the programme the costs for each phase should be at the lower end of this range.

On a similar scale to a PFI scheme the equivalent costs for a non PFI (Conventional D&B only) scheme will be of the order of £1 million to £2 million, which largely comprises design and other consultancy fees with a small amount assumed for legal and financial advice<sup>130</sup>.

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<sup>129</sup> BSF Economics of the LEP Guidance Note, issued by the OGC.

<sup>130</sup> All figures rely on BSF Guidance Notes.



## 2.6 The Contractual Structure of the LEP<sup>131</sup>

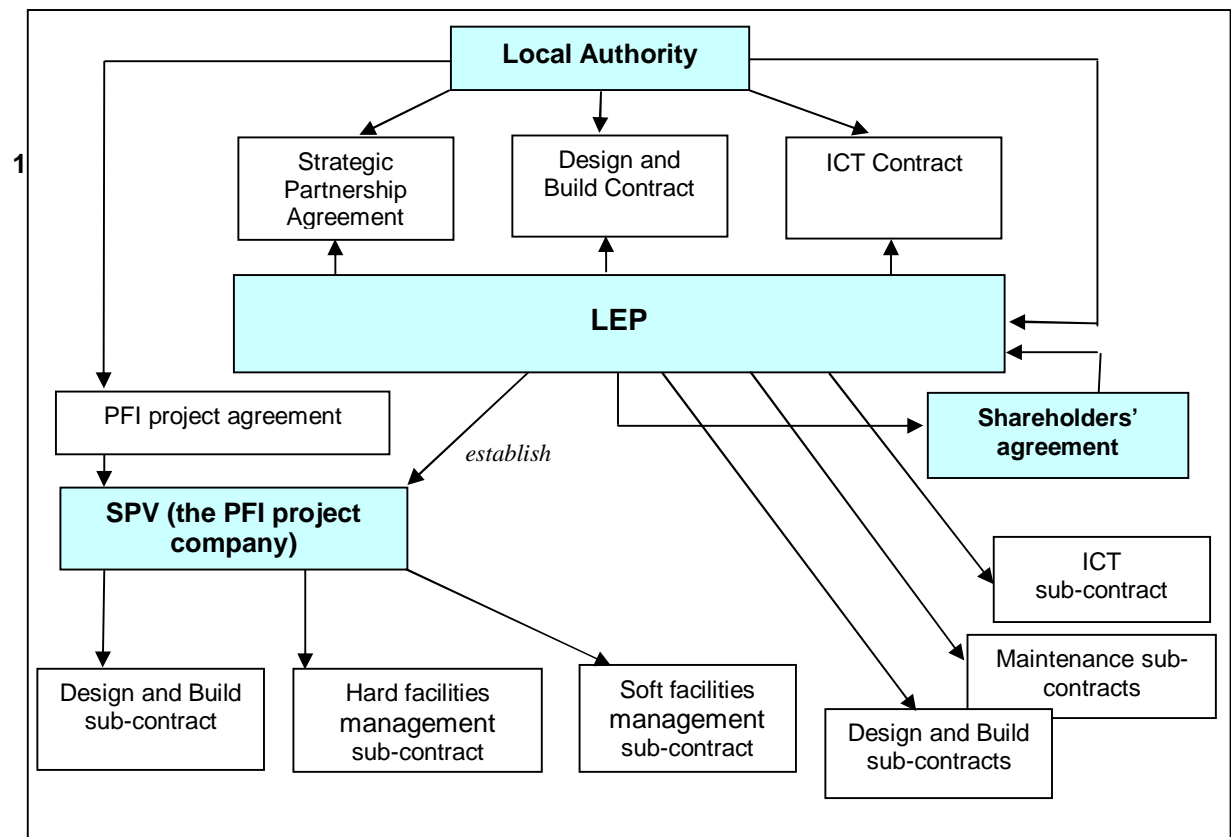


Fig 6 The Entities in a LEP

<sup>131</sup> Based on *BSF GUIDANCE NOTE Economics of the LEP* Version 2.0 Status: Issued February 2008. (File name EconomicsoftheLEPGuidanceNote).

<sup>132</sup> Based on *BSF GUIDANCE NOTE Economics of the LEP* Version 2.0 Status: Issued February 2008. (File name EconomicsoftheLEPGuidanceNote).

#### 1.2.3.4 The Nature of the LEP Contract

'The LEP shall design, install, test and commission the ICT assets in accordance with the ICT requirements, the Implementation Programme and the Implementation Testing Procedure.' This power effectively denudes the Local Education Authority of its influence on the ICT policy and the capability to be pro-active in OSS adoption is lost to the democratically elected body.

#### Experiences of BSF from a School Head<sup>133</sup>

As before analytical deductions are recorded in square brackets and capitals.

##### Loss of control

A compulsory part of the BSF process is for ICT delivery to be moved from schools to the LEP. [BUNDLING]. BSF thus reverses much of the devolution of control and budgets to schools that took place in recent years as a result of the Local Management of Schools (LMS) Initiative. Schools were well managing their own ICT and facilities services, many being engaged with OSS to some extent. [LEPS PRODUCE RESTRICTION OF CHOICE IN ICT, AND INCENTIVE TOWARDS PROPRIETARY PROVISION].

If the school uses a thick LEP it will lose control of ICT network management. Staff will be transferred to the new LEP. The role of the on-site network manager will gradually disappear; management of the network will be off-site. [REDUCTION OF LOCAL SKILLS AND KNOWLEDGE BASE].

##### Facilities management

The more services purchased from the LEP, the more cost-effective the offer becomes. Despite this schools may wish to retain more control by opting out of some elements of the offer. [PRESSURE TO ACCEPT BUNDLING]. Since the LEP is intended to be operational and provide school services for 30 years, this induces lock-in. [LOCK-IN FOSTERING INCUMBENT ADVANTAGE].

##### Costs

Facilities management costs will almost certainly be higher than current school costs, although a high level of service and performance is offered. Costs are based on square meterage, which, for many schools, will increase as part of BSF. After the end of the ICT contract there is no further commitment to ICT capital funding, and schools are concerned about the impact BSF will have on budgets from that point onwards. [POTENTIAL TO BE UNSUSTAINABLE AS THE SCHOOL ENLARGES OR EVOLVES].

Schools regularly use ICT postponements for short-term reductions in expenditure; in

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<sup>133</sup> This account is condensed from an interview at <http://www.teachingexpertise.com/articles/building-schools-future-personal-view-3911>

a LEP contract the local authority makes the payments rather than the schools, so control over this savings option is removed. [REDUCED FLEXIBILITY AND CHOICE OF WHICH EXPENDITURE TO POSTPONE UNDER BSF]

### **Methodological Note: Data Gathering from Schools**

Although several schools (both Head Teachers and Heads of IT) in the catchment were approached with questions on their ICT preferences and the role of BSF in the provision, none chose to respond. The Head of a Peterborough School was defensive on the use of PFI schemes, and BSF, and referred me to a local Councillor, claiming that he had no powers in the matter of PFI or BSF adoption.

The figures for stopped BSF current schools projects under the Coalition government in the catchment are:

|                        |  |
|------------------------|--|
| <u>Peterborough:</u>   | 9 stopped, 2 for discussion as academies                 |
| <u>Cambridgeshire:</u> | 6 unaffected, only one is PFI                            |
| <u>Bedfordshire:</u>   | 12 stopped, 2 for discussion as academies <sup>134</sup> |

### **The Implications of the LEP**

Dexter Whitfield comments that LEPs erode democratic accountability:

notwithstanding the Strategic Partnership Board, *the formation of which is being left to the very end of the process*. ... The LEP will become *an increasingly powerful gatekeeper to educational strategies, policies and decisions*<sup>135</sup>.

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<sup>134</sup> Michael Gove (Minister of Education) List of 8<sup>th</sup> July 2010.

<sup>135</sup> Pers Comm.

### 1.3 Study Part 3: Local Authority ICT Provision in the Administrative Hubs

The topic treated in this section identifies an emergent theorisation in the work of Dexter Whitfield and Prem Sikka<sup>136</sup>. Both Whitfield and David Craig have explored the nature of contracts let by local and central government. Sikka has traced the accounting status of the very large contractors' investors. These are frequently off-shored and fail to pay taxes to the UK Revenue for work done in the UK. Sikka comments: 'I think tax avoidance will be a major arena of conflict for the foreseeable future and will define the nature of democracy, geopolitics, the state, government and the social bargain with corporations'<sup>137</sup>.

Following this work, the present author has tried to obtain information on the ICT spend and the nature of ICT contracts let within the purlieus of East of England local authorities at Huntingdon, Peterborough and Cambridge.

The chapter reveals these flaws in the methods open to a researcher. (1) Public servants are very reluctant to give interviews; neither do they in the majority of cases respond to emails or telephone calls. (2) This leaves the option to *require* the release of documents and information under the Freedom of Information Act. This presumes that the researcher knows what documents exist.

Responses from the public sector bodies usually take the full legal period of one month (20 working days) to arrive. The material frequently lacks date-stamping, and documents that purport to form a 'series' across time clearly reference entirely different entities within the organisation, so that a timeline cannot be constructed. Since the local press meets similar barriers in respect of free information flow, and all of us are barred by 'contract confidentiality' reasons from the full contractual detail we need, the system of reported public decision-making in the UK is perceived to be undemocratic.

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<sup>136</sup> See the AABA website, and the free online peer reviewed journal *Accountancy Business and the Public Interest*. It contains a number of papers on tax and darker practices of big business.

<sup>137</sup> Pers Comm., on file with the author.

### 1.3.1 Peterborough Unitary Authority, the Freedom of Information Act Releases

Questions in bold, answers in italics underlined. Investigator JS, respondent: E

|   |  |
|---|--|
| <b>Introduction of the subject of Research and opening questions:</b>   |  |
| <b>Questions:</b>   |  |
| <b>JS:</b>  | <b>We are currently looking for signs of information-sharing, shared knowledge production and a local skills register in the public ICT sector, and this information is likely mediated by, and or gathered by, the City Council. Hence we would like to put these questions.</b>  |
|   | Does the Unitary Authority hold an ICT Skills Register?  |
| <u>E</u>  | <u><i>Peterborough City Council does not have a local skills register for the public ICT sector.</i></u>   |
| <b>JS</b>   | <b>We gather that ICT provision in Peterborough City Council itself is now largely outsourced. It would be very instructive to be able to know the following:</b>  |
| <b>Q1 Number of ICT-related council employees in the council's direct employ in core functional areas of the council before outsourcing.</b>  |  |
|   | <u><i>47</i></u>   |
| <b>Q2 Number of ICT-related employees in-house at present (after outsourcing), and projected (same criteria)</b>  |  |
|   | <u><i>1 (full-time equivalent - as at 31 March 2010)</i></u>   |
| <b>Q3 Total number of council employees.</b>  |  |
|   | <u><i>At end of February 2010: 2769 employees</i></u>  |
| <b>Q4 Total council budget for any of the years 2007-8, 2008-9.</b>   |  |
| The Council's Statement of Accounts for 2008-09 can be found on the Council's website at: <a href="http://www.peterborough.gov.uk/council_and_democracy/our_finances.aspx">http://www.peterborough.gov.uk/council_and_democracy/our_finances.aspx</a> |  |
| <b>Q5 Expenditure on ICT-related goods and services for the same years.</b>   |  |
| Total ICT expenditure includes revenue and capital expenditure and also the ICT support departments, hardware, software, schools, and telephony:  |  |
|   | <u><i>2007/08: £12,997,137</i></u>   |
|   | <u><i>2008/09: £10,909,903.</i></u>  |
| <b>Q6 Number, duration and cost of the outsource contract(s), and company or companies to whom the contracts are let.</b>   |  |
|   | <u><i>There is one outsourcing contract and that is with Serco. The contract duration is 2009 - 2016.</i></u>  |
|   | <u><i>With regard to the cost of the contract, this information is commercially sensitive and the Council is not therefore obliged to supply this information and in accordance with the Freedom of Information Act 2000 this e-mail acts as a Refusal Notice. The exemption applies because under Section 43 of the Freedom of Information Act 2000 the disclosure of this information is likely to prejudice commercial interests.</i></u> |
| <b>Q7 Degree of outsourcing of ICT in the schools sector in the Peterborough area.</b>  |  |
|   | <u><i>None</i></u>   |

A further question related to questions 1 and 2 concerned the fate of the employees who were no longer at the unitary authority. I was told employees were transferred to Serco, the ALMOS

contractor for all the local authority ICT under the TUPE<sup>138</sup> scheme, which supposedly protects public sector employee benefits<sup>139</sup>.

At p 220 of the Peterborough Medium Term Financial Strategy and Budget 2010/11 (book 2 of 2) the ICT staff are said to have reduced from 60 to 40 even before outsourcing<sup>140</sup>.

In relation to Q7, the answer does not appear to be correct. There are a number of BSF schools in Peterborough, but no details are available on (1) bidders: number or names, (2) prices, terms and conditions of the contracts or (3) whether ICT is confirmed as bundled with the actual construction of the school building – usually the case with such contracts. The schools involved are in the South of the City in Bushfield, Orton Longueville and Stanground. Budget research revealed these figures<sup>141</sup>:

| Project                            | Category | Sector    | Region          | Capital Value |
|------------------------------------|----------|-----------|-----------------|---------------|
| Peterborough Secondary Schools PFI | PFI      | Secondary | Peterborough UA | 71.40M        |

This project is part of Peterborough's wider PFI decisions, including in the health care and prisons sector. The Unitary Authority's *£505M PFI deal was the fifth largest UK public-private partnership to reach financial close in 2009*<sup>142</sup>.

### **The Peterborough Unitary Authority Budget<sup>143</sup>**

The Peterborough Unitary Authority's overall budget for 2009-2010 is: £247M. The overall budget projection for 2010-11 is £254,514,000.

The Peterborough medium-term financial strategy budget 2008/09 and medium-term financial plan to 2010/11 confirm these strategic goals at section 9.3.1:

The existing strategy remains where *the Council will consider alternative forms of service delivery that can be done at less cost with the same or improved service.*

*Shared Services* – exploring partnership working with a range of councils for corporate services and revenues and benefits.

*Mixed economy* – ensuring that the Council only does in house what it can do better than the private sector expertise available e.g. Information Communication Technology (ICT) reducing services to a core level and buying support for peak workload/specialist pieces of work e.g. legal.

*Arms Length Management Organisation (ALMO)*

<sup>138</sup> TUPE: *Transfer of Undertakings (Protection of Employment) Regulations 2006*. see government issued details at <http://www.idea.gov.uk/idk/core/page.do?pageId=6908271>

<sup>139</sup> Unison the public sector workers trade union is not happy that these rights are in effect preserved. <http://www.unison.org.uk/file/TUPE%20Update%2022%20March%202009.doc>

<sup>140</sup> <http://democracy.peterborough.gov.uk/mgConvert2PDF.aspx?ID=4519>

<sup>141</sup> BSF support for the three schools mentioned now stopped.

<sup>142</sup> Infrastructure Journal.

<sup>143</sup> Sourced from the Budget Book on the Council website.

*Voluntary Sector/Social Enterprise – service delivery options*; Professional Services Partnership (PSP) to secure the transformation<sup>144</sup>.

The implication here is that many public services will be outsourced, with the attendant expectation that only proprietary software will be contracted in.

### **The ICT Spend History**

The figures gleaned from the Council Control Total Summary 2007/08 to 2010/11 are:

|          |  |
|----------|--|
| 2007-08: | £1,247,000   |
| 2008--09 | £1,250, 000  |
| 2009-10  | £1,365, 000  |
| 2010-11  | £1,435,000 (projected or set aside) <sup>145</sup> |

At P111 of the Budget Book for 2010 to 2011 the report states:

The Council has appointed an external provider of ICT Services; it may be that they will fund some elements of the infrastructure with the Council retaining ownership of the assets<sup>146</sup>.

ICT was outsourced to Serco, a large multinational contracting company<sup>147</sup>, in September 2009. Under the contract, which is valued at around £44M over 11 years, Serco will act as a strategic partner to the Council, advising on procurement and transforming existing processes and services.

### **Democracy and Decision Making: Scrutiny of Local Authority Practices<sup>148</sup>**

Peterborough has *two scrutiny commissions* and *four scrutiny committees* to oversee what is becoming known as the 'democracy' facet of council activity. Each manages its own work programmes and has the power to report directly to the Cabinet<sup>149</sup>. These are:

- Scrutiny commission for rural communities
- Scrutiny commission for health issues
- Creating opportunities and tackling inequalities scrutiny committee
- Environment capital scrutiny committee
- Strong and supportive communities scrutiny committee
- Sustainable growth scrutiny committee

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<sup>144</sup> <http://www.peterborough.gov.uk/PDF/coun-accounts- mediumTermFinancialStrategy08-09.pdf>

<sup>145</sup> <http://www.peterborough.gov.uk/PDF/coun-accounts-MediumTermFinancialStrategy08-09.pdf> at p79.

<sup>146</sup> <http://democracy.peterborough.gov.uk/mgConvert2PDF.aspx?ID=4519> It should be explained that the term 'democracy' it one used in that part of the council website where the public can use the FoI Act, it is not a value judgement.

<sup>147</sup> Serco, was recently valued by the City at about £2.7bn, also aims to expand further into India *after buying Indian outsourcer InfoVision Group in 2008*.

<sup>148</sup> This is the new term for such transparency as if available (under law) on the LA web sites.

<sup>149</sup> *Cabinet* Government is the adopted form of local authority governmnt in UK. It has the same connotation as in Central Government: an inner core of privileged councillors, analogous to the national cabinet of Government Ministers.

As in the Hunts DC scrutiny committees, the membership is overwhelmingly Councillors.

### 1.3.2 Cambridge County Council Releases under the Freedom of Information Act

To: [foi@cambridgeshire.gov.uk](mailto:foi@cambridgeshire.gov.uk)

**Subject: ICT budget breakdown requested by Dr Jo Stanley, Research Fellow University of Cambridge**

Please can you supply me with budgets for following categories:

1. **ICT- Hardware-** desktop computers, laptops, fax machines, printers, servers, switches, keyboards, hard drives, cables etc.
2. **ICT- Software-** applications software, operating systems software, database software, security and anti-virus software, spyware etc.
3. **ICT- Telephony-** telephone switches and support, voice and data networks, telephone handsets, mobile phones etc.
4. **ICT- Support Services-** maintenance, ICT consultancy, support services etc.
5. **ICT- Outsourced-** obtain goods or services from an outside supplier etc.

*Answers 1-5. For many of these categories we have centralised budgets but others are locally held with the service.*

**6. Total number of ICT staff that work for the council:**

*181.25 full-time equivalents, including vacant posts.*

**7. Total number of staff within the Council**

*As of 30 April 2009, we have 6,368 staff. This excludes school-based staff.*

**8. The Total Council budget for procuring goods and services for 2009/10**

*The Council's gross budget is £860M, of which approximately £300M is spent on external goods and services*

*In addition, many of our ICT contracts have a cost that includes elements of hardware, software and professional services. For example our contract with Fujitsu for the Oracle e-business suite has all of the components (excluding telephony) included. You may find it more useful to see our contract register which sets out some detail and values for such ICT contracts via the web link on the right hand side.*

The picture that emerges is a many:many relationship between the sources and sinks for funding at Cambridgeshire County Council. Actual spends, broken down by goods and services acquired are untraceable by customary inquiry.

Research finally revealed the following information on contracts let by the Council:

- Oracle from Fujitsu, 8 years: £17 million
- NTL Business Ltd, 8 years: £34 million
- Sx3 (service and systems solutions), 10 years: £5 million.

Council employees who were owners of the contracts were also named. Beyond this information on the nature of goods or services supplied was meagre, and the recommended link:

<http://www.cambridgeshire.gov.uk/NR/rdonlyres/37F26DDC-4409-4385-95D9-323D647FE739/0/ContractRegisterv11.xls>



was found to be useless as a source of the contracts described above.

### 1.3.3 Huntingdon District Council Freedom of Information Responses to Requests

**FOI and EIR Request No. 1226 Submission ID : 33065 21 April 2010**

**User IP: 131.111.164.219 js731@cam.ac.uk**

I am writing in respect of your recent enquiry for information held by the Authority under the provisions of the Freedom of Information Act.

Your request for information has now been investigated and I can confirm that we do not hold the information you are requesting.

You requested a comprehensive list of contracts held by Huntingdonshire District Council with outside (outsourced) companies for all sectors.

*We do not have a comprehensive list of contracts. We do have a list of contract awards on our web site but is not a comprehensive list. Please follow the link below:*

<http://applications.huntsdc.gov.uk/Applications/contractsregister/>

This response was considered less than helpful, consequently a further request was issued, and copied to the present author's MP:

**To the information management department of Huntingdonshire District Council:**

Dear XXX

A search has shown almost no reference to the rebuild of the District Council Offices in the public domain, and I can trace only one set of DC meeting minutes dealing with the proposal discussed.

Concerning both the build and the ICT refresh, may I know please:

1. Were these acquisitions (the build and the ICT refresh) bundled?
2. Who was/were the contractor(s)?
3. How many bidders were there (names of bidders also)?
4. The contract number(s)
5. Duration of the ICT contract
6. Where did the independent technical advice come from on the ICT refresh?
7. Who is the technically qualified, independent ICT advisor on the relevant scrutiny committee (Economic Well-being probably)?
8. Does the public sector still own Pathfinder, or does the contractor (constructor) lease the premises back to the DC?

Thank you in advance for your cooperation.

As you see, I have copied to my MP

kind regards

Dr Jo Stanley

The result was that I received the bidders' criteria document (running to over 100 pages) for the original build of the Council Offices, but no answers to the questions put. On resubmitting the request I finally (after a further one month's delay, making 3 months in total) received the information:

**Re: Freedom of Information Act and Environmental Information Regulations**

**FOI and EIR Request No 1298.**

**District Councils new building and the ICT refresh:**

**1. Were these acquisitions (the build and the ICT refresh) bundled?**

*The only element of IT included in the construction contract was the wiring infrastructure, network cabinets on floor plates and the server room cooling. No servers or other IT equipment were included.*

**2. How many bidders were there (names of bidders also)?**

*Tenders were invited from Alfred McAlpine Capital Projects; AWG Property Ltd; Church Manor; D E Clegg; Mowlem Building; Gleesons. A total of six from the responses received to an OJEU PIN.*

**3. Duration of the ICT contract**

*There was no separate ICT contract.*

**4. Where did the independent technical advice come from on the ICT refresh?**

*The winning contractor for the new building used their own technical resources for the wiring infrastructure, the network cabinet on floor plates and server room cooling.*

**5. Who is the technically qualified, independent ICT advisor on the relevant scrutiny committee? (Economic Well-being for example)?**

*There is no independent technically qualified ICT advisor on any scrutiny committee.*

**6. Does the public sector still own Pathfinder House (local authority offices), or does the contractor (constructor) lease the premises back to the DC?**

*The project was wholly financed by the District Council who owns Pathfinder House and the freehold of the site.*

## 2. Conclusions Drawn from the Regional Study

### C.1 Practicalities and Pragmatics: Why OSS is less Important than Open Systems

Discussions with interviewees produced these perceptions:

Open Source products are constantly changing and diversifying, so pinning a product down and certificating it as interoperable is difficult. Whereas creating interoperability with Open Source is always possible by going in and modifying the code this is mainly done on an *ad hoc* basis. Fixing one interoperability issue can always break another one because there is no clear de-coupling between private implementation and public interface, which would offer a much more robust design pattern.

In short, achieving interoperability with Open Source products is always possible, but this will often be achieved by ad hoc methods, often reducing reliability and efficiency.

In addition interviewees raised these points which would need to be countered by OPAALS:

1. It is unclear that Open Source will attract the level of investment required to deliver significant innovation when the benefits of that innovation have to be shared with the innovator's competitors.
2. Many prominent examples of Open Source developments (e.g. Moodle in the hands of the Open University) depend on state funding, or at least the internalisation of costs by state-funded organisations. This hides the true costs of developing these solutions and raises questions about claims of sustainability for Open Source.
3. Interoperability is entirely compatible with proprietary technology, as demonstrated in many markets such as audio-visual and telecoms. But establishing an ecosystem supported by government funding itself imposes a kind of monopoly on the market and, in these circumstances very great care should be taken not to exclude any significant players.

Crispin Weston, reviewing the demands within learning technology, suggests the requirement to 'support the disaggregation of content, so that teachers can pick and mix quite small chunks of content, which is part of the 'need for very flexible and agile systems'. He believes that 'authentication without trust (e.g. by self-validating encryption) is therefore preferable, particularly with low-stakes systems'.

### C.2 The Role of OSS in the Public Sector in General, Municipalities in Particular

The success stories of OSS introduction are anecdotal and patchy though numerous. Such structured research as there is is pessimistic about the suitability of public sector targets for this type of digital provision, for the following reasons:

The results indicate that cities in general do not have the necessary characteristics to successfully adopt OSS to deliver services and conduct city business on a comprehensive

*scale*. The key indicators point to significant deficiencies in the three domains: *capability*, *discipline*, and *cultural affinity*<sup>150</sup>.

These workers found ten US cities with suitable absorptive capacity, and cite Largo, Florida as a striking example. The city has deployed Linux for its 400 desktop clients, and estimates a \$1M per year saving in hardware, software, licensing, maintenance, and staff costs

One of the best documented, and most frequently cited public sector OSS deployment stories is the study of Beaumont Hospital in Dublin<sup>151</sup>, where savings were made across all levels of the software stack. Here are the figures:

| Open Source          | Option          | Equivalent Closed | Source Systems |
|----------------------|-----------------|-------------------|----------------|
| initial annual spend | final year of 5 | initial:          | final          |
| €209.5K,             | €377K           | €4.883M           | €8.713M        |

What springs from the pages of this study is the ability of the OSS introducers to have a free and unconstrained hand at their attempt at deployment, and also benefit of committed support from the CEO.

Further examples are described at <http://www.oss-watch.ac.uk/resources/cs-oss-watch.xml>.

### C.3 Public Sector Policy Advice on the Use of OSS

Peeling and Satchell in summarising their seminal 2001 study advised the UK government as follows:

This report concludes that the existence of *an OSS reference implementation of a data standard* has often accelerated the adoption of such standards, and recommends that the Government consider *selective sponsorship of OSS reference implementations*<sup>152</sup>.

They also stress that:

The Open Source model offers a *new paradigm for funding software in communities of-interest* (e.g. Health and Education). *The Government could consider running pilot projects to test the viability of the OSS approach to such software*<sup>153</sup>.

Peeling and Satchell recommended ongoing studies and the iterative revisiting of the OSS issue and what part of the stack should be considered for such solutions.

Yet in the same year *The Register* reports that the portal acting as the centralised registration service for all e-Government services in the United Kingdom (*gateway.gov.uk*) was to be built by Microsoft.

Increasingly, public sector-funded bodies are being encouraged, or even mandated, by the

<sup>150</sup> *Open Source Software Use in Municipal Government: Is full immersion possible?* David J. Ward and Eric Y. Tao, Proc. World Congress Engin. And Comp. Sci. [2009] Vol II.

<sup>151</sup> *Open Source Software can Improve the Health of the Bank Balance - The Beaumont Hospital Experience*, Brian Fitzgerald Tony Kenny.

<sup>152</sup> [http://www.cabinetoffice.gov.uk/media/253425/QinetiQ\\_OSS\\_rep.pdf](http://www.cabinetoffice.gov.uk/media/253425/QinetiQ_OSS_rep.pdf)

<sup>153</sup> Point 15 px (10) of the report.

European Union or the UK government **consider** the use of OSS, as indicated by the Office of Government Commerce papers and releases. It is estimated that 'mixed environments' of open and closed source software systems are already common<sup>154</sup>. In the UK higher and further education sectors around half the educational institutions operate a mixed environment<sup>155</sup>.

The UK government announced trials of OSS on selected sites in 2002<sup>156</sup>. The verdict on these trials is disappointing for the extreme obviousness of its written conclusions<sup>157</sup>. These include: positive savings (hardware and software), comments that desktop applications' are at an early stage of maturity, positive words for OSS in infrastructural deployment, flagging the need for planning when migrating.

Yet OSS is still often overlooked as a mainstream procurement option. This appears to be due to such factors as:

- A shortage of skills in procurement risk assessment probably resulting in misconceptions about what is involved in adoption. The procurement of OSS is rather different from acquiring proprietary software. However, an *iterative development of procurement strategy* – a history of project events such as any good ICT system manager automatically deems essential - could be stored in the local, shared knowledge repository and passed to other Local Authorities for their use and assistance.
- The 2010 UK Coalition Government looks to save 25% to 40% expenditure in all government departments and there is a push to shed jobs. Unfortunately this means that OSS, with its attendant high maintenance requirement would not mean short-term savings. However, Dexter Whitfield's theorisation of the marketisation of public services<sup>158</sup>, and the high costs of investment in fostering an ever-more capital-dependent culture indicate that a reversal of those tactics is unlikely.
- Insurance issues. Peeling and Satchell reported in 2001:

J.S.Wurzler is one of the companies that offers policies, and charge a higher premium (by about 25%) for companies that use Windows NT, as they assess the risk of a payout to be greater. *They do not distinguish between Open Source operating systems*

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<sup>154</sup> For example SME report at Peterborough Breakfast seminar, Dec 2009 (Interview 11). Linux Opsys are being successfully installed in school servers alongside proprietary systems.

<sup>155</sup> <http://www.oss-watch.ac.uk/studies/survey2008.pdf> \o

<sup>156</sup> In September 2003 the UK Government launched a series of Open Source Software (OSS) trials across both central government departments and the wider public sector: Powys County Council, OfWat (Water Regulator's Office) and Dept of Culture. Eight 'proof of concept' trials were to be initiated aiming at the implementation of OSS as an alternative to proprietary software. Initial trials were to be run by IBM.

<sup>157</sup> *OSS Trials in Government Final Report*, [17/04/2007]. The document draws principally on Linux.org files, and shows small evidence of technologically informed analysis.

<sup>158</sup> The latest in a series of books and research reports into the public sector: employment, policies and waste written by Dexter Whitfield since the early 1980s: *Global Auction of Public Assets: Public sector alternatives to the infrastructure market and Public Private Partnership*.

*and other proprietary systems*<sup>159</sup>.

- *Is OSS of Industrial Strength?* Over the last few years acceptance that OSS is a robust style in many layers of the software stack with OSS programs developed to enterprise level: OSS is considered *enterprise ready* by adapters of systems who can choose enterprise versions if they wish for their clients<sup>160</sup>.
- *Support:* Is there enough support available through incorporated third party companies and organisations to make OSS adoption viable? This is particularly pertinent where public bodies do not wish to invest in in-house maintenance teams.
- *Training:* 'what courses and manuals are available?' is a frequent question from potential adopters.
- *Integration and testing:* is OSS able to be integrated into existing systems? Have there been enough conformance tests, and are the figures available on comparative performance?

#### *The Issue of the Cloud, Diversion or Essential?*

The Government's Chief Information Officer (CIO) and the CIO Council, on the advice of *Intellect* commissioned a study on the merits of cloud computing for e-Government platforms. The report's current advice is this:

In order to ensure a consistent policy across Government the CIO should have the ultimate decision making responsibility on IT procurement. "That will secure Government-wide standards and systems,"

When government commissions work which creates intellectual property rights (IPR), *those rights should not stop others from using the work.*

Yet the *Digital Britain* report advocated caution in the use of cloud mode:

There are issues of meeting governmental needs for data location, security, data recovery, availability and reliability [with cloud computing]<sup>161</sup>.

#### *IPR Issues*

The Office of Public Sector Information's recommends that IP under Crown copyright should be made available for re-use by the public, in order to exploit the potential economic benefit:

This is consistent with the Government's approach to Open Source, Open Standards and reuse, where IP created by Government IT is available for re-use by anyone.

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<sup>159</sup> Peeling, N., & Satchell, J. (2001). *Analysis of the Impact of Open Source Software*. [http://www.govtalk.gov.uk/docuents/QinetiQ\\_OSS\\_rep.pdf](http://www.govtalk.gov.uk/docuents/QinetiQ_OSS_rep.pdf)[http://www.govtalk.gov.uk/docuents/QinetiQ\\_OSS](http://www.govtalk.gov.uk/docuents/QinetiQ_OSS). These authors add that other insurers have not stated any predefined policy to our knowledge, and seem to assess risks on a case by case basis.

<sup>160</sup> Conversations with J, owner of a SME specialising in tailoring OSS for the charitable sector (interview 15); and interview 10 with W, CEO of a supplier of software platforms to government departments and projects.

<sup>161</sup> The *Digital Britain* report.

### 3. Conclusions to Part 1

There are currently two formidable legal impediments to the introduction of DE/OSS aims and concepts in the regions of UK. Firstly software publishers' license conditions, founded in copyright law (see Part 2), and secondly, government contracts with aggregate properties which exclude SMEs at a number of levels. Yet software SMEs tend to be in the forefront of innovative use and adaptation of OSS. The barriers to OSS/DE introduction are explored below.

#### A. At Platform Level:

##### A.1 **The use of the giant software publishers** as software providers is not conducive to the creation of a local skills base or in-house public sector maintenance teams.

These providers are in the main diametrically opposed to OSS, and have small interest in local knowledge production by co-operative means or a local skills base, preferring centralised help desk solutions.

Proprietary contracts between the major software vendors and the public sector contain fierce penalty clauses which become active on early exit from a contract. Yet, as we have illustrated, there are diminishing returns for keeping such contracts alive. The schools sector provides a stark example. Those schools that wish to exit a contract early may forfeit a new teacher as the price of exit.

Those schools that have selected a different ('non-standard') software option, such as OSS are disadvantaged under aggregated agreements made by government: they must find their own funding to support the choice.

##### A.2 **SMEs can suffer exclusion from supplying educational content** to the schools sector on grounds of interoperability failure, precipitated by failure of the Schools ICT procurement body responsible to understand the technical issues. Once again the problem is traceable to aggregated demand- and consequently supply-side contractual arrangements made and promoted by the previous UK New Labour government.

#### B **Awards of local authority and agency ICT contracts to very large intermediaries.**

The way these contracts are let impacts the SMEs in five ways:

##### B.1 **The size of the bids is inflated** by OGC-recommended demand-side aggregation. This is logically and actually followed by supply-side aggregation in the form of huge bids from giant intermediaries; the bid can traverse a number of sectors, thereby locking out the single-sector, specialist SMEs. The giant bidders almost invariably use proprietary software for reasons of pass-through profit. Contracts typically run for 10-15 years, can be 30 years: ie *contractual lock-in*.

**B.2 Escalating EC regulation of bidding processes** militates against the SMEs, who lack the capacity to satisfy arduous pre-requisites. In addition, although software SMEs may harvest some subcontracts from the big providers, the nature of the jobs offered indicates that SMEs are not valued for their skills or experience, but treated in the same way as new (therefore cheap) graduates, and given short-term, poorly paid contracts.

**B.3 The giant bids may result in labour transfers from the public sector to the new provider.** This weakens the *publicly-owned skills-base*. The public sector Unions (eg Unison) complain that employee rights are not protected in these transfers (TUPE failure). Local know-how is inevitably depleted, and the public sector, whence SME support mainly comes, depletes its budget in outsourcing ICT. The knock-on effect is that the very instruments of regional support for SMEs, such as Business Link, are further reduced.

The main configuration for outsourcing projects is *the PFI* (Private Finance Initiative); 70% of ICT PFI contracts have failed, which is why HM Treasury now briefs against them. However Peterborough Unitary Authority awarded such a contract as recently as Autumn 2009.

Failed contracts still require the procurer (the local authority) to compensate the failing provider. See the Bedford example, s1.1.6; local public funds are thus further depleted.

#### **B.4 Income**

The local authority receives income from (1) the domestic rate (capped, since paid by voters), (2) central government (capped, fiscal debt). That leaves (3) the business rate-payers, overwhelmingly SMEs, to pay disproportionately more than the other sources. 30% rises in SME business rates have not been unusual during the last two years of recession.

**B.5** Investors in the big bids for PFIs are frequently registered off-shore and construct complex tax avoidance structures, denying the UK Exchequer large amounts of revenue, which in turn is felt as pressure on the regional public sector and its constituents.

#### **Prognosis**

Under the prevailing conditions one would expect the local authorities to revisit the possibility of OSS deployment. OSS are cheap; above all the code is *open and owned by the procurer*, so maintenance contracts can be *more competitive*, and are also manageable by SMEs.

Public sector adoption of OSS would bring in its wake graduate jobs, the possibility to establish a local OSS skills base within the public sector and a local skills register for both



public sector and the wider regional business community. Both these resources could be used jointly inter-authority and trans-regionally.

Knowledge development (business, especially export intelligence, and amassment of skills) would be stimulated. Open Standards for specialist program integration could be developed and the OSS know-how captured by the public sector could be used to advise SME adopters at the very least as a side-effect.

Unhappily the new UK Coalition Government is pressuring local authorities to cut jobs, which is the antithesis of local skills-building. In Peterborough the Unitary Authority awarded a PFI contract to Serco and slashed 47 in-house jobs in the ICT department to 1 in 2010.

This polarisation of work awarded to those large companies which have previously worked for the public sector (the '*preferred candidate list*') led to the capture of the public services industries by massive intermediaries for servicing and maintaining the public ICT estate, with concomitant exclusion of local SMEs. Computer Weekly's comments are these:

RM, Capita and Serco effectively dominate the market. The Government through the OGC (The Office of Government Commerce) has ensured that these companies can no longer trade with the kind of outrageous margins on software and hardware they once enjoyed but the resulting quasi-monopoly means that in no sense can schools [for example] be said to access a free market<sup>162</sup>.

This development seems to make the communitarian goals of shared knowledge, local skills and community ICT platform support for SMEs further away than ever. Dexter Whitfield comments on the PFIs:

The full public costs are masked because a wide range of additional costs borne by the client are rarely identified. These include additional contract management and monitoring staff, engaging technical consultants to advise the authority of contract problems, lost income from delays in service delivery and overpayment of benefits/credits and additional procurement costs in re-negotiating contracts or retendering. The loss of planned efficiency savings often results in spending cuts being targeted elsewhere.

In short, we see a large scale emergent externalities problem.

Whitfield's recommended impact assessment would use these criteria:

comprehensive social, economic, health and sustainable development

These criteria are in kilter with both the OPAALS/DBE '4 accounts' economic impact assessment recommendation<sup>163</sup>, and the new 'critical accounting' school found in both academic and practitioner circles<sup>164</sup>.

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<sup>162</sup> <http://www.computerworlduk.com/community/blogs/index.cfm?blogid=40&entryid=2985>.

<sup>163</sup> Lorena Rivera-Leon, the DBE book. **FULL REF NEEDED**

## Part 2 Protection of Digital Objects by Copyright

Copyright founds licenses for software. Software platforms support all economic players globally, from artists, SMEs, corporates, places of education through to government bodies. A review of the interaction of these and their approach to ICT in the East of England was the business of chapters 1 and 2.

Copyright has many other touch-points with digitally held works, and hence a major economic impact - via formats and dissemination means - in the high earning entertainment industries of music and movies.

Copyright law may clash with patent law; with anti-trust law, which will likely trump it. Copyright may threaten freedom of speech. Copyright has already shrunk the public domain for literary, dramatic, musical and artistic works. Copyright law is currently acknowledged to be dysfunctional, serving none of the main stakeholders: creators, audience, or publishers<sup>165</sup>.

The work of the chapter 3 is diagnostic, and to a certain extent prescriptive. There is an attempt to locate copyright's internal inconsistencies by examining black letter law and the philosophy grounding the ontology of copyright; this chapter proposes a new ontology.

The diagram below amplifies the one used in the Phase 2 Deliverable D11.3; there it was used to depict the role of *knowledge with utility* and its protection by patent law. It now absorbs the protection granted to aesthetic works which include, as literary works, computer code.

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<sup>164</sup> For example, *From the Private Finance Initiative to the new Prudential Borrowing Framework*, D Asenova *at al.* Draft on file with the author [2007].

<sup>165</sup> Guillen has pointed out his argument for this effect: creators and publishers are losing benefits because of a failure to short-circuit loss of protection caused by technology leaks; hence the audience is suffering from the measures adopted to try to stop this activity.

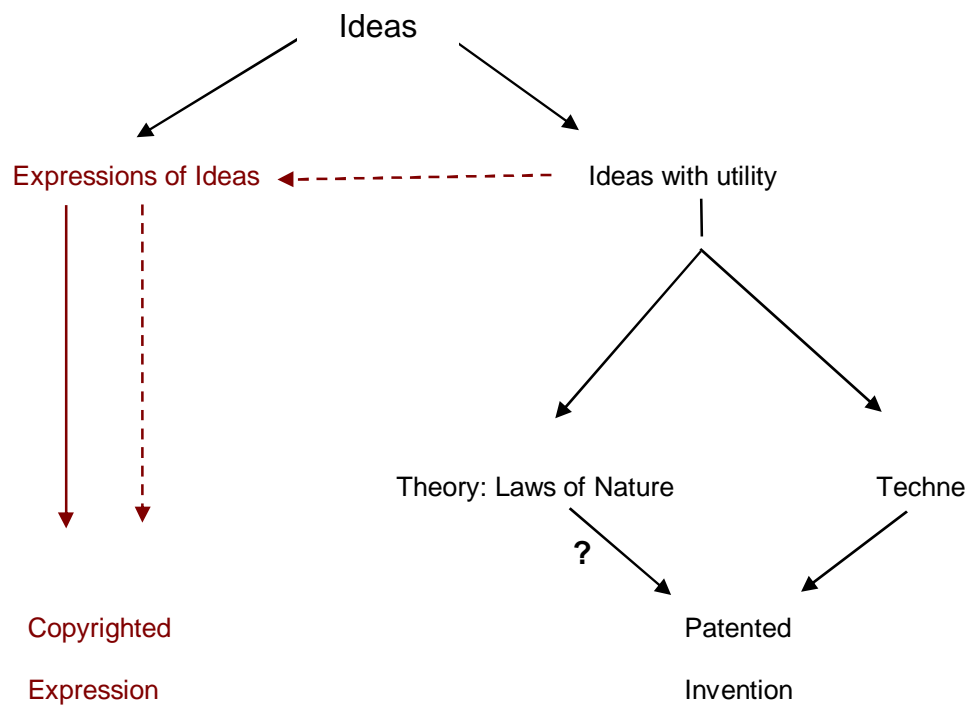


Figure 7

The problematic link is between an idea with utility and the copyrighted expression of it.

### Chapter 3 The Ontology of Copyright; Damned Bad Metaphysics

*Justice Story in Folsom v. Marsh, 1841 commented with respect to a required approach to copyright as 'the metaphysics of the law, where the distinctions are, or at least may be, very subtle and refined, and, sometimes, almost evanescent'.*

The concepts and doctrines of copyright law interweave philosophical foundations with expedient policy. Policy aspects become more prominent if the right is applied to a utilitarian work having economic value such as a computer program.

The scope of copyright is broad and loosely-bounded. The right in a work springs into being when the first record of a work is made. Copyright will not protect ideas, only the *expression* of ideas. A recorded work can be *registered* but it is not *examined* under any criteria of uniqueness or merit. A *patent* on the other hand is a clear-cut right in an invention, applied for by an inventor and granted by the government only after rigorous scrutiny<sup>166</sup>. Its scope is tightly bounded by a *set of claims*, which must describe a genuinely new and substantial advance on what went before<sup>167</sup>.

The criteria of patentability are admittedly challenging – the inventor must demonstrate, for example, the *non-obviousness* of the invention<sup>168</sup> – which causes perennial difficulties. But the *sequence of legal processes* – examination, grant of right, opposition, challenge for infringement, are logical and sequential, and leave exactly one issue to be resolved by the courts in a challenge: whether the challenger invention does or does not come under the descriptive umbrella (claims) of an invention which already exists in the art; if it does it is rejected.

In the case of copyright on the other hand, the setting of *scope of protection* in a work is postponed at the onset of the right. Only when there is an infringement challenge is it necessary to clarify scope, and this must be done *simultaneously* with the assessment of similarity between the two works. In these circumstances the co-mingling of tests – for scope and similarity – generates poor mental models and anomalies and the copyright landscape becomes confused.

This chapter offers a model for copyright objects and operations (*copy, distribute, adapt* etc) as *abstract data type Representation*. It also explores the merits of *type and token*

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<sup>166</sup> Always with the proviso that *the rigor of the scrutiny is diverse*, according to the Patent Office and regional patent system, thus precipitating 'strong' and 'weak' patents.

<sup>167</sup> Every claim in the patent represents a *distinct invention*, and must be independently tested for novelty against prior art. Hence some 'inventions' will encompass a broad field, others will be quite narrow. The Patent Office will decide whether some of the claims are so broad as to fall within the penumbra of existing inventions; if so, the claims are rejected. (Emphasised by Hill and Cote: *Ending the Federal Crapshoot: Emphasising the Plain Meaning in Patent Claim Interpretation*. 42.1 Idea [2002] at 7).

<sup>168</sup> 35 US Code s103. See also Judge Giles Rich *The Vague Concept of 'Invention' as Replaced by s103 of the (US) 1952 Patent Act*. Rich co-wrote the '52 Act with Pasquale Federico. <http://innovation.hoover.org/media/file/ppl/GSR%20on%20Vague%20Concept%20of%20Invention%20in%20JPOS%201964.pdf> visited 27<sup>th</sup> July 2010

*theory* (Charles Sanders Peirce<sup>169</sup>) as a means to clarify and distinguish the abstract objects that attract copyright protection, and the basis of a strategy to resolve many of the anomalies.

## 1. Scope and Similarity

Although copyright is active without formal registration, a law suit cannot be brought in respect of an unregistered work. Yet all registration does is to provide a rebuttable assumption that a valid copyright exists in a work.

The seeds of the deepest confusion in the ontology of copyright are traceable to the postponement of setting the scope of the right in a work *until a challenge arises*. Whereas it is illegal to copy a *copyright protected work or those parts of it that are under copyright*, it is innocuous to copy a whole or parts that are not so protected<sup>170</sup>. It is essential, therefore, that we know what is protected (protectable) within a work, or the law becomes vague and it is then unclear whether infringement is taking place<sup>171</sup>.

We examine here the Principle of Copyright Immunities, and the result of applying it, together with the level of maturity a work must reach to be considered copyrightable. The result of filtering a work to locate those *parts* and *levels* that are protected and those that are not results in an inevitable fragmentation of the work into shards of protected and unprotected material mixed together.

## 2. A Question of Levels: The Ideas Expression Dichotomy, Abstract Idea and Concrete Expression

An '*expression*' is copyrightable, but an '*idea*' is not.

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<sup>169</sup> Hartshorne, Charles and Weiss, Paul editors *Collected Papers of CS Peirce*. Cambridge, MA: Harvard University Press, (1931-58).

<sup>170</sup> Nimmer, Melville B., and David Nimmer *Nimmer on Copyright* [1997], at 8.01[D].

<sup>171</sup> See *Aharonian v. Gonzales*, Opinion 03 01 2006, Northern District of California. Aharonian sought declarations that (1) computer source code consists entirely of algorithms and data structures considered by him to be unprotectable ideas or processes under 17 U.S.C. 102(b); (2) that "idea" and "expression" are unconstitutionally vague in violation of the Due Process Clause of the Fifth Amendment; and (3) that software is not covered by the Copyright Act. The copyright material in contention was an expert system containing (a) a programmatic representation of patent and copyright law; (b) a database of existing source code and (c) an analytical tool applying (a) to (b) to find the likelihood of infringement or invalidity. The suit was rejected on grounds of over-generality, stating that if Aharonian 'copies source code that is protected by copyright law, he infringes the copyright regardless of whether the ideas underlying the source code are patentable.'

The notion that the ideas/expression dichotomy was unconstitutionally vague was refuted out of hand. Judge Patel, while conceding that the terms were inexact pronounced that 'the fact that words in a statute require a certain degree of judicial interpretation is not merely permissible -- it is bedrock assumption of our common law system.' The fair use exception for Aharonian's database has been mooted.

US Code 17 S101 (definitions section) does not define either of these terms<sup>172</sup>, nor does UK law<sup>173</sup> which is harmonised with European law. Andrew Christie maintains that the dichotomy is:

‘really *an ex post facto rationalisation of a policy decision* as to what is the appropriate scope of copyright protection in any particular case<sup>174</sup>.’

The quotation below, from *Nichols v Universal*, explains the Judge Learned Hand Abstractions Test. It is at one and the same time the most lucid statement of the levels problem and yet finally, only an insight into it. The context of his analysis is a literary work, a play:

Upon any work ... *a great number of patterns of increasing generality will fit equally well, as more or less incident is left out*. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist only of its title; but *there is a point* in this series of abstractions where they are no longer protected, *since otherwise the playwright could prevent the use of his ‘ideas’, to which, apart from their expression, his property is never extended* ... Nobody has ever been able to fix that boundary, and *nobody ever can*<sup>175</sup>.

To expand on these concepts<sup>176</sup>:

In the hierarchy of idea development, there is an early stage of the work at which its ideas are too general – too inchoate - to be captured under copyright; the work lacks sufficient *particularity*. As ideas are crystallised into ‘*an expression*’, there comes a point where the work is deemed protectable under copyright<sup>177</sup>.

*This is the first point at which confusion arises: where is that point?*

Since it cannot be located, the courts have no adequate guidance in their decisions.

Climbing back up the developmental hierarchy we can make this statement: the levels of a work range from the incontestably protectable (lower ‘*concrete*’ level - a version containing

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<sup>172</sup> Denis Karjala maintains that “‘idea’ and ‘expression’ are *not analytically useful words* ... because they are basically conclusions for *what the courts do or do not protect in specific circumstances*.” Brooklyn LR [1998].

<sup>173</sup> Resorting to the OED: ‘To *express*: represent, make known in words ...’.

<sup>174</sup> *IP Protection for the Design of Integrated Circuits* [1992], at 165.

<sup>175</sup> *Nichols v Universal Pictures*. 45 F 2<sup>nd</sup> at 119 [1930]. 2nd Circuit.

<sup>176</sup> Nimmer says this of the dichotomy: ‘[The] fundamental distinction constitutes *not so much a limitation of the copyrightability of works, as a measure of the degree of similarity* which must exist as between a copyright work and an unauthorised copy in order to constitute infringement’. Which statement provides an augury of the confusion to come in scope and similarity resolution. *Treatise on Copyright*, Melville and David Nimmer s2.03[D].

<sup>177</sup> ‘*Wherever [the line] is drawn will seem arbitrary*’ *Nichols at 122*. And again ‘obviously, *no principle* can be stated as to when an imitator has gone beyond the “idea” and has borrowed its “expression”. *Decisions must therefore inevitably be ad hoc*’. Judge Hand in *Peter Pan Fabrics v Martin Weiner Corp*. 274 F 2<sup>nd</sup> 487, 2<sup>nd</sup> Circuit [1960], at 489. This from Nimmer: ‘[the ideas/expression dichotomy] does not, of course, tell us *where* in any given work the level of abstraction is, such as to *cross the line* from expression to idea.’

fully expressed detail) - to the totally unprotectable (higher 'abstract' level): for example the synopsis of a novel, or the overall objective of a computer program. This deliverable will show that the zone between these two is essentially 'up for grabs'. Further, 'concrete' and 'abstract' are considered bad choices of words for the following reasons:

'Concrete' in the context of copyright must be taken as *particularised*, but unfortunately the term also has connotations of *tangibility*, which are not intended and lead to confusion with the idea of 'recording' – setting down the work - thereby rendering it 'visible' to copyright law.

Judge Hand's wording can be interpreted as a restatement of David Lewis's *fourth way* of distinguishing abstract from concrete entities<sup>178</sup>: *the way of abstraction*. This involves 'the subtraction' of detail until an incomplete description of the original concrete entity becomes a complete description of the abstraction<sup>179</sup>.

Unhappily this does not advance our goal of finding any *line of incipient copyrightability*. So it would appear that the ideas/expression dichotomy is a false dawn holding out an overoptimistic promise of a solution, and that Aharonian may be correct in his attack on the decipherability (and questionable legal status) of the dichotomy<sup>180</sup>.

I will, use the terms *generality* and *specificity* rather than use abstraction and concreteness, as some small help towards this goal.

The most highly particularised stage of the work is at a level close to the finished, publishable work. This way of thinking harbours the traditional rationale that the reward of copyright is justified only for the maximum 'accumulation' of intellectual labour in a work at this very particularised level. That is, a sufficiency of 'skill, labour and judgement'<sup>181</sup> has been exerted in the making of the work to generate that degree of *particularity*, so a *prima facie* copyright appears to have been 'earned'<sup>182</sup>. But this approach gives rise to the logically questionable implication that an inchoate (implying 'unready for publication') work can have the right to a greater protection on its developmental path towards readiness for public consumption. While

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<sup>178</sup> The Judge was a Harvard philosophy graduate, where two of his principal teachers either studied under Charles Sanders Peirce, or parsed his work in order to extend it. Charles Peirce was developing his *type and token theory* from the 1860s, offering a complete *Interim Account* developed through the 1880s and 1890s and presented in 1903. Judge Hand was studying under Peircean scholars around the turn of the century. For *type and token theory*, see later in this paper.

Steven Ang, in writing *The Idea- Expression Dichotomy and Merger Doctrine in the Copyright Laws of the U.S. and the U.K.*, International Journal of Law and Information Technology, Vol 2 No. 2, chose to argue within a purely legal frame, whereas this work places its analysis in the formal field of philosophy.

<sup>179</sup> Lewis, David, *On the Plurality of Worlds*, [1986], Oxford: Basil Blackwell. At p82, p172.

<sup>180</sup> Yet the dichotomy is referred to in the European Copyright Directive: Directive of the Council of May 14, 1991, *On the Legal Protection of Computer Programs* (91 /250/EG).

<sup>181</sup> William Cornish, David Llewelyn in *Intellectual Property: Patents, Copyrights, Trademarks and Allied Rights* cites three formulations: 'skill, labour and judgement', 'selection, judgement and experience' and 'labour, skill and capital', (the latter from Lord Atkinson in *MacMillan v Cooper* [1923], 93 LJPC, 113 at 117). These have been traditionally used as a metric for the accumulation of value and hence the copyrightability in the work.

<sup>182</sup> These criteria are customarily recruited in cases of compilations, directories and anthologies, which are often challenged for copyrightability because of their 'lack of originality'.

this may laudably reflect a desire to protect the author's interests, it violates the true copyright predicate, defined by level and qualities. 17 US Code s107(4) fires a shot across the bows of those believing that unpublished works will be sacrosanct:

The fact that a work is unpublished *shall not itself bar a finding of fair use*<sup>183</sup>.

The only realistic/pragmatic notion 'scope' is that it coincides with the *maximum generality in the expression of a work that the courts are prepared to countenance as copyrightable at any given time*.

We have now met the first focus of confusion.

A pragmatic model might visualise the levels of a work as a set of statements articulating the work in terms of increasing particularity, moving down the levels from general to particular.

| IDEA                  | EXPRESSION        |
|-----------------------|-------------------|
| Idea for a title      | title             |
| outline ideas         | synopsis          |
| detailed ideas        | chapter abstracts |
| ideas for final draft | publishable text  |

In the figure ideas for the work are distinguished from their communicable expressions of the work. The notion of 'fixation' – recording a work in some medium - is here tacitly accepted as simply *the means by which works are communicated to others; which does not stop expressions being primarily the mental constructs that precede their record.*

Figure 8

Jerry Fodor's notion of 'mentalese'<sup>184</sup> may or may not exist. If it does it could be characterised as a presyntactic, possibly non-verbal language in which concepts are represented in the mind. Such a representational system would a pre-language articulation of thought.

There is no implication under Fodor's theory that *when* thoughts in mentalese are finally framed in a natural language the expression of that work is *then* conflated with the making of a record<sup>185</sup>. It opens the question as to exactly where the work is made<sup>186</sup>.

The conflation is the legal fiction of a 'work is created when it is fixed for the first time', (17 US Code s101).

The fundamental problem of the dichotomy is the movement from idea to expression. How can a private idea be progressively transformed on the same axis, into an overtly public

<sup>183</sup> See Pierre Leval, Judge US District Court Southern District New York, who makes a sharp analysis of the degree of protection accorded to different kinds of work; 'fair use' is one of the copyright immunities; *Towards a Fair Use Standard*, 103 Harvard LR, 1105.

<sup>184</sup> *The Elm and the Expert: Mentalese and Its Semantics*, MIT Press. [1996].

<sup>185</sup> See also John Searle, whose notion of 'representation' is also a mental one. (*Speech Acts* [1967]).

<sup>186</sup> Colin Blakemore, the sensory physiologist expressed the view that an idea need to be verbalised by the creator, in order that the articulation expresses, to the creator herself, the very idea being devised. Only when the loop is completed is the creation actually made. (pers comm.).



language expression, when these two are not the same *kind* of thing, as *figure 1* suggests? Thus the notion of idea-to-expression as an axis with a seamless progression from one species to the other, marked by a *legal* bright line (or a less-than-bright line) signalling the onset of copyrightability is implausible.

As Spivack puts it: ‘under this model, at *some unstated point*, a *Platonic form* is transformed into a concrete, tangible expression.’ Notice that Spivack too seeming to be slipping into the tangibility assumption<sup>187</sup>.

### 3. The Tangibility of an Expression

Now we come to the second point of semantic confusion; that between *particularity* in a work and the work’s *tangibility*. Either could be inferred from the term ‘concrete’. Nimmer maintains that certain courts and commentators have, by ‘an unconscious shift of meaning’ made ‘concrete’ the synonym of ‘*tangible*’<sup>188</sup>. At all stages of development, a work can be made tangible as a record. Particularity, on the other hand, resides in *the degree of detail* (specificity) found in the work’s content. Two major jurisprudences, US and GB, converge on all the main points: ‘A work is created when it is fixed for the first time’<sup>189</sup>. Similarly, a work does not emerge above the horizon of (UK) copyright law ‘*unless and until* recorded’<sup>190</sup>, which last statement is a preferable capture of the legal fiction of this conflation.

The conflation is so clearly misleading that the model described in the ontology section below must confront it.

We can conclude at this point that the tangibility of the record of the work, is

1. to be distinguished from the creation of the work except under the legal fiction of its being created at the point of first record, and
2. the copyrightability of the work is not co-existent with ‘having a record’ of the state of play in the evolution of the work *at that level*.

---

<sup>187</sup> *Does Form Follow from Function? The Ideas/Expression Dichotomy in Copyright Protection of Computer Software* UCLA LR [1988], at 770).

<sup>188</sup> He reminds us of the confusion between *concrete* (as in *tangible*) and also as ‘the polar opposite of abstract’, ie *specific*. (*Treatise* at s2.02). According to Nimmer: ‘some courts and writers have seized upon the acknowledged requirement for concreteness [specificity], and proceeded to a usually unconscious shift of meaning defining the concrete as synonymous with the tangible.’

<sup>189</sup> (17 US Code s101).

<sup>190</sup> UK Copyright Design and Patent Act 1988, s3(2).

| IDEA                  | EXPRESSION        | RECORD                  | PROTECTION STATUS |
|-----------------------|-------------------|-------------------------|-------------------|
| Idea for a title      | title             | Record <sub>t</sub>     | Not ©             |
| outline ideas         | synopsis          | record <sub>s</sub>     | Not ©             |
| detailed ideas        | chapter abstracts | record <sub>ca</sub>    | Arguably ©        |
| ideas for final draft | publishable text  | record <sub>final</sub> | ©                 |

Figure 9

#### 4. Should a Computer Program be Protectable by Copyright at All?

We use the term ‘text’ with due care. Software according to Pamela Samuelson is a machine ‘whose medium of construction is *text*’<sup>191</sup>; textual objects are literary works – hence the argument for software protection. She has criticised two early computer program cases on utilitarian grounds, for inappropriate syllogistic argument<sup>192</sup>:

One can adapt and extend the scope of Samuelson’s argument in the following syllogism:

*Literary works* are copyright protected

**Computer programs** are *literary works*

---

Computer programs are copyright protected

Any weakness in this syllogism lies in the second premise, and the *meaning* of the middle term. The second premise could be argued to be a fallacy of meaning. Is a computer program *actually* a literary work? Is it *primarily* a literary work? Is it so much divorced from literature by being *functional* that it is cut out of copyrightability altogether?

17 US Code s102(b) says this:

***In no case does copyright protection*** for an original work of ***extend to any idea, procedure, process, system, method of operation, concept, principle, or discovery,***

---

<sup>191</sup> Pamela Samuelson, *A Manifesto Concerning the Legal Protection of Computer Programs* Samuelson, Davis, Kapor, Reichman, 94 Columbia LR [1994], 2310, at 2324, and 2350.

<sup>192</sup> In her objection to the copyrightability of *object code*, for example, which she regards as entirely utilitarian, (like operating systems) she says this: ‘the base [of copyright] is that the content of a copyright work has always had some *non-functional aesthetic, informational or entertaining qualities which are communicated to a human audience*. *CONTU Revisited*, 663 Duke Law Journal [1984], 663, at 749. The real sticking point is the target of the information. By default that is a human. However, as a fiction, it could be argued that to pass the information to a machine still minimally obeys the rubric. *Nimmer* suggests a criterion for copyrightable works is that *they should be perceptible by the five senses*, (*Treatise* s1.08[B]). This clearly supports the human-centred approach to copyright. *CONTU Revisited*, at 747). This syllogism expresses the point:

Computer programs are copyrightable

Operating systems are computer programs

---

Therefore operating systems are copyrightable

regardless of the form in which it is described, explained, illustrated, or embodied in such work.

Is s102(b) intended to act as an override to the *prima facie* appearance of a program as a *fixed* work (17 US Code s102(a) **check**), written in some *notation* and mapping to some *meaning*? This point is revisited later in discussion of the computer copyright cases.

## 5. A Question of Parts: Shards of Protectable Text

From Nimmer we derive a comprehensive list of the immunities of parts of a work from copyright. These include (1) work already in the public domain; (2) *scenes a faire*: hackneyed old plots that recur in many stories – theatrical term; (3) mundane (unoriginal) work; (4) copied work (unoriginal in the other sense of being pre-existent); (5) copyright not being sustainable if there can be ‘only one or very few expressions’ of ‘it’ – refers mainly to factual material, data; (6) latterly *externalities* have been added to the list: the computer program cases, such as the US case of *Plains Cotton*<sup>193</sup>. The case involved close similarity between two programs to implement a cotton exchange for traders. Externality exemptions allow works to converge by forces of *context*.

These can include: *hardware constraints*<sup>194</sup>; *software constraints*; *computer manufacturer's design standards*<sup>195</sup>; *target industry practices* (that is, the vernacular of an industry or company for whom the program is written compelling similarity in language) and *computer industry practices*<sup>196</sup>. Resemblance between works in these cases does not violate the rights of any of them. Add to these (7) the risk of erosion of copyright by fair use<sup>197</sup>.

The collection of immunities will be termed ‘The Nimmer Filter’ hereinafter<sup>198</sup>.

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<sup>193</sup> *Plains Cotton Cooperative Association v Goodpasture Computer Service*. 807 F 2<sup>nd</sup> [1987], 5<sup>th</sup> Circuit, holding that externalities can coerce convergence between *n* works without copyright violation of any.

<sup>194</sup> Nimmer *Treatise* Vol 3 at 13-66.

<sup>195</sup> *Treatise* Vol 3 at 13-69.

<sup>196</sup> *Treatise* Vol 3 at 13-70.

<sup>197</sup> ‘*Fair use*’ means that under certain prescribed conditions copying a copyright work cannot be denied to others by the author, (17 US Code s107); for example, making a single copy of a work for private study. Fair use is associated with non-commercial uses, but is not strictly tethered to them. Similarly the concept of *fair dealing* in British law (CDPA Chapter 7, s29 *et seq*).

<sup>198</sup> Content of the filter found at *Treatise* at s13.

## 6. A Model for the Abstract Objects of Copyright Law

We are now obliged to navigate the poor mental models implicit in the ideas/expression dichotomy.

The method chosen to clarify the scope of copyright here is to start afresh, and create an ontology of the right itself and its target subject matter.

Four approaches are used in this account:

1. The idea of *type and token* as applied to works of language, which is the category of subject matter addressed here.
2. The notion of an *Abstract Data Type*, used with *object-oriented* concepts. In object-orientation, ADTs are implemented as *classes*, having instances - *objects*. These concepts are used here to model the properties and privileged operations of literary objects. The methods have also something to say about owner and copyist traceability – here described as the ‘handling’ of literary objects.
3. The concept that *creative change* to a work of language is an operation *private to the mind*, since the mental acts of one person cannot be inspected by another.
4. Lastly, a distinction is made between *user’s use* of a language object, and *taker’s use*. Examples of the former are reading (a book) or executing a computer program. Examples of the latter are plagiarism of a scientific paper or copying and disseminating multiple copies of a book.

### 6.1 Type and Token Theory

This section analyses a work of language as a *type* able to be *tokenised*. A book is tokenised in its copies; a computer program is tokenised in electronic format on a diskette.

We perceive types through their tokens.

The philosophical basis for type and token theory was first described by CS Peirce and can be illustrated by some remarks of Quine’s. He noticed a German inscription on a Harvard Museum, which used the word ‘*der*’ twice and proposed that:

[There] are two contrasting senses in which we use the word ‘*word*’. ... A word in the second sense is *not a physical object*, not a dribble of ink or an incision in granite, but *an abstract object*. In this second sense of the word ‘*word*’ it is not two words *der* that turn up in the inscription, but one word *der* that *gets inscribed twice*<sup>199</sup>. Words in the *first sense* have come to be called *tokens*; words in the *second sense* are called *types*<sup>200</sup>.

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<sup>199</sup> The uses are grammatically different, which fact Quine elects to ignore, explicitly focusing on the *form* of the word.

<sup>200</sup> W.V.O. Quine *Type versus Token*, (*Quiddities* Harvard UP [1987]).

So a word in a language, according to Quine, can be described as two things: the *type* and its *token*; the token being the tangible manifestation of the type<sup>201</sup>. Peirce's articulation of the concept was:

In order that a Type may be used, *it has to be embodied in a Token*, which shall be a sign of the Type, and *thereby of the object the Type signifies*.

Thus we have three entities: the 'dribble of ink', the abstraction the inked notation represents, and the representatum – the idea or object the word points to. The first two will be aspects of our Abstract Data Type (ADT) *Representation*.

Commentators have extended the notion of type and token from a single word to a complete work. Stevenson for instance:

[a token] will be a complex individual mark or sound having token words as its spatial or temporal parts; and [a type] will be a *special sort of class* ... (or "kind") having such complex individual marks or sounds *as its members*<sup>202</sup>.

Stevenson subscribes to the view that a type is a **class**, with tokens as its **members**, but Quine dismisses the class argument on one ground. I choose another ground of objection. First Quine's argument:

If a and b are different strings, then the string consisting of a followed by c differs from b followed by c.

If types were mere classes of their tokens this would be false, for if a and b have actually been written, but are destined never to be written with c appended then *both* strings would be the empty class if construed [extensionally] as classes of their tokens, thus identical, contradicting the postulate<sup>203</sup>.

Quine next toys with two different data structures for dealing with a string: (1) a sequence – where the elements form a numerically indexed series. Then whether string c will never be concatenated to a or b is immaterial (2) An occurrence, where the occurrence of a word is the string *up to and including the word in question*, and a second occurrence may contain the first.

My ground of objection is more practical. If the notion of object orientation, which we deploy later on, is to run for any distance, the dichotomy between the relators ISA<sup>204</sup> and IS\_PART\_OF must be respected. A composition (parts) hierarchy is a different thing from an inheritance (ISA) hierarchy. Whether elements of a string (spaces and words and punctuation) actually map to '*parts of*' is problematic.

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<sup>201</sup> Peirce was the instigator of the separation of *token* from *type*; *Collected Papers*. Vol 4 at 537, ed. Charles Hartshorne and Paul Weiss. Cambridge, MA: Harvard University Press, 1931-58.

<sup>202</sup> C.L. Stevenson ("What is a Poem?" Phil Review [1967], at 329).

<sup>203</sup> *Quiddities* at P218.

<sup>204</sup> A simple example 'a dog IS A carnivore, a carnivore IS A mammal, a mammal IS AN animal'. ISA represents an inheritance hierarchy amongst types.

Probably the most interesting writer on the subject of type token in this decade is Zoltan Gendler Szabo; these comments express his view:

A representation is *a proxy or symbol* whose function is to stand for its representatum

... *the move from tokens to types is not a matter of straightforward inductive generalisation*. It is not like justifying a belief about *Panthera leo* by an appeal to particular lions; it is more like justifying it by an appeal to pictures in zoological books<sup>205</sup>.

In this discussion I follow Gendler Szabo and take the objects of the type I postulate: type *Representation*, to be abstract particulars<sup>206</sup>, and not a class. Abstract particulars have no instances.

A small example from database construction will suffice. There is a one-many relationship between the type and its tokens: one title (book), many copies of it. A library member wishing to reserve *War and Peace* reserves *the book*, not any individual copy, whereas she actually borrows one of the tangible *copies* of the book. The work is an abstract particular; *War and Peace* is not a class, it is a particular.

A literary work as type needs to be tokenised before it can be protected by copyright<sup>207</sup>. The key idea is that it is *the work* - the type - that is protected. The implication of this in copyright law is that 'a work' is protected as the basic entity through *all* its forms and translations<sup>208</sup>. Historically, copyright works were a fusion of type and token. Progressively a copyright was seen as a right in the work as an abstract entity.

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<sup>205</sup> Zoltan Gendler Szabo, *Expressions and their Representations* Philosophical Quarterly, no 195, vol 49, [April, 1999].

<sup>206</sup> Similar to a *number*, which is said to be *represented* by a *numeral*.

<sup>207</sup> 'Unless and until recorded' (UK's CDPA [1988]). 'Copyright protection subsists in ... works ... fixed in *any tangible medium* of expression'. 17 US Code S102(a).

<sup>208</sup> As a derivative work. (17 US Code s103). The legal notion of a derivative work is very broad. A toy based on a book is no longer a work of language, but in law is regarded as an adaptation of the base work.

### A Brief History of Copyright Works as Type and Token

Copyright was originally, in British law, a *publisher's* or '*bookseller's*' right. (The English *Stationers Charter* [Mary 1557]). The author was only slowly perceived as proprietor of his own work. Work as a *type* was not separated from the manuscript (the tangible *token*) that changed hands in a sale. The 1710 Statute of Anne gave reproduction rights to *the holders of a token of the manuscript*, that was the author by default; but he customarily sold his token to a member of the Stationers Guild.

Towards the end of the 17<sup>th</sup> century, John Locke crystallised the idea of taking from the common and enhancing the taking by *labour*, to create personal property. (*Two Treatises on Government* [1690]). In the UK, the booksellers, for whom things were not going well at that period, seized on Locke's thesis. It was seen as the hope for fortifying their claims to ownership of a work.

The reasoning was as follows.

The author owned property in his work (Locke, and common law); the publisher *acquired* the work from the author by a transaction; the publisher then owned the work. It is said that the booksellers 'invented' the author to bolster their own rights under the Statute of Anne (*The Author as Proprietor*, Mark Rose, 23 Representations at 51).

The booksellers pressed the notion of the author's **common law right**. Their strategy was to resort to this right, saying that the Statute of Anne **merely augmented** the common law. They brought actions in the Court of Chancery to enforce these rights. They further tried to shore up authorial rights on the basis that when the right was transferred to one of their members *it was in perpetuity*. *Donaldson v Becket* [1774] brought the possibility of perpetual copyright to an end, (Bently and Sherman, *The Making of Modern IP Law* [1999]). The booksellers kept copyright commodity-orientated, ignoring or suppressing the abstract notion of a 'work'.

Under US common law, copyright was similarly limited to the tangible medium in which the expression was fixed. That is, transferring the medium containing the work transferred the right to unlimited reproduction, because there was no separate right to the work as *intangible type*.

The case of *Pushman v NY Graphic Soc., Inc.* elucidated the separation of copyright ownership in a work as type from mere right of possession of a copy. (39 NE 2<sup>nd</sup> 249 [1942]), cited by Alan Wagner, *Patenting Computer Science*, (J Marshall J Comp. and Info. Sci at 8, [Fall, 1998]).

## 6.2 Works of Language Modelled as the Type '*Representation*'

A *Representation* is, in broad terms, the result of a transformation of 'real world' objects or of thoughts, by mental processing, into an object in the realm of language: a book, poem or computer program.

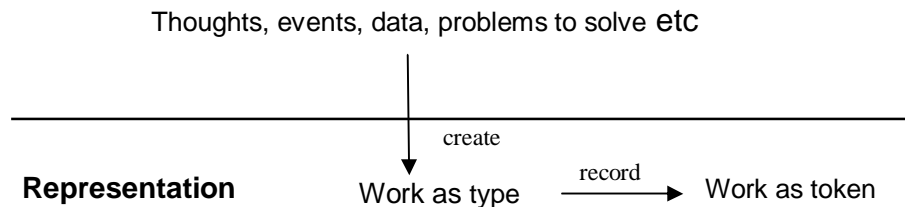


Figure 10

A *Representation* is taken to be a type *or* a token in Representation space, copyright law showing no acknowledgement of the existence a work until it is tokenised.

### 6.2.1 Operations on Type *Representation*

Here I will provide all operations that are mandated for literary objects. During the discussion that follows these are sifted into those acknowledged in law, and those that lie beyond current copyright law but need logical clarification<sup>209</sup>.

Copyright law as it stands does not sequester *all* operations on a representation. The *read* and *execute* operations (below figure 11) are not conducted in *Representation* space; they are not part of the copyrightable set of operations; both are **user's uses** of the work, and cannot – or should not - infringe or be infringed. As we find, in order to execute a program it must be *copied* into the computer's memory. The user's use has clashed with the protected author's use.

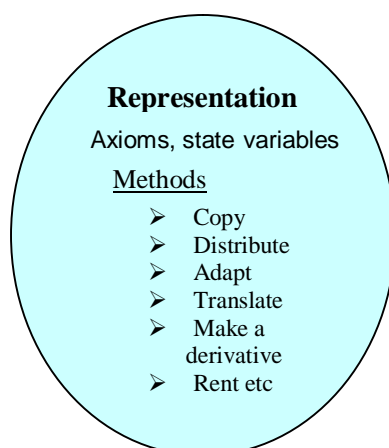


Figure 11

#### The Legal View

The ADT Representation will support a collection of titles: *War and Peace*, *Chemins de la Liberté*, *Twelfth Night* etc.

In object-oriented parlance, the operations on a representation object are called methods.

Each title is supported in the Object Oriented Design paradigm by *state variables*: title, author, date first published, ISBN etc, and constraints on operations, the *axioms*.

<sup>209</sup> DIRECTIVE 2009/24/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009, on the legal protection of computer programs. Official Journal of the European Union 5.5.2009. This repeals: Council Directive 91/250/EEC (OJ L 122, 17.5.1991, p. 42).



But the operations in the legal domain represent only a few of the mandatory *operations set* for any member of the Type *Representation*.

Figure 12 represents the spaces copyright-related operations inhabit.

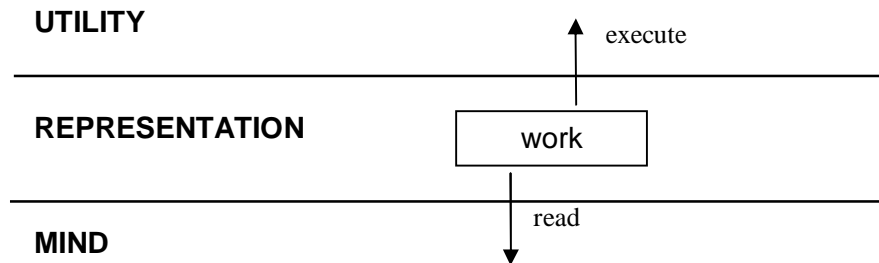


Figure 12

Copyright law covers the *reproduction* of the work and the making of *derivative works* based on it<sup>210</sup>. In law, copies can be *distributed* under the right<sup>211</sup>.

In this ontology a more purist approach to the operations is adopted:

- operations that give rise to *other language works* (versions and translations of language works) are posited as protectable. Operations that generate non-language works are not to be allowed in protected representation space under this ontology.
- *distribution* is taken to be a *second-order* operation, taking a token of a work as its operand. It is included in representation space, though it manipulates tokens as *commodities*. The processes are here represented in functional notation:

distribute (copy (tokenise (create|record (Representation))))

Example uses of a language work that are not in protected copyright space then are these: *read* the work, *execute* it as a process (computer program), use it as a doorstop, or make paper darts out of its pages<sup>212</sup>.

We next need to sort out the properties of the work and its embodiment in terms of the processes enacted on it.

The uses of a work when it is 'read' (by man or machine), or used as a transformer of data input into data output (execution) are ignored. It is often forgotten that *read* is not a copyright privileged operation.

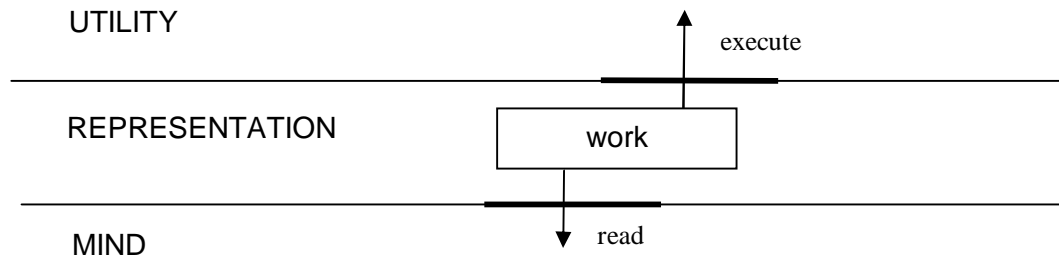
The thesis here is that if mandatory operations **not** protected by copyright are *frustrated by copyright law*, then we may infer that copyright law may not be appropriate.

<sup>210</sup> 17 US Code s106 (1), (2).

<sup>211</sup> 17 US Code s106 (3).

<sup>212</sup> Recall, I take the work to be either its type or its token at this juncture.

In *figure 13*, the three spaces are shown together with the blocks on utility and access that copyright can under certain circumstances precipitate (thick lines):

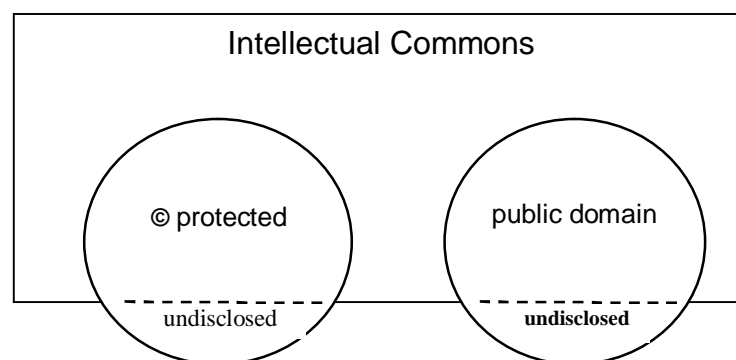


*Figure 13*

For example, computer programs need to be *copied* and possibly *adapted* before machine usable. They need to be *reverse analysed* (translated?) before being human-readable. The thesis must assume that the author *does not wish to frustrate* these *user uses*, particularly as they are the pecuniary *raison d'être* for the work. So if a work is made to be executed or read, the next move is to inquire who makes such use of it.

Ronan Deazley sets up his spaces rather differently. He locates the division between copyrightable and unprotectable as contingent on the need to gain permissions or not. He then sub-divides '*meaningful access to*' works from '*use of*' a work.

Ronan Deazley sets up his spaces rather differently. He locates the division between copyrightable and unprotectable as contingent on the need to gain permissions or not. He then sub-divides '*meaningful access to*' works from '*use of*' a work.



*Figure 14 Deazley's initial casting of free and protected*

Access to a work can be blocked *physically*, as it rarely is - Deazley's example is the case of the Dead Sea Scrolls - or blocked by *technological protective measures* (TPMs) such as

encryption or copy controls<sup>213</sup>. But access of itself is an *end-user's* or '*reader's right*' ceteris paribus; and 'reading' is not a protected copyright operation<sup>214</sup>.

In the United States, the early copyright law '*formalities*' required deposition of the work at the Library of Congress, exposure of the work being part of the IPR bargain. If a bar to reader's access becomes tightly coupled to efforts *to exclude a taker*, then the constraint goes beyond its rightful legal powers. There should be a balance here which cumulative recent law has destroyed: in efforts to defeat taker's use, *user's* use has been curtailed

According to (the dubious logic of) the *Ideas/Expression Dichotomy*, '*ideas embodied in copyrightable expression are already implicitly in the public domain*'. Creators' rights over expression, which are subject to copyright, might get a special dispensation, since it can be argued that *the expression* appears *de nouveau* thanks solely to the artist's endeavour, and as a consequence there was no 'Commons' from which to pluck and cordon off a work, as might be argued in the case of patentable inventions.

Open access (Commons) supporters would argue the artist's reliance on his privilege in education in the language and culture of his society as sufficient reason not to claim personal ownership.

### 6.3 User's Use and Taker's Use of Expressions

Under this ontology the agents of '*user's use*' will be the human sensory apparatus and mind, or a machine. If execution of a computer program is frustrated by the requirement to first *copy* the work – maybe even *adapt* it – *in order to use it at all*; that is an indication that copyright is a poor 'fit' with the kind of work being examined. This is so because copyright-protected operations have become part of the process of accessing the work for modern purposes.

If the reading of a computer program by a human is frustrated by the requirement to reverse analyse (translate) the work, incidentally, *copying* it as an intermediate step in the reverse analysis, that is an indication that the target of the work was not primarily intended for the human reader but for a machine.

The monopoly of *translation* as an author's right is traditionally rationalised on the basis that, after translation, another cohort will be able to access the work, resulting in opening another market for the author.

A work that targets a machine may be rationalised on the same basis. After translation of some level of the code, other machines can run the program. Under this rationale it seems

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<sup>213</sup> See the WCT Copyright Treaty, grounding the European Informative Society Directive (2001/29/EC). Article 6 deals with TPMs. See also the UK Copyright and Related Rights Regulations [2003].

<sup>214</sup> This notion is further developed by Jo Stanley in a formal model of copyright operations as the method content of an abstract data type called *Representation*. See also early work in *Scope and Similarity: The Protection of Computer Programs by Copyright, an Ontological Approach*. Intellectual Property Teachers Annual Conference [2003].

that the 'user's use' argument cannot be deployed as *the basis for distinguishing a functional work from an aesthetic one*.

#### 6.4 Abstract Data Type *Representation* and its Behaviour

The analysis continues by reiterating the mandatory operations for ADT *Representation*.

The list of operations used here is informed by considering a language work as both type and token. The operations will attach to either type or token.

The ontology tells us that a language work, **once tokenised**, can be re-tokenised. This gives us the copyright law operation: *reproduce* or *copy*. Copyright law does not distinguish between the creation of a work and its first record:

A work is "**created**" *when it is fixed in a copy ... for the first time*.

But before a work is 'fixed', (recorded), the work (as the type) must be *created*. That is a private (mental) operation that is not open to direct inspection. It must occur, in simple common sense, because if it did not, then operation *record* would have no argument – no operand - and there would be no token.

The operations on objects of type *Representation* tend to cluster about either the type or the token. So, using the terms of this ontology, *create*(work) is an operation on the type; *copy*(work) acts on the token, and *record*(work) transduces the type into its first token.

Those operations that take the type as an operand will be called **cognitive**, since they require creative mental effort - deconstruction and reconstruction. Those that operate on the token will be called **gestalt** since they do not creatively change the type, but take a 'whole' as operand.

A compilation is the product of the gestalt operation of using (*copying*) prior works or data, and the cognitive operation of *creating* a 'shell work', by making a selection, using introductory text, preparing an index and so on. In law the whole is copyrightable. The work nests previously available material into a new 'shell' work, (*figure 15*).

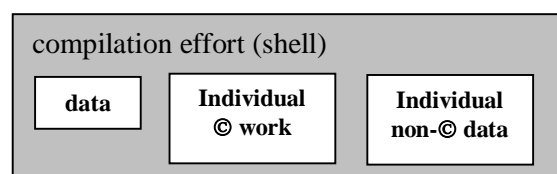


Figure 15

The author has a monopoly on the *creation* of her work, so *create*(work) is an operation protectable in copyright space. She will normally *record* the work in the first instance (though she may use an amanuensis). Anyone can re-tokenise the work, using the *copy* operation in, for example, slavish piracy.

In copyright law, *the copy operation is legal if authorised*; otherwise it infringes an operation exclusive to the copyright owner<sup>215</sup>.

In infringement of a work, *piracy* is the most constrained method of taking the work of another. That is *gestalt copying*. The other is what I will call *plagiarism*, in which the plagiarist *cognitively adapts* the model work to produce one that is very similar, having had access to the model work before or during the making of the mimic work.

## 7. The Similarity Determination in Copyright Law

It is the task of the judiciary to assess the similarity between two rival works<sup>216</sup>. A court assessment of whether one work has infringed another relies on an abstraction of the work, essentially to its meaning or *idea*, in order to judge whether two tokens are substantially similar. The level for comparison seems to be moveable. Drahos elucidates the process:

In order to make the decision, judges are necessarily involved in *a process of abstraction* in which they, as it were, *create the abstract object* that then forms the basis of their identity judgement.

However, the location of the abstraction that captures *just the permissible level of commonality* so that you can say 'the works aggregate under the same idea' is a moveable feast. Thus, this line of reasoning leads to the unfortunate outcome that what is being protected is *the idea*<sup>217</sup>.

Drahos again:

*Abstractness comes in degrees*. Imagine stories based on *the idea* of the last three of something left in the world, whether it be nations, people or dinosaurs. The *concrete expression*<sup>218</sup> of these stories is likely to be very different. Yet *at a sufficient level of abstraction* they might be thought equivalent. At the most abstract level it might be claimed these stories are *a concretization* of a three-point geometry.

As soon as copyright protection moves higher than the level of the verbatim expression, it might be argued that what is being protected (from plagiarism) is *a set of equivalent expressions*. What do these expressions have in common? On Drahos' argument, presumably their *idea* is common. But copyright does not protect ideas. The notion of *substantial similarity* drives perilously close to the protection of ideas<sup>219</sup>.

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<sup>215</sup> In US law, subject to 17 US Code s107 and the other veto means (s108 – s120) to reduce an author's exclusive rights under s106.

<sup>216</sup> Drahos conflates similarity and scope determinations: 'the basic process involves a comparison of two physical objects [tokens], and deciding whether or not one is an *impermissible imitation* of the other.' *A Philosophy of Intellectual Property*, at 154.

<sup>217</sup> This reasoning is confirmed correct by Drahos, (pers com). It runs counter to the legal bar of protection for the idea (s102(b)).

<sup>218</sup> By which Drahos must mean *particularity* of expression (ie degree of detail).

<sup>219</sup> Drahos says: '*By definition* the Substantial Similarity Test allows different expressions *to be aggregated as copies*. Different expressions can be aggregated *if they are part of some unifying expression, ie an idea*.' (pers. com.). The question is: is this an 'idea' in the Learned Hand sense?

## 8. Copyright and Technology in the Courts

In the case of traditional works – music, literature, plays, images - the ‘finder of fact’ in the US courts could have reference to (1) the layman’s perception of the ‘essence’ of a work (impressionist view), together with (2) a expert opinion for his determination of similarity.

With technological works, the expert view has increasingly taken the dominant position, since the public cannot be expected to pass judgement on complex technological issues.

The trend towards reliance on the expert witness, however, will never make the average jurist into a technology expert, and a sequence of US cases has revealed a disconnect between the Court’s *understanding* of the technical expert, and the sense the latter *wished to convey* in her advice.

Take as example, *Autoskill*<sup>220</sup>, a copyright case involving computerised teaching systems. The expert computer witness, Dr Johnson-Laird<sup>221</sup>, focused on an analysis of the computer programs in contention, declaring himself ‘not competent to talk about matters of teaching’.

He found no substantial similarity between the logic flow used in the two programs. However the two courts, lower and higher, inexplicably transferred their analysis from the computer programs to *the teaching method portrayed*. Said the 10<sup>th</sup> Circuit (Appeals):

The judge [in the District Court] *gave greater weight to Dr Olson’s testimony* [education expert] that the differences [between the programs] were *not pedagogically significant*.

Yet learning methods are just that, methods, thus if any IP protection had been suitable for the pedagogical *method*, it would be by patent (17 US Code s102(b)).

For commercial products such as computer programs, this degree of uncertainty as to what it is lawful to emulate versus what is an illicit taking of the work of another is unacceptable. See Gregory Aharonian’s case s2 above.

Efforts to formalise criteria for this assessment have led to the *Abstraction Filtration Comparison Test* (AFC) in the *Altai* case. The boxed section below describes the test’s provenance<sup>222</sup>.

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<sup>220</sup> *Autoskill v National Educational Support Systems (NESS)*. (994 F 2<sup>nd</sup> [1993] 1476. 10<sup>th</sup> Circuit), following the district hearing, (793 F Suppl., DNM [1992]).

<sup>221</sup> A reverse engineering expert.

<sup>222</sup> Stanley, Jo: *Invention and Representation: Freedoms and Ownership in a Time of Intellectual Property Rights*. Forthcoming.

### **A Brief Evolution of Court Tests, Moving Towards Computer Program Analysis**

The *Arnstein v Porter* Court (154 F2<sup>nd</sup> [1946], 464, 2<sup>nd</sup> Circuit) made its decision in the days of traditional plagiarism trials. The Court tried to balance the lay perception of the essence of a Cole Porter song with the expert musicologist's opinion – and thence find the degree of the alleged taking (by Cole Porter from a hymn writer of the time).

*Roth Greeting Cards v United Card Co* (429 F 2<sup>nd</sup> [1970], 1106, 9<sup>th</sup> Circuit) used the 'Look and Feel' test to compare the greetings card illustrations in contention. In *Sid and Marty Krofft v McDonald's Corp.* (562 F2<sup>nd</sup> [1977], 1157; 9<sup>th</sup> Circuit) the Court assessed alleged plagiarism of TV episodes by an advertising campaign. It used an 'extrinsic test' for similarity of *ideas* in a work; if the test reported positive, the inquiry moved to comparing the works as *expressions*. The former test was associated with expertise, the latter was a lay opinion.

In *Johnson v Uniden*, a computer case, (623 F Suppl. [1985], 1485, D Minnesota), a Court again tried to balance the layman versus expert opinion in a technological context; the test was not subsequently found useful.

The *Whelan v Jaslow* Court, (District Court hearing: 609 F Suppl. ED. Pa, [1985], 1307. Appeal: 797 F 2<sup>nd</sup> [1986], 1222) - the case of a computerised Dental Practice system - placed the ideas/expression divider too high, so that far too many levels of the system's 'expression' (below the divider) were protected by copyright.

In *Plains Cotton Cooperative Association v Goodpasture Computer Service*, a computerised cotton exchange, (807 F 2<sup>nd</sup> [1987]), the 5<sup>th</sup> Circuit reversed the *Whelan* ethos by setting the divider deeply into the lower levels of expressions so that *only* detailed code levels were protected – known as thin protection.

In *Brown Bag Software v Symantec Corp.*, (960 F2<sup>nd</sup> 1465, at 1475 [1992]), the 9<sup>th</sup> Circuit was already formulating a crude forerunner to the AFC test before *Altai* was decided. In *Brown Bag* we see pointers to an *early* partitioning of the computer program, and an *a priori* determination of scope under a plethora of criteria, a method referred to as '*Analytic Dissection*' was used: 'for the purpose of defining the scope of the Plaintiff's subject matter'. It was followed by a *subsequent* (pared down) substantial similarity test was conducted for infringement.

The Court's opinion indicated an apparently unconscious shift of dissection from its 'substantial similarity' role (in *Krofft*), to becoming the (separate and initial) scope-maker in *Brown Bag*.

*Brown Bag* was decided by the Appeals Court of the 9<sup>th</sup> Circuit two months before the 2<sup>nd</sup> Circuit decided *Altai*. *Altai* extended that test.

## 8.1 **Computer Associates Inc. v Altai**<sup>223</sup>

This case elucidated the *Abstraction/Filtration/Comparison* test<sup>224</sup> with Nimmer's filter at its core. Its goal was to remove from contention elements known to be unprotectable expression in a program. The test found favour with a number of American courts and commentators, and has been recommended for adoption in the European courts<sup>225</sup>, adopted by a British court in one candidate case<sup>226</sup>, and ignored in another<sup>227</sup>.

### The Facts in Altai

In 1981 Computer Associates Incorporated (CAI) developed a program called 'CA-Scheduler', a job-scheduler for IBM mainframes. In order for the program to run on all then current IBM operating systems, CAI included in the scheduler a program called ADAPTER as a component. A year later Altai also produced a job-scheduler, called 'ZEKE'. Wishing to port their program across operating systems, they created a corresponding switch program to ADAPTER, called OSCAR.

A programmer at Altai had previously worked for CAI. When he left, he took a copy of ADAPTER with him. CAI complained to Altai that 30% of the OSCAR code was a literal copy of ADAPTER code. Altai promptly rebuilt OSCAR using 'clean-room' techniques. Non-infringing code was the result.

<sup>223</sup> *Computer Associates International, Inc. v Altai, Inc.*, (775 Fed Suppl, 544 [Aug 1991], District Court, EDNY). Appeal: 982 F 2<sup>nd</sup> [June 1992], 693, Second Circuit).

<sup>224</sup> The test is rooted Nimmer's filter and a commentary by Englund: *Idea, Process, or Protected Expression?* Steven Englund, (Note in Michigan LR [1990], 866), detailing the levels of top-down computer program development, together with some 'straws in the wind' cases prior to *Altai*.

Spivack (also cited in *Altai*) was already articulating a levelled test of sorts. The key of Spivack's test is that *what is original* in the work should be copyrightable, apparently applying a higher standard of originality than copyright normally requires.

He said this: 'The computer program is divided into function, structure and organisation, routines, modules, object code and source code'. Then comes his procedure for analysis:

- (1) 'plaintiff must decide *at what levels of abstraction he can maintain a successful infringement action*': this means that he has the burden of examining the 'prior art' to ascertain whether his program is original in the part under scrutiny.
- (2) the trier of fact then decides at what levels substantial similarity occurs, (using expert opinion)
- (3) using Spivack's new 'novelty test', the novelty in each level of the program is determined. That is protected. As the levels become more 'abstract', Spivack posits that it will be harder to demonstrate novelty.
- (4) Where there is substantial similarity AND the allegedly offended program is novel: then it is infringed.

As Spivack puts it, this tool solves the idea/expression problem 'without having to confront it'. (Spivack [1988] at 772). Unfortunately the perennial flaw dogs Spivack's scheme: the fact that copyright is unexamined severely restricts access to and availability of prior art to search. Also the weight of the search, considered onerous already by the Patent Office would be put on the shoulders of the creator of the work. Once again, where would the threshold of the proposed novelty actually lie? At the end of the day that individual gets only the weak protection which is all copyright is capable of affording..

<sup>225</sup> Estele Derclaye *Software Copyright Protection: Can Europe Learn from American Case Law* (Part 2) EIPR 2 [2000], and Stanley Lai: *The Protection of Computer Software* [2000] at 112.

<sup>226</sup> *Richardson v Flanders* (FSR [1993], 497). The programs concerned stock-taking procedures for pharmacists. Of the seventeen similarities between the rival programs, under AFC only three were found to infringe copyright.

<sup>227</sup> Justice Jacobs rejected *Altai* in *Ibcos v Barclays*. FSR [1994], at 275.



### 8.1.1 Single or Multiple Divider for Ideas from Expression

The placing of the dividing line between ‘unprotectable idea’ and ‘protectable expression’ still eludes us. Let us return the Judge Learned Hand’s insight, and trace how it has been modified (distorted?) in a digital object setting.

Judge Learned Hand had suggested that:

*A great number of patterns of increasing generality will fit equally well [on a work]*

He has generally been interpreted as meaning that a single divider splits the protectable from the unprotectable:

*there is a point in this series of abstractions where [they] are no longer protected<sup>228</sup>.*

Here is the dual level concept:



Englund’s academic commentary had impact on the *Altai* Court. In this paper the author maps the products of *top-down decomposition* during computer program development onto a multi-level derivative of the old Abstractions Test. Englund refers to this as ‘all-or-nothing’, and unrealistic<sup>229</sup>.

<sup>228</sup> Dennis Karjala recommends the re-assertion of the one divider principle: ‘a much simpler approach that is better aligned with traditional law would be to draw *only one abstraction line*, as envisioned by Judge Hand: ‘somewhere around the literal code and *near verbatim-paraphrase level*’. (*Coherent Theory*, 66 U Cincinnati LR, at 83).

Karjala’s reason is the definition of a program according to 17 US Code §101, as a *set of instructions*. His pragmatic rationale is *the predictability in outcomes this strategy would bring*, with reduction in litigation costs and freeing of court time. In later writings he points out that the cost of expert witnesses could also be eliminated. (His, Brooklyn LR).

<sup>229</sup> Englund believed that there are two dichotomies: that of *idea and expression* and that of *process and expression*. He advises that the program should be regarded as a set of low level implementations of modules as instructions. Then one should conceptualise these as ‘replaced by’ their ‘functions’ at a higher level. He says this: ‘At any intermediate level of abstraction, the program may be conceived of as a collection of module *functions* and *literal instructions* organised into higher-level modules that together implement the ultimate function of the program’.

At higher levels of abstraction, the functions become more general, the structure more simple, and the instructions fewer in number. Englund advises this procedure: ‘For each set of modules, one should ask whether the use of this particular set is necessary efficiently to implement that part of the process that is implemented in the common client module. If so, the common client module’s use is merged with the process of the program and is therefore unprotected. If the same process could be implemented efficiently by combining and redividing the functions of a set of modules in a number of substantially different ways, then the selection of that particular set of modules should be protected’.

Englund maintains that *program text and structure should be treated as an integrated whole*. This implies *that Englund would filter the code itself along with the rest*. He considers the main unprotectable elements as those lacking *originality* and those which, of ‘necessity’ can only be expressed *in one way*.

He insists that the analysis is essentially an ordinary literary idea/expression analysis, *but using multiple dividers*, since a ‘necessary’ element *in any level* must make it part of the ‘idea’, and unprotectable. His ‘one concession’ to the process/expression divide is ‘computational efficiency’,

The *Altai* test first splits a program into 'parts' loosely corresponding to the levels of program development under traditional top-down methods: Abstraction. Next each stratum is dissected to find elements which, for diverse reasons, cannot be defended as protectable under copyright: Filtration<sup>230</sup>. The *Altai* court never challenged the idea that literal code should, as by right, be protected<sup>231</sup>. This meant that effectively it removed the literal code from the filter as an initial *step*.

After all the removals of unprotectable parts, a 'golden nugget' of protectable expression is supposed to remain. Armed with this one compares the rival works, the alleged copy program being compared to just the protected parts of the 'original' work<sup>232</sup>: Comparison.

### The Analysis and Decision in *Altai*

In the District Court, The Computer Associates expert listed elements to be considered for similarity checks.

Dr Davis, the Court's own expert witness, picked up these elements and quantified their relative importance in the similarity test. *System outline* (as organisation chart) was *negligible* in protectable significance, source code *a 100 times greater*, and object code *1,000 times greater*. These elements then served the court as the 'program parts', along with parameter lists, a list of services and macros.

When the comparison was made, it was found that similarities between parameters and macros in the two programs were either not proven, or they were considered unprotectable because they were in the public domain or dictated by *externalities*. The list of services offered was deemed contingent on 'the demands of the operating system on the one side and the application program on the other'. With respect to the code, cleaned up OSCAR was declared *not* substantially similar to ADAPTER.

Computer Associates appealed. The Second Circuit affirmed the lower court decision, with the modification that filtration should focus on analysis of the *infringed* work, thereby fortifying the notion that scope determination comes first.

As can be seen, not only is the AFC test becoming excruciatingly complex, but it is also development paradigm-dependent. Dennis Karjala points out the additional anomaly of

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since this reduces the notion of choice in implementation, because that would defeat program performance. It is therefore another merger argument. (For merger, see s11, below).

<sup>230</sup> Specifically citing *Nimmer* for the immunities, see s5 above..

<sup>231</sup> Approved under *Franklin and Williams. Apple Computer Inc v Franklin Computer Corporation*. US Court of Appeals, (714 F 2<sup>nd</sup> [1983] 1240, Third Circuit). *Apple Computer, Inc v Formula International, Inc*, (725 F 2<sup>nd</sup> [1984] 521, Ninth Circuit).

<sup>232</sup> From the outset, the *Altai* court maintained that their decision should **not control screen displays**, which were audiovisual works. These were **an effect** of a program, not the program itself. (*CAI v Altai*, District Court hearing at 559).

source and object codes being withdrawn from the filter without rationale<sup>233</sup>. Were they not withdrawn, they too might be eliminated as ‘unprotectable processes’<sup>234</sup>.

## 8.2 Conclusion on the Technological Challenge for the Courts

John Ogilvie, writing at the time between the District Court hearing of *Altai* and the Appeal, criticised the ‘parameter and service lists’ (given as the ‘program parts’ in Court) as being interfaces rather than bona fide levels of abstraction applicable to the program. In order for a test of the complexity of *Altai* to work, he maintains that the program paradigm must be settled from the outset. Ogilvie recommends 6 levels of development to act as the program parts or levels.

These concepts, parts and levels, are quite separate in the view of a professional systems developer, but they were becoming confused by the Court jurists. Ogilvie’s aim was for the 6-levels paradigm to act as a focus to keep the various Circuit Courts (11 separate geographical jurisdictions across the United States) in harmony<sup>235</sup>.

Yet this approach is doomed to failure if programs are constructed in a way that does not reflect an Ogilvie-compatible paradigm, or indeed any particular paradigm at all - the back of the envelope system developments that 30 years of modular programming has failed to curb<sup>236</sup>.

## 9. A Return to Ontological Considerations:

### 9.1 Loss of Numerical Identity Amongst Copyright Objects

Two **identical** works, if independently created, attract separate copyrights. The lack of a requirement for *uniqueness* as between two independently created works is a copyright law given. What then makes them two works and not one – that is, one abstract particular?

The difference between the two identical works might lie in their authorship<sup>237</sup>. But suppose the same author produced the same work twice. Suppose in a bout of amnesia she forgot the making of the earlier work. That would make them two ‘*independent works*’ under the definition of the term. One might use the idea of *idempotence*<sup>238</sup> as a solution to cover the case where the work is independently ‘recreated’ in this way. Otherwise one could view the later work as an identical independent creation, *indexed by time*.

### 9.2 Copyright’s Privileged Operations

<sup>233</sup> But see *Bateman v Mnemonics*, in which the Eleventh Circuit was prepared to put the literal code through the Nimmer filter, bucking the previous trend.

<sup>234</sup> 17 US Code §102(b), or *scenes*, or merger.

<sup>235</sup> John Ogilvie, *Defining Program Parts Under Learned Hand’s Abstraction Test*, Michigan LR [1992], 526.

<sup>236</sup> See *Harbor Software*, *infra*.

<sup>237</sup> An example at token level is this: Digital signatures implemented by WWW Consortium’s Dsig project (Chu et al [1997] <http://www.w3.org/TR/PR-Dsig-label.html>) are mathematically encrypted. This generates the assertion that a particular author created a document in a particular form. Alteration of the document provably invalidates the assertion.

<sup>238</sup> An expression which under an operator gives itself as a result:  $y$  writes  $x$  AND  $x$  AND  $x$  ..., so  $y$  writes  $x$ . (B Peirce, American Journal Mathematics [1881]).

This section reviews the copyright privileged operations and their relationship to the two phases of an object of the type '*Representation*': type and token. It places those operations such as *read(Book)* and *execute(Program)* in the logical framework, albeit beyond the reach of copyright law.

The making of derivative works is a generic copyright operation in law. This ontology takes the following operations that make other literary works to be legitimate operations on a representation:

- *Amend*: overwrites the original. Keep only latest.
- *Version*: generates a new work in a series, keep all.
- *Adapt*: modifies a work, taking it from one language **form** to another: novel to play, for instance.
- *Translate*: renders a work available to another cohort of users: Russian to English, English to Braille, source code to assembly code, etc.

The operations that generate derivative works impact the work as *type*, and are classified as *cognitive*. They take a token of a prior work and generate a new type from it, as in the case of *version*<sup>239</sup>:

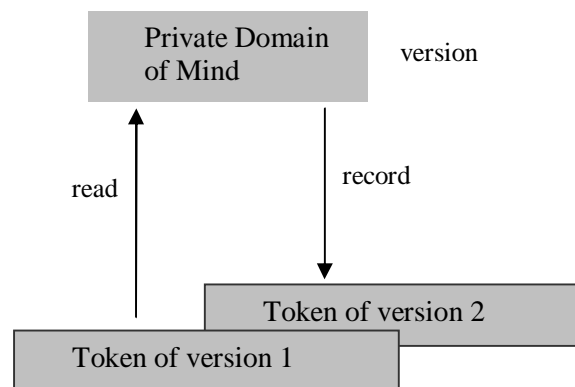


Figure 16

Because a cognitive operation is private to the mind that achieves it, there is nothing but circumstantial evidence to link the two works together. The circumstantial evidence, of course, is overwhelming<sup>240</sup>.

When plagiarism occurs, the situation is exactly similar to authorised versioning, and so is the test. The input is a prior work. A mind has access to that work, and there is substantial similarity between input and output works. The difference between the two cases is that only in one case is the *version* operation *authorised*. This is either because the author himself

<sup>239</sup> 17 US Code §101: ... and where the work has been prepared in *different versions, each version constitutes a separate work*.

<sup>240</sup> The evidence is: V2 was made after V1, the version-maker had the chance to access V1, and V2 is substantially similar to V1.

creates the version, or because the *version* operation is authorised by him to another; an editor or reviser might make the second work.

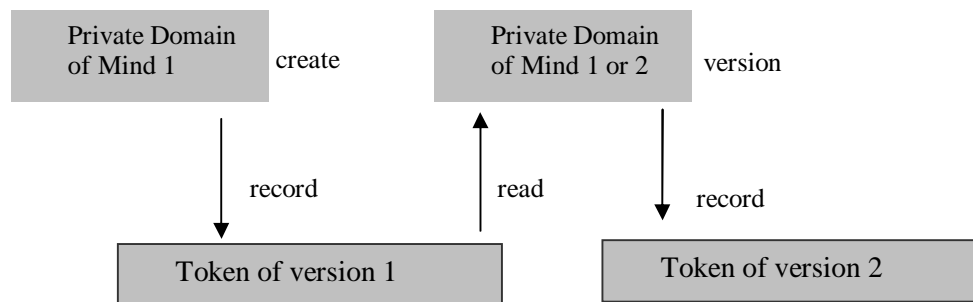


Figure 17

Pirating produces slavish copies:

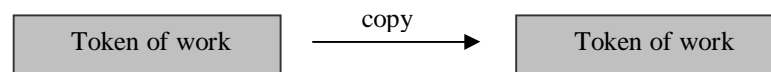


Figure 18

Piracy is a gestalt operation; what it takes it does not change. It requires no mental loop.

In the revision of a work, the operation is customarily iterative<sup>241</sup>:

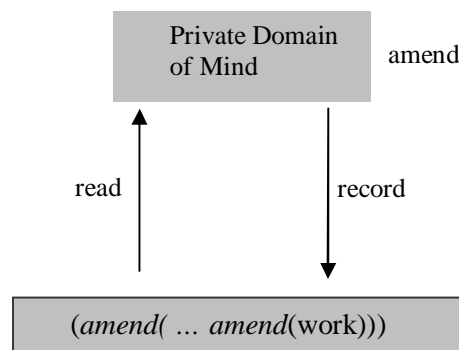


Figure 19

Revision may proceed by small incremental moves. The process will almost certainly be recursive. In full, the nested operation would be:

*amend(amend ... (record(create(sentence ... )))).*

<sup>241</sup> The legal referent is 17 US Code s101: Where a work is prepared over a period of time, the portion of it that has been fixed at any particular time constitutes the work as of that time. Justice Jacobs in *Ibcos* also suggests that each time a computer program is revised, a fresh copyright is created.

The functional language representation above shows nesting between levels of treatment of the core work: First it is created, then recorded (copyright law conflates these two). The record can then be amended over and over until we reach the outer nesting, or final work.

Whatever the operational grain (chapter, sentence or word) and however high the running frequency of the loop, the (private) mental phase must still run, in order to alter the type. Ontologically this private operation uncouples the input and output works, and legally, authorisation re-couples them and legitimises the operation.

All the cognitive operations mentioned so far have been cognitive *transformations*. There is one other: cognitive *use*. Traditionally that is the *read* operation. Although this operation has been considered as outside copyright space in this ontology, it is worth examining.

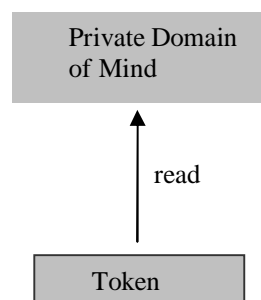


Figure 20

*Read* in this ontology implies no more than that a token of the work is *made available* to a *direct* recipient; that is, informally, one capable of ‘understanding’ the form of the work. For example a Russian speaker is able to read a work in Russian. *Cognitive use* has no necessary output at all.

This operation has been used (by analogy) to legitimise reverse analysis of computer code, as a method to access the code’s *ideas*. If computer programs are deemed copyright subject matter, reverse analysis could be allowed as a matter of policy, to satisfy a goal such as enabling interoperability between computer programs. However, surely the more rational view would be that interoperability between two entities implies ‘fit’, that fit is not an operation known in copyright space - it is a device operation - and implies that we are dealing with *devices*. This supports rejection of computer code under 17 US Code s102(b).

The primary traditional goal of linguistic works, as given for copyright purposes, is to *convey information*. The target of the information was traditionally a human. An objection to the copyrightability of specialised works has been their restricted readership. In the case of object code it has been suggested that there is essentially no human readership at all<sup>242</sup>.

<sup>242</sup> See Pamela Samuelson’s comments in the *Manifesto*, footnote 24 above. On the other hand, a case for the readability of code, and communication between computer scientists *in* code is made by Abelson *et al* (amicus briefs to *Universal City Studios v Eric Corley*, [23/01/2001]). The amici argued that *code is a text language used between computer scientists for efficiency of explanation*. Touretzky of Carnegie Mellon argues that *all* computer code is human-readable. I take the amici to mean that they

Either we accept that the reverse engineering of object code is the analogue of *reading* to access *ideas*, albeit the human is not the target readership, or we view reverse engineering as *translation* that violates a copyright operation but can be saved by fair use, because of the *final use* the expression is put to. This is an argument that uses the public goods facet of copyright: public goods are non-rival, one reader does not eliminate readership by another.

However, we might decide that program code is barred at the first hurdle, which is the segregation of useful from non-useful works.

## 10. The Ideas/Expression Dichotomy Revisited

One of the tests inherent in the dichotomy is that 1 idea has many expressions.

In *Whelan* the error in the placement of the single idea/expression divider was founded in the thought that if *x* and *y* are one-to-many related, then *x is the idea of the work, and y is its expression*.

In *Altai*, the simple I/E axis is rotated through 90 degrees, and we find the thesis to be that *at each level of abstraction* there are both ideas and expressions.

My ontological answer to this conundrum relies on the notion that ideas are private, therefore any cognitive operations on an idea cannot be inspected. To change a work – to flesh it out – and move from one level to another needs a cognitive operation.

### 10.1 The Disconnect between Levels in a Work

Judge Learned Hand's insight on levels of abstraction is purely a suggested scope-maker. It has no notion of trial of similarity. It is also short on advice as to where the line may be drawn between the protectable by copyright and the unprotectable.

What 'the abstractions' must effectively be is a *set of statements* expressing the ideas of the work at the successive levels. We know of them only by their record.

Ben Kremer comments *a propos* of the relation between reserved words and the programs they initiate:

Reserved words cannot ever be '*converted into*' source code. The true relationship is *more like the title of a book and its contents*. Moving from the former to the latter *must involve a process of independent creation*; there is never any '*conversion*', which it is argued involves instead some sort of mechanical or computational re-rendering *with no independent creative input*<sup>243</sup>.

Kremer's argument seems to speak for the uncoupling, by a private creative (cognitive) act, of the more *general* statement at a higher level and the more *particularised* statement at the lower one. The particularised statement incorporates the general statement as a *partial* specification.

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want to read *source* code. In current copyright law the distribution of source code would be the prerogative of the copyright owner. Its use among scholars could be a fair use.

<sup>243</sup> Kremer, B *Copyright Protection of Computer Programs*, 6 EIPR [2000] 292, at 294.

The thesis here is this: each level of specialisation, moving down the levels, does not merely produce a *new expression derived* from the expression at the level above, but also *must* import and incorporate *new ideas* in order to satisfy the new, specialised demands of the current, more particularised level.

*In short, each level has its own concerns, requiring a full recasting of the work.*

This is especially pointed in a computer context where different developmental skills, possibly implemented by different developers, deal with the different levels.

To summarise:

The ideas expressed at level 0 are insufficient to flesh out level 1's expression. Therefore, a level 0 token must be read, and a cognitive act done to change the *level 0* work into a level 1 work.

The concept is expressed diagrammatically below in figure 21:

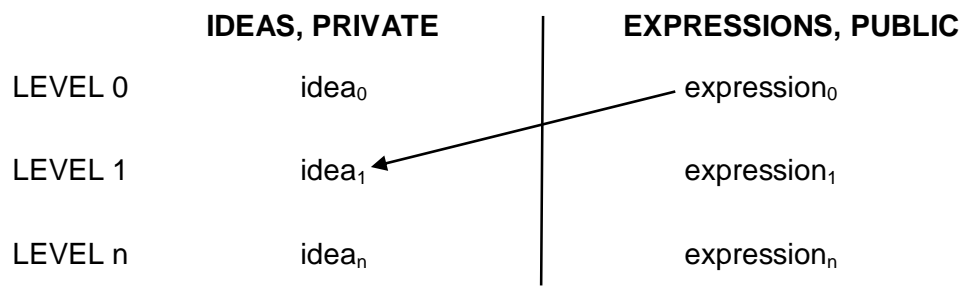


Figure 21

Summarised, the model indicates that:

- idea<sub>0</sub> <> idea<sub>1</sub>
- ideas are private, and taken to be *fully expressed* by their expressions at their own level.
- expression<sub>1</sub> is not simply one way to say expression<sub>0</sub>; it is its own expression of a new idea: idea<sub>1</sub>
- ideas<sub>1.1, 1.2, 1.3</sub> may each be articulated as an expression, and are different 'ideas' at the same level.
- A work from any level has, as part of its specification, the ideas expressed in the work at the level above. The rest of the specification must satisfy the detailed demands of *the current level*, and recruit fresh ideas to do so.

## 10.2 The Body-less Mummy Metaphor

Andrew Christie's perception of the ideas/expression dichotomy uses the metaphor<sup>244</sup> of the body-less mummy. There *is* certainly an idea behind any expression, but it cannot be

<sup>244</sup> *IP Protection for the Design of Integrated Circuits* [1992], at 165.



located: there is *no body*; the recorded expression is all we have; the layers of bandage in Christie's visualisation represent the levels of generality. He goes on:

*a very general form* of expression would nevertheless seem to be capable of expression in *numerous other, less general, forms of expression*.

The only deduction that follows from this is that a one-to-many relation between x and y in this context shows that x is a more general expression, and y, or more accurately,  $y_n$  is one of a set of more particularised expressions. But the one-to-many relationship is not going to be a mechanistic way to determine what is protectable by copyright and what is not, because there are many levels and many one-to-many relationships between pairs of them.

Richard Stern suggests:

Something can be an idea *without* being at the very extreme of generality and abstraction, and something can be an expression *without being at the very extreme of concreteness*. ... Clearly *several different ways* of doing something can *each* be ideas *for carrying out another idea that is at a higher level* of abstraction<sup>245</sup>.

Ogilvie gives an example. At the higher level, the expression is:

**LEVEL 1**            Make a determination of whether a number is divisible by 9.

I would say that that is the full expression of the idea *at that level*. At a lower level the idea for a specific algorithm could be expressed optionally:

**LEVEL 2.1**        add the number's digits, add in the digits of the result recursively until a single digit is arrived at. If the digit is 9, the number is divisible by 9.

**LEVEL 2.2**        repeatedly subtract 9 until the result is 0 or not 0; if 0 then the number is divisible by 9.

Not only do the two expressions record methods, but they could be regarded as totally different ideas albeit to fulfil the same goal.

The *Altai* model was arrived at by grafting top-down decomposition onto the axis of the classic ideas/expression dichotomy. It forms a complex test. It expects to locate 'ideas' at all levels thus simply confirming the essentially *a priori* model put forward here. *Altai*, however, gets us no further in locating *the point at which* a computer work becomes copyright protectable; it has all the flaws of the classic dichotomy.

## 11. Merger

The so-called *merger doctrine* is grounded in the notion that if there is *only one* (or at most very few) possible expressions of an idea, therefore, as a legal fiction, idea and expression 'merge' and copyright is void. This inspection reveals further poor fit of copyright with computer objects.

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<sup>245</sup> Richard Stern: *The Protection of Programming Languages*. (17, Rutgers Comp Tech Law J [1991]).

Some of the reasons given for invoking the merger doctrine are as follows:

- the idea is a fact.
- the expression is the 'most efficient', therefore a writer is coerced into choosing the (one) efficient option. (Applied to algorithms). The rationale is that if an expression is the most efficient one that could be used in the specified context, it should not be sequestered under copyright.
- compatibility and external constraints - such as hardware or software platforms, interfaces of all kinds, *de facto* standards, and the vernacular of the industry for which the software is written - cause convergence between expressions.

### **1. Fact Merger**

Facts, unlike ideas, are essentially public. They are the worldly correlates of true propositions, of states of affairs. True reports (expressions) of facts are, not surprisingly, one-to-one related to the facts that support them. Facts, or data about facts, which is the language correlate of facts, are corrupted if expressed in another way<sup>246</sup>. If facts are translated, unlike translations of fictional products, facts in a target language are one-to-one related to those in the source language.

### **2. Efficiency Merger**

There are several objections to this idea:

1. the efficiency of a computer process would seem to be, *a priori*, an attribute of the execution of the program, therefore a property of its utilitarian nature, and contingent on other factors than the readable program script. A computer program does not necessarily contain its efficiency in its readable expression, nor is it a self-contained entity.

A simple example would be a program containing a *sort algorithm*. Performance will depend on the list size of the data input, the order of data presentation (sorted, random or inverse), and the size of the individual elements in the list to be sorted<sup>247</sup>. If the *expression* of an algorithm does not reach as far as input specifications for execution, then these are uncontrollable variables in an efficiency assessment.

2. There is a hardware issue<sup>248</sup> A (patented) algorithm's speed is not necessarily stable across time. Does (initially faster) algorithm 2 come to infringe (initially slow) algorithm 1 when a hardware development enables algorithm 1 to speed up and exceed algorithm 2's performance? The example comes from patent law, and concerns a case where the speed of the algorithm determines the problem set that

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<sup>246</sup> Clearly we take as a given the proviso that conversion amongst units (eg Fahrenheit and Celsius) is not a corruption in reporting facts.

<sup>247</sup> Wirth, *Algorithms + Data Structures = Programs* [1976].

<sup>248</sup> See Andrew Chin *Asymptotic Complexity*, (Jurimetrics).

can be solved by the algorithms, and can be a property on which 35 US Code s103 (non-obviousness) can rely.

Efficiency seems to be neither stable nor predictable until the program is executed as a *method*. Protection of a method by copyright is barred by 17 US Code s102(b). As Dennis Karjala has commented, ‘the *Baker v Selden* court did not inquire into *whether other accounting methods existed* to accomplish the goals of Selden’s system (in principle there are millions), *let alone any that were better than the one at issue*<sup>249</sup>’.

### **3. Compatibility Merger**

In the case of two expressions that co-operate (interface interoperability) or antagonise (lock-and-key jamming devices) when executed, the use expressed is seen under this ontology as occupying utility space. Yet performance in utility space is used to invoke the doctrines of copyright space.

No-one explains *why* a copyrightable expression is judged in its **functional** relationship with another expression, except to say the goal of interaction is ‘its idea’. The notion of ‘fit’ is a functional one, and is followed by a utilitarian result.

### **4. De Facto Standards and Merger**

*The abandonment of protection for a computer program due to merger in the case of de facto standards leads to an anomaly. A (new) work at the start of its career is copyright protected, but protection is withdrawn if the work (1) becomes popular and (2) *functionally* interfaces with other expressions or with a user.*

User interfaces have been characterised as methods for operating a computer, and hence beyond copyright protection. Interaction between interfaces is, again, a question of fit.

## **12. Words and Devices**

We have seen that computer technology takes copyright law out of its comfort zone. It is required to cope with device-oriented properties, and the traditional tenets are wearing thin. Below are three cases that illustrate this position.

Example 1      *Sega Enterprises Ltd v Accolade, Inc.*

Sega was a producer of computer games and a console platform called ‘Genesis’ to execute them. Accolade was an independent producer of computer games, who wanted to recruit additional running platforms for its games, notably Sega’s *Genesis* console<sup>250</sup>.

*Genesis* only executed games whose code contained the Sega initialisation string. Accolade decompiled the program taken from the *Genesis* circuitry, and generated from it human-readable micro-code. Accolade searched for matches amongst the Sega games programs, in

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<sup>249</sup> Referring to the paradigm case of *Baker v Selden* [1879], *A Coherent Theory* at 81.

<sup>250</sup> *Sega Enterprises Ltd v Accolade, Inc.*, 977 F 2<sup>nd</sup> at 1510, [1992]. 9<sup>th</sup> Circuit.

order to find the key bitstring that could unlock the *Genesis* console. It then experimentally modified its own games and tested the results. Although *Sega* was primarily a fair use case, it brings an early example of 'device copyright'.

Following the ontology developed here I divide the area in which operations take place into 3 ontological spaces:

UTILITY, where a useful article finds its intended use.

REPRESENTATION, where copyright objects and operations naturally reside.

MIND, where human mental, (private) operations take place.

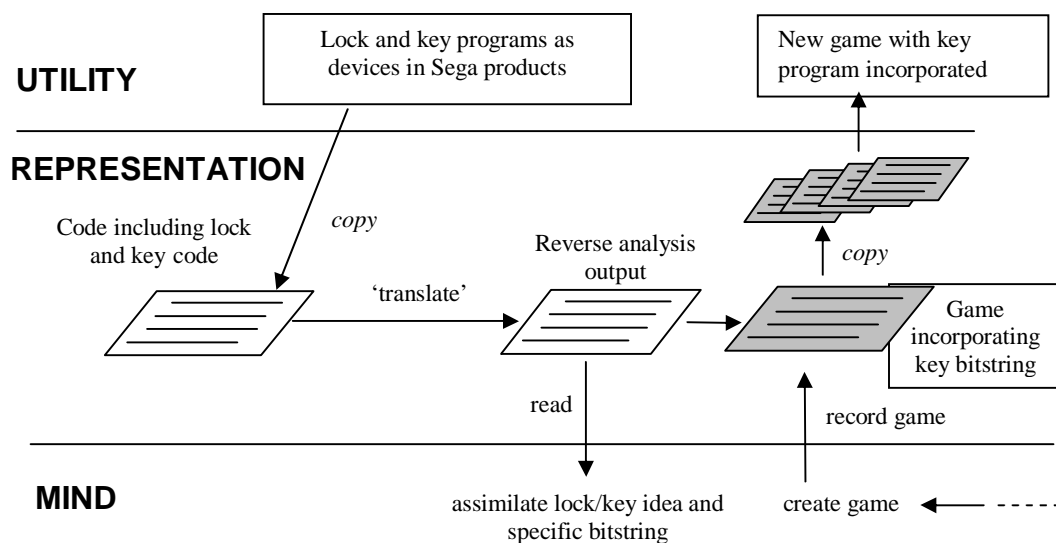


Figure 22

In a paradigm trade secrets case<sup>251</sup> the Supreme Court made this definition of reverse engineering as: '*starting with the known product and working backwards to divine the process which aided in its development or manufacture*'. I posit that reverse engineering in this case fulfils the goal to implement a 'fit', and is a *device* notion where the goal is one of 'fit' – lock and key - to trigger function.

**Example 2:** *Vault v Quaid*<sup>252</sup>

Vault's customers were application developers. Vault produced a protection system called '*PROLOK*' for their applications. The system came in two parts on diskette: (1) a non-erasable, magnetic 'fingerprint' and (2) a 'recogniser' program, which interacted with the fingerprint so that the application would run only when an original *PROLOK* diskette was present in the drive. Customers' programs were loaded onto *PROLOK* diskettes and sold to end users.

<sup>251</sup> *Kewanee Oil v Bicorn*, 416 US 470 [1974].

<sup>252</sup> *Vault Corp. v Quaid Software, Ltd*, 847 F 2<sup>nd</sup> [1988], at 255, 5<sup>th</sup> Circuit.

Quaid produced a diskette called 'CopyWrite'. It contained a program called 'RAMKEY', which was able to unlock *PROLOK*, hence sabotaging its purpose. Quaid had used reverse analysis to create *RAMKEY* versions that tracked the *PROLOK* versions as they became available. Quaid defeated the Vault 1983 version of *PROLOK* by including 30 characters taken from *PROLOK* in their own code. *RAMKEY* was accused of being a *derivative work*. The criteria for this assessment are: 'based on one or more *preexisting works* (17 US Code s101)', and the rule that '[an] infringing work must incorporate, in some form, a portion of the copyrighted work<sup>253</sup>'.

Also the two works must be 'substantially similar', (having the same idea). In Quaid, 30 characters were taken from a work of source code about 50 pages long, and embedded in Quaid's 80-page long *RAMKEY* program - but only for *RAMKEY1* - ensuing versions did not need or use the string. The string sequence was of course quantitatively minor. Qualitatively however, argued Vault, the copied sequence defined *PROLOK* (was its idea), in that it was the code element that crucially interacted with the diskette fingerprint. The Fifth Circuit pointed out that the programs must 'perform essentially *the same function*' (have the same idea). In *Quaid* the programs in issue performed *antagonistic* functions. The Court maintained that *RAMKEY* and *PROLOK* were different programs, not meeting the substantial similarity test. The programs were *functionally* (lethally) related, yet substantially dissimilar in the literary sense of an idea.

Example 3:     *Autodesk v Dyason*<sup>254</sup>: Hardware and Software

A parallel fact pattern to *Quaid* emerged in this Australian case. The AutoCAD drawing program was protected by its *Widget.C* program (the key), which interacted with a hardware lock that plugged into the user's machine. Each copy of AutoCAD had exactly one hardware lock. Periodically a challenge was sent from *Widget.C* to the lock circuit (a shift register and XOR gate). Only if a correct binary response to the challenge was received, would AutoCAD continue to run.

The defendant, in creating a rival program, used an oscilloscope to detect the signals exchanged between the key program and the lock device. He then *emulated the functionality* of the lock, and sold it to the public; The effect of the sabotaging program was to allow a number of persons to use the Autocad at the same time. It transpired that the circuitry of the two locks was quite different. Here the idea of the two programs was substantially similar, yet the 'programs' were quite different.

The lower court thought both the locks were programs and found infringement. Michael Pattison, in criticising the lower court decision brings these points:

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<sup>253</sup> *Litchfield v Spielberg* (736 F 2<sup>nd</sup> [1984], 1352). (9<sup>th</sup> Circuit). The question in this case was: was the film *ET* a copyright violation of a screenplay submitted to Spielberg?

<sup>254</sup> Finally decided [1992], Appeal to High Court reported in *Australian Intellectual Property Cases* (AIPC) s 90-855.

Hardware is not the same as software, for all their logical equivalence of function. The AutoCAD lock was a hardware device; a program is a work of language. The relevant Australian Act describes a program as 'an expression in any language, code or notation, of a set of instructions'.<sup>255</sup>

Pattison argues that *even if* the lock were considered to be a program, it is not '*fixed*' such that it can be *communicated*. A criterion for copyright protection is to be '*fixed in a reproducible form*'. You cannot retrospectively a circuit to its original algorithm - though you may black-box *interpret* it so as to produce *some* algorithm that does the same job.

Though both the Sega and the AutoCAD devices are locks for restricting use of a computer program, the Sega software lock gets automatic copyright protection whereas the hardware device goes without.

We now have tools to enable a designer to cast the logic blocks for her system in hardware or software. The tool iterates trials, and like a genetic algorithm offers the system developer candidate partitions between hardware and software for the final system based on performance, this interchangeability must call into question the suitability of copyright in computer technology. Here the optionality illustrated would allow software to be copyright protected, but not hardware.

### 13. Languages: Biological and Natural

The argument here is that in many contexts where copyright appears to theorists to apply, these theorists are in fact carried away by a false notion of '*a language*'. The check and balance to inappropriate use of copyright is an appreciation of domain separation. This is illustrated below in the domain of biological chemistry.

Adrian Speck has commented, in regard to biological research and record:

[Would] the synthesis of *an actual protein or DNA* infringe [copyright in the written sequence]?<sup>256</sup>

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<sup>255</sup> *Copyright Protection and Computer Technology*, 4 EIPR [1991] 145.

<sup>256</sup> *Genetic Copyright*, (4 EIPR [1995] at 171).

Here is the domain distinction:

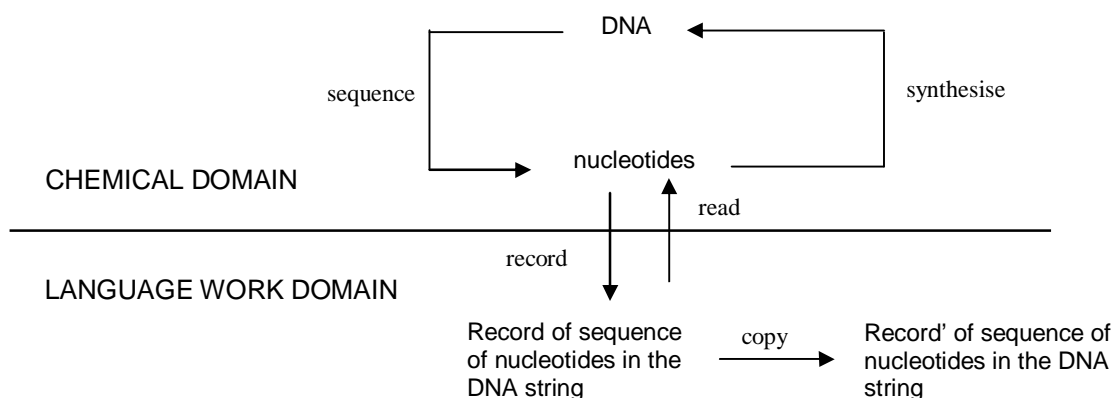


Figure 23

DNA is in fact relatively easy to make in a test-tube, provided one includes the right enzyme and has the right conditions.

Whereas *copying the record* (r) of the DNA string as record prime (r') is potentially a copyright-protected operation, only exempt through being factual, *synthesis* of the same DNA cannot in this ontology infringe since it is a *chemical* operation from a different domain<sup>257</sup>. The reader of the record has taken DNA as one takes a recipe, and has (similarly) produced chemical from chemical. This is a **user's use**.

This reference to the British statute indicates awareness of such a domain separation:

It is *not an infringement of any copyright* in a *design document* ... to *make an article* to the design or to *copy an article* made to the design<sup>258</sup>

In his article, Speck continues:

What is original in [the copyright sense] in the *elucidation and recording* of the sequence of ... nucleic acid<sup>259</sup>.

Contrary to the ontology which I am developing here, Speck's statement bundles the real world activity of *sequencing* DNA with the *recording* of the nascent scientific data, ignoring the fact that one operation is in the chemical domain and the other, which creates the record, is a *Representation* operation. I have commented:

When the elucidating *method* was new, *the most appropriate protection would have been by patent*. If the elucidating method is in routine use, then the patent option disappears. Elucidation (sequencing) is a real-world [chemical] operation not recognised

<sup>257</sup> *Copyright Law in Biotechnology: a View from the Formalist Camp*, Jo Stanley and Darrel Ince, 3 EIPR [1997] at 142, response to Speck's article.

<sup>258</sup> UK CDPA s51 ss1.

<sup>259</sup> Speck at 172.

by copyright. ... The “originality” or otherwise of a DNA molecule can have no bearing on its record<sup>260</sup>.

*Baker v Selden*<sup>261</sup> says as much:

The copyright of the book ... would be valid *without regard to the novelty, or want of novelty, of its subject matter*. The novelty of the art or *thing described* has nothing to do with the validity of the copyright.

## Resume of Part 2

The abstract conception of a work and its tangible record flows naturally from the philosophical notion of *type* and *token*. Copyright resides in a work as type, but the work is not acknowledged in law until a token is made. The use of type/token theory explains the evolution of the protection of a work as token changing to the protection of the work as type.

*Representation* has been modelled as an abstract data type in order to identify operations that would naturally be expected of a copyright work. The operations are seen to attach to either type or token, except *record*, which converts the one into the other. These operations in the main reflect those found in copyright law.

‘Use’ in the sense of reading a work is a (*cognitive*) – a *user’s* use of the tokenised work. Getting instructions for a procedure from a written work is a *cognitive* use; the interest lies in the fact that either man or machine can ‘read’ the work in some sense. We then need to wrestle with the notion of ‘machine cognition’, which is another story than this one.

Such uses are distinguished from utilitarian use in the sense of the *functional execution* of a representation like object code. Copyright operations are *author’s* uses. Author’s uses are the rights vested in a creator, but may also be assigned. User’s uses are obtained customarily for a consideration paid to the author, often via his intermediary.

The model suggested here takes levels of expression as discrete. A representation at level *n* is connected to that at level *n+1* by submitting it to a private mental act of adaptation, or creation. The output is a representation at level *n+1*.

The notion of domain difference grounds the idea that a real world operation such as the production of a DNA molecule cannot violate copyright, as the chemistry involved belongs to another domain; the instructions are accessed as a *user’s* use of the written material.

## Conclusion from Part 2

### A. Copyright Expansion and its Progeny of Woes

Copyright is over-strength and expanded in scope beyond any rational justification, this is commonly accepted<sup>262</sup>. According to Jessica Litman it is a law student’s apprentice-piece to

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<sup>260</sup> *A View from the Formalist Camp*, Stanley and Ince, at 143. Speck goes on to suggest that DNA has its own language, and that to record its sequence is analogous to *translating* it into another language. (Speck at 172).

<sup>261</sup> Concerning a book-keeping method, the contention arose as to whether it was or was not copyright protected. Being a *method* it is not. The book describing the method was protected. This case triggered the introduction of US Code s102(b) against protecting methods under copyright.



redesign copyright law with a clean slate and some logic<sup>263</sup>; it serves none of the stakeholders well at present. The straight arrow of connection between creator and 'reader' is befuddled by the machinations of intermediaries, and this is the level at which copyright issues are currently being argued. The role of the traditional publisher is overtaken by internet representations and distribution, and we are questioning which is the better way for the creation to reach the 'consumer'.

So has copyright run its course, or has the initially sound concept been so abused by law-makers and judicial interpretation as to render it pathological in context of its current subject matter of jurisdiction?

Firstly, the US CONTU Committee, which decided the path upon which we are now all dependent, namely to protect of programs by copyright, had no program developers in their ranks as an inspection of their biographies affirms; most were librarians; Europe followed America, seeming to sleep-walk into acceptance of the paradigm.

Secondly the Supreme Court at the time of CONTU was in the direst muddle of the entire infamous trilogy of patent decisions (case of *Flook*), and the prospect of selecting patent protection for programs at that time looked bleak.

Thirdly, the reach of digital technology was not then anticipated, but perhaps should have been. Even having said this, copyright was by the time of CONTU already bloated in scope and protection period. Copyright law was originated for books. We should remember MaCaulay's simple statement in the House of Commons in the middle of the nineteenth century:

It is desirable that we should have *a supply of good books*, [which] we cannot ... unless *men of letters are liberally remunerated*<sup>264</sup>.

This implies that copyright protection should be sufficient to promote creativity, but no more. This concept is supported by Chaffee's principles, notably his fourth, which advocates parsimony of protection. 'Protection should not extend beyond the purpose of that protection'<sup>265</sup>.

Today copyright founds program user-licenses and as such shackles SMEs to the treadmill of renewable licenses, perpetual upgrades and re-learning of program use.

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<sup>262</sup> See Justice Laddie, the 1995 Stephen Stewart Lecture, *Copyright, Over-Strength, Over-Regulated, Over-Rated*, 18 E.I.P.R. 253 [1996]. Also *Locating Copyright Within the First Amendment* Skein Neil Weinstock Netanel, *Stanford Law Review* Vol. 54:1 2001, where at p19 he says: 'the problem is not merely that expression has steadily gobbled up idea, but that there is no clear line between idea and expression'. See also Netanel in *Copyright's Paradox*.

<sup>263</sup> *The Copyright Revision Act of 2026*, Litman, Twelfth Annual Honourable Helen Wilson Nies Memorial Lecture [2009]. Judge Nies was an elegant opinion maker and friend of Judge Rich in the CCPA and its subsequent incarnation as the CAFC.

<sup>264</sup> Hansard [1841].

<sup>265</sup> Zechariah Chaffee *Reflections on the Law of Copyright*. (45, Columbia Law Review 504 and 719 (parts 1 and 2) [1945]). Chaffee was a judicial philosopher and scholar of freedom of speech under the first amendment.

## B. The Perils of the 'EULA': End User License Agreement

Licensors may withhold the EULA until after purchase of the software or hide it. Encryption of software can make it impossible for the user to install their new software without accepting the EULA or violating the *Digital Millennium Copyright Act (DMCA)*<sup>266</sup> or its foreign counterparts. (See *Blizzard v BnetD*<sup>267</sup>). There can be errors with license price lists that confuse the licensee. Scott Braden, writing in December 2005<sup>268</sup> tells how he uncovered a plethora of mistakes in the resale market for one major software publisher's products. Such errors can render a licensee illegal, without redress.

The EULA began life as a liability disclaimer and contract between the user and the publisher of the software. However, the terms of a EULA are all too frequently not thoroughly read and understood by the user. Some of the risks are discussed below.

Agreements '*not to criticise the product publicly*' effectively prevent independent quality surveys, thus depleting consumer information about products. If the customer agrees not to disclose the results of any benchmark test on the software to any third party, this inhibits unfettered, informed choice and hence fair competition. If a EULA contains a term such as '*using this product means you will be monitored*', automatic license updates can be coerced by having the networked device contact some third party without the knowledge of the consumer, jeopardising security and threatening privacy. The clause '*do not reverse engineer this product*' appears in some EULAs, Annalee Newitz suggests that this stifles innovation and reinforces lock-in<sup>269</sup>. The EULA may use some form of words such as '*except and only to the extent that such activity is expressly permitted by applicable law*'. This opaque expression gives the user no guidance as to how a violation could occur, yet it obeys the strict legal requirement to give him notice.

Licensors can receive a fee to have advertising software bundled with licensed products. In signing the EULA the end user may also be promising not to remove such software, and not to use sniffer (detector) programs to access or interrupt traffic from the software on the wire. There may be clauses to ensure that the user *has also* signed up to future modified versions of the EULA. *This implies a one-sided modification of a contract without one party's explicit consent.*

But how then should we guard the licensing power of deeply innovative software to return a reward? We must consider the essentiality of a *competitive marketplace* for innovation to thrive in. A fruitful model is used by the 'Intellectual Property' firm of Arm, the RISK chip

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<sup>266</sup> Note that for the purposes of this piece, the DMCA is regarded as paracopyright so not dealt with in any detail.

<sup>267</sup> United States Court of Appeals, (Eighth Circuit). *Blizzard v BnetD* Case no: 04-3654 [2005].

<sup>268</sup> *How a Mid-sized Company Saved over \$870,000 on a \$3M Microsoft EA* [specific kind of license agreement] *in Less than Three Weeks*. Braden claims to have corrected, as he puts it: 'mistakes that cost my client several hundred thousand dollars over the past few years'. ([www.microsoft-watch.com/content/operating\\_systems/how\\_to\\_negotiate\\_with\\_microsoft.html](http://www.microsoft-watch.com/content/operating_systems/how_to_negotiate_with_microsoft.html)).

<sup>269</sup> [www.eff.org/wp/dangerous-terms-users-guide-eulas](http://www.eff.org/wp/dangerous-terms-users-guide-eulas)

developers in Cambridge. The firm's two drivers are these: first, they do not *produce* for the market what they have developed, they simply license their designs. Second, their licenses are universal. Since their chips are unique for speed and lightness and they can license for all vendors mobile phones, they can coerce interoperability whilst preserving a feedback of profit into R&D.

### Part 3 The Retreat of the State<sup>270</sup>

As we described in the conclusion to Part 1, there are two substantial blocks to the welfare of SMEs in relation to their computer provision in a culture of large corporations and consortia of corporations.

The first is the trend towards demand side aggregation, when complex contracts squeeze the smaller companies out of public sector jobs. Further, corporations can cast deals amongst themselves for the use of each other's products, and proprietary software is one of the beneficiaries.

The second is a function of *network effects* in computer provision. An *installed base*<sup>271</sup> belonging to a dominant first-comer supplier in the market has value to consumers over and above the intrinsic value of the supplied item<sup>272</sup>. This is the case in, for example, the operating system market, where clusters of software applications have grown up around the prevalent market dominant operating system.

The gravity pull of a dominant platform is so intense that independent software vendors (ISVs) have little choice but to write to APIs (Application Programming Interfaces) of the platform on which nearly all software will run<sup>273</sup>. This makes it difficult for other operating system producers (open source or proprietary) to enter the market and compete<sup>274</sup>. That is, applications barriers to entry against new competitors are erected, and consumers become locked in to the product of the vendor they began with. Costs of 'consumer switch' to an entrant's product may be high. If the number of applications written for the entrant's platform is sparse (almost certain to be the case in the early reaches of the entrant's project) the consumer is severely punished for the switch<sup>275</sup>.

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<sup>270</sup> This heading is taken from the title of Susan Strange's book – one of many she wrote mapping the rise and rise of the trans-national corporations.

<sup>271</sup> Installed base: a substantial number of customers are set up with a good or service (a computer operating system, for example) that makes it easy for them to communicate with others having the same facility. Examples are: exchanging files that have the same format, and swapping applications that run on the same platform.

<sup>272</sup> *Network effects*, or *network externalities*, means this: a good's value to the buyer of an extra unit is higher when more units are sold, everything else being equal [Economides 2001].

<sup>273</sup> *Network Protocols: the Essential Intellectual Facility*, Anna Rosa Gejlsbjerg and Jo Stanley. BILETA conference Belfast [Spring 2005].

<sup>274</sup> *Lost Possible Futures: Microsoft's Strategic Behaviour*, Jo Stanley and Anna Rosa Gejlsbjerg (Society Legal Scholars Annual Conference at Strathclyde [Sept 2005]).

<sup>275</sup> Consumer Welfare in Relation to Monopolies: Harm to End-Users in the Operating System Market, Jo Stanley. SLISA annual conference [April 2006].

The UK is at a pivotal point in policy: will the communitarian aims of *The Big Society* check or override short term profiteering by transnational corporations and their aggregates? Or is the power of Capital too deeply entrenched in our social structure in terms of customer monopolies, powers over employment and heft in investments and pensions?

## References to Part 1

AABA website, and the free online peer reviewed journal *Accountancy Business and the Public Interest*, for Prem Sikka's bulletins.

Asenova D. *From the Private Finance Initiative to the new Prudential Borrowing Framework*, et al. Draft on file with the author, (2007).

Association for Chief Executives of Voluntary Organisations, *Replacing the State? The Case for Third Sector Public Service Delivery*, (2003).

*The Annual Survey of Small Businesses' Opinions 2006/07* (ASBS 2006/07)  
<http://www.berr.gov.uk/files/file42727.doc>

Becta *Microsoft Vista and Office: Interim report with recommendations on adoption and deployment*, (Jan 2007).

Becta *Microsoft Vista and Office 2007 Final report with recommendations on adoption, deployment and interoperability*. (Jan 2008).

Bell, D *Public Investment and Devolution*, FAI Quarterly Economic Commentary, (June 1999) FAI Quarterly Economic Commentary.

Bennett et al: *Local Government And Local Economic Development In Britain* (2004) at P211.

Blond, Phillip, *The Ownership State: Restoring excellence, innovation and ethos to the public services*. NESTA (Oct 2009).

Botto F., Passani A *Community Networks and Digital Ecosystems Relationships*, Proceedings of OPAALS, 7--8 October 2008, Tampere, Finland, pp. 37--46 , D12.10). (2008)

Boyne, G A, *Competitive Tendering in Local Government: A Review of Theory and Evidence*', Public Administration, (1998).

Carnaghan, Robert and Bracewell-Milnes, Barry. *Testing the market: competitive tendering for government services in Britain and abroad*.

Centre for Public Services report: *How to Exclude Support Services from Building Schools for the Future and PFI Projects*.

Craig, David *Plundering the Public Sector* (2006).

*European Code of Best Practices Facilitating Access by SMEs to Public Procurement Contracts*, 14/10/2008: European Parliament and the Council Directive 2004/18/EC, 31 March 2004.  
[http://ec.europa.eu/internal\\_market/publicprocurement/docs/sme\\_code\\_of\\_best\\_practices\\_en.pdf](http://ec.europa.eu/internal_market/publicprocurement/docs/sme_code_of_best_practices_en.pdf)

European Commission. *A single market for 21st century Europe, communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the committee of the Regions. Final*: Brussels, 20.11.2007COM(2007) 724 final, visited April 2010.[http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007\\_0724en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0724en01.pdf).

European Commission. Staff Working Document.Brussels, 25.6.2008SEC (2008) 2193.

Fitzgerald, Brian and Kenny, Tony *Open Source Software can Improve the Health of the Bank Balance - The Beaumont Hospital Experience*, (2003). <http://www.osor.eu/studies/migration-to-open-source-software-2013-beaumont>.

FSB report, *Public Sector Procurement: the small business perspective*.  
<http://www.communities.gov.uk/localgovernment/efficiencybetter/nationalprocurementprogramme/nationalprocurementstrategy/smallbusinessfriendly/authoritieswhohave/>

Glover Report *Accelerating the SME economic engine: through transparent, simple and strategic procurement*, [http://www.paessex.gov.uk/pae/glover\\_report.pdf](http://www.paessex.gov.uk/pae/glover_report.pdf), (August 2008)

Gosling Paul, *The Rise of the "Public Services Industry"* – A report for UNISON Sept (2008).

Hellowell, Mark, and Pollock, Alysson *Written Evidence to the National Assembly for Wales Finance Committee with regards to its Enquiry into PPPs* (Dec 2007).

Huntingdonshire District Council, *ICT Strategy 2009-11*.

Julius, DeAnne *Understanding the Public Services Industry: How big, how good, where next?* Report for BERR (2008).

John Kay *A New Public Sector* (01 June 2001); Prospect essay.

Local Government Planning and Land Act LGPLA, (1982)

Moravcsik, Andrew *Negotiating the Single European Act: national interests and conventional statecraft in the European Community*, International Organization 45, 1, (Winter 1991).

National Audit Office, *Improving the PFI tendering process* at [http://www.nao.org.uk/publications/0607/improving\\_pfi\\_tendering.aspx](http://www.nao.org.uk/publications/0607/improving_pfi_tendering.aspx)

Office of Fair Trading report, 1974, [http://www.oft.gov.uk/shared\\_oftr/reports/comp\\_policy/oftr742b.pdf](http://www.oft.gov.uk/shared_oftr/reports/comp_policy/oftr742b.pdf)

Office of Government Commerce, UK papers on Framework Agreements: [http://www.ogc.gov.uk/documents/OGC\\_Guidance\\_on\\_Framework\\_AgreementsSept\\_08.pdf](http://www.ogc.gov.uk/documents/OGC_Guidance_on_Framework_AgreementsSept_08.pdf) and [http://www.ogc.gov.uk/documents/Framework\\_Agreements\\_and\\_EC\\_Developments.doc](http://www.ogc.gov.uk/documents/Framework_Agreements_and_EC_Developments.doc)

Office Government Commerce BSF Economics of the LEP Guidance Note at [www.partnershipsfor schools.org.uk/.../](http://www.partnershipsfor schools.org.uk/.../)

Ovum, *Player Rankings, UK Public Sector*, (04 April 2008).

Peeling, N. & Satchell, J. (2001). *Analysis of the Impact of Open Source Software*, [http://www.cabinetoffice.gov.uk/media/253425/QinetiQ\\_OSS\\_rep.pdf](http://www.cabinetoffice.gov.uk/media/253425/QinetiQ_OSS_rep.pdf)

Peterborough Unitary Authority web site Public Information page: <http://democracy.peterborough.gov.uk/mgConvert2PDF.aspx?ID=4519>

Peterborough Unitary Authority website, annual accounts <http://www.peterborough.gov.uk/PDF/coun-accounts-mediumTermFinancialStrategy08-09.pdf>

Peterborough Unitary Authority, Budget Book: <http://democracy.peterborough.gov.uk/mgConvert2PDF.aspx?ID=4519> Last visited May 2010.

Rivera Leon, Lorena in *The DBE Book*. **CORRECT REF**

Roots, Bill *Review of arrangements for efficiencies from 'smarter procurement' in local government*, (Feb, 2009).

Shaoul, Jean *Britain: The business of education under Labour*, World Socialist web site (27<sup>th</sup> March 2010). At: <http://www.wsws.org/articles/2010/mar2010/edu2-m27.shtml>.

Sikka, Prem and Willmott, Hugh, *All Offshore – The Sprat, The Mackerel, Accounting Firms And The State In Globalization, The Chartist* (2006).

Sikka, Prem and Willmott, Hugh. *The dark side of transfer pricing: Its role in tax avoidance and wealth retentiveness*, to be published by Elsevier 2010. (Copy on file with present author).

Smith, Peter and Hobbs, Adam for the Small Business Service: <http://www.bis.gov.uk/files/file38305.pdf>

Stanley, Jo *Consumer Welfare in Relation to Monopolies: Harm to End-Users in the Operating System Market*, SLSA annual conference (April 2006).

Stanley, Jo and Gejlsbjerg, Anna Rosa *Lost Possible Futures: Microsoft's Strategic Behaviour*, Society Legal Scholars Annual Conference at Strathclyde (Sept 2005).

Unison web site *The Private Finance Initiative, A Strategic Response* (April 1998).

Ward, David J. and Tao, Eric Y. *Open Source Software Use in Municipal Government: Is full immersion possible?* Proc. World Congress Engin. And Comp. Sci. [2009] Vol II.

Weston, Crispin *A critique of Becta's policy on learning platforms*, Alpha Learning 12th June 2006.

Whitfield, Dexter *Global Auction of Public Assets* (2010), Spokesman Books.

Whitfield, Dexter, *Options Appraisal Criteria and Matrix*, European Services Strategy Unit, research report no 2, (June 2007).

Whitfield, Dexter *Cost overruns, delays and terminations: 105 outsourced public sector ICT projects* ESSU Research Report No. 3 (2007).

Whitfield, Dexter *New Labour's Attack on Public Services* (2006).

Whitfield, Dexter *Public Services or Corporate Welfare*, (2001).

UK Office of Government Commerce (OGC) (2004), *Aggregation: is bigger always better?*

UK Government TUPE: *Transfer of Undertakings (Protection of Employment) Regulations 2006*. see government issued details at <http://www.idea.gov.uk/idk/core/page.do?pageId=6908271>

UK Office of Government Commerce (OGC) *Open Source Software Trials in Government Final Report*. Last updated: 17/04/2007. At: <http://www.ogc.gov.uk/documents/CP0041OpenSourceSoftwareTrialReport.pdf>

Unison report on TUPE at <http://www.unison.org.uk/file/TUPE%20Update%202022%20March%202009.doc>

## References to Part 2

Amicus briefs of Abelson and Touretzky *et al* to *Universal City Studios v Eric Corley*, (23/01/2001).

Ang, Steven *The Idea- Expression Dichotomy and Merger Doctrine in the Copyright Laws of the U.S. and the U.K.*, International Journal of Law and Information Technology (UK), Vol. 2 No. 2., (1994).

Bently, L. and Sherman, B. *The Making of Modern IP Law* (1999).

Braden, Scott *How a Mid-sized Company Saved over \$870,000 on a \$3M Microsoft EA in Less than Three Weeks*. (2005).

Chafee, Zechariah *Reflections on the Law of Copyright*. 45, Columbia Law Review 504 and 719, parts 1 and 2, (1945).

Chin, Andrew *Computational Complexity and the Scope of Software Patents*, 39 Jurimetrics 17 (1999).

Christie, Andrew *IP Protection for the Design of Integrated Circuits* (1992), PhD thesis (at Cambridge University Library) and subsequent book, (1992).

Cornish, William and Llewelyn, David in *Intellectual Property: Patents, Copyrights, Trademarks and Allied Rights*. Fifth ed.

Drahos, Peter A *Philosophy of Intellectual Property* (1999).

Economides, Nicholas, *The Microsoft Antitrust Case*, Journal of Industry, Competition and Trade: From Theory to Policy (2001).

Estele Derclaye *Software Copyright Protection: Can Europe Learn from American Case Law* (Part 2) EIPR 2 (2000).

Englund Steven: *Idea, Process, or Protected Expression?* Note in Michigan LR (1990), 866.

European Commission, WCT Copyright Treaty, grounding the European Informative Society Directive (2001/29/EC).

European Copyright Directive: Directive of the Council of May 14, 1991, *On the Legal Protection of Computer Programs* (91 /250/EG).

Fodor, Jerry, *The Elm and the Expert: Mentalese and Its Semantics*, MIT Press. (1996).

Hill R. B. and Cote F. P. *Ending the Federal Crapshoot: Emphasising the Plain Meaning in Patent Claim Interpretation*. 42.1 Idea (2002)

Gejlsbjerg, Anna Rosa and Stanley, Jo *Network Protocols: the Essential Intellectual Facility*, BILETA conference Belfast (Spring 2005).

Gendler Szabo, Zoltan *Expressions and their Representations* Philosophical Quarterly, no 195, vol 49, (1999).

Hartshorne, Charles and Weiss, Paul editors *Collected Papers of CS Peirce*. Cambridge, MA: Harvard University Press, (1931-58).

*Ibcos v Barclays*. FSR (1994), at 275.

Karjala Dennis, *Copyright Protection for Computer Program Structure*, 64 Brooklyn LR [1998].

Karjala Dennis, *A Coherent Theory of Copyright*, 66 U Cincinnati LR, at 83. (1997)

Kremer, Ben *Copyright Protection of Computer Programs*, 6 EIPR (2000) 292.

Justice Laddie, the 1995 Stephen Stewart Lecture, *Copyright, Over-Strength, Over-Regulated, Over-Rated*, 18 EIPR. 253 (1996).

Lai, Stanley *The Protection of Computer Software* EIPR at 112. (2000).

Leval, Pierre *Towards a Fair Use Standard*, 103 Harvard LR, 1105. (1990).

Lewis, David *On the Plurality of Worlds*, (1986), Oxford: Basil Blackwell.

Locke, John *Two Treatises on Government* (1690).

Litman, Jessica *The Copyright Revision Act of 2026*, Litman, Twelfth Annual Honourable Helen Wilson Nies Memorial Lecture (2009).

Netanel, Neil *Copyright's Paradox* Oxford University Press, (2008).

Netanel, Neil Weinstock *Locating Copyright Within the First Amendment Skein*, Stanford Law Review Vol. 54:1 (2001).

Newitz, Annalee [www.eff.org/wp/dangerous-terms-users-guide-eulas](http://www.eff.org/wp/dangerous-terms-users-guide-eulas). Last visited January 2010

Nimmer, Melville B., and David Nimmer *Nimmer on Copyright* 1997 edition.

Northern District of California, *Aharonian v. Gonzales*. Opinion 03 01 (2006).

Official Journal of the European Union DIRECTIVE 2009/24/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009, on the legal protection of computer programs. (5.5.2009). Also Council Directive 91/250/EEC (OJ L 122, 17.5.1991).

Ogilvie, John *Defining Program Parts Under Learned Hand's Abstraction Test*, Michigan LR (1992), 526.

Pattison, Michael *Copyright Protection and Computer Technology*, 4 EIPR (1991) 145.

Quine, W.V.O. *Quiddities* Harvard UP (1987).

Rich, Giles *The Vague Concept of 'Invention' as Replaced by s103 of the (US) 1952 Patent Act*. <http://innovation.hoover.org/media/file/ppl/GSR%20on%20Vague%20Concept%20of%20Invention%20in%20JPOS%201964.pdf> visited 27<sup>th</sup> July 2010.

*Richardson v Flanders*, 497FSR (1993).

Rose, Mark *The author as proprietor: Donaldson v. Becket and the genealogy of modern authorship* Representations 23. At 51, (1988).

Samuelson, Pamela, Davis, Kapor, Reichman, Jerome. *A Manifesto Concerning the Legal Protection of Computer Programs* 94 Columbia LR (1994).

Samuelson, Pamela. *CONTU Revisited*, 663 Duke Law Journal (1984).

Searle, John *Speech Acts* (1967).

Speck, Adrian *Genetic Copyright*, 4 EIPR (1995) at 171.

Spivack, Peter *Does Form Follow from Function? The Ideas/Expression Dichotomy in Copyright Protection of Computer Software* UCLA LR (1988).

Stanley, Jo and Briscoe, Gerard *The ABC of Digital Business Ecosystems* Communications Law (2010).

Stanley, Jo *Invention and Representation: Freedoms and Ownership in a Time of Intellectual Property Rights*. Forthcoming.

Stanley, Jo *Scope and Similarity: The Protection of Computer Programs by Copyright, an Ontological Approach*. Intellectual Property Teachers Annual Conference (2003).

Stanley, Jo and Ince, Darrel *Copyright Law in Biotechnology: a View from the Formalist Camp*, 3 EIPR (1997).



Stern, Richard: *The Protection of Programming Languages*. 17, Rutgers Comp Tech Law J (1991).

Stevenson, C.L. *What is a Poem?* Phil Review (1967).

US Supreme Court, *Kewanee Oil v Bicorn*, 416 US 470 (1974).

US Court 2<sup>nd</sup> Circuit 982 F 2<sup>nd</sup> series 693, *Computer Associates International, Inc. v Altai, Inc.*, (June 1992), following the District Court, EDNY in 775 Fed Suppl, 544 (Aug 1991).

US Court 2<sup>nd</sup> Circuit *Whelan v Jaslow* 797 F 2<sup>nd</sup> series (1986), 1222, following District hearing hearing: 609 F Suppl. ED. Pa, (1985), 1307.

US Court 2<sup>nd</sup> Circuit *Nichols v Universal Pictures*. 45 F 2<sup>nd</sup> series, (1930).

US Court 3<sup>rd</sup> Circuit *Apple Computer Inc v Franklin Computer Corporation*. (14 F 2<sup>nd</sup> series (1983) 1240.

US Court 5<sup>th</sup> Circuit *Vault Corp. v Quaid Software, Ltd*, 847 F 2<sup>nd</sup> series (1988), at 255.

US Court 5<sup>th</sup> Circuit *Plains Cotton Cooperative Association v Goodpasture Computer Service*, 807 F 2<sup>nd</sup> (1987).

US Court 5<sup>th</sup> Circuit *Plains Cotton Cooperative Association v Goodpasture Computer Service*. 807 F 2<sup>nd</sup> series, (1987).

US Court 2<sup>nd</sup> Circuit, *Arnstein v Porter* Court 154 F 2<sup>nd</sup> series (1946).

US Court 9<sup>th</sup> Circuit *Sega Enterprises Ltd v Accolade, Inc.*, 977 F 2<sup>nd</sup> series at 1510, (1992).

United States Court of 8<sup>th</sup> Circuit. *Blizzard v BnetD* Case no: 04-3654 (2005).

US Court 9<sup>th</sup> Circuit *Brown Bag Software v Symantec Corp.*, 960 F2nd 1465, (1992).

US Court 9<sup>th</sup> Circuit *Apple Computer, Inc v Formula International, Inc*, 725 F 2<sup>nd</sup> series (1984) 521.

US Court 9<sup>th</sup> Circuit *Litchfield v Spielberg*, 736 F 2<sup>nd</sup> (1984), 1352).

US Court 9<sup>th</sup> Circuit *Sid and Marty Krofft v McDonald's Corp*. 562 F2<sup>nd</sup> series (1977), 1157.

US Court 9<sup>th</sup> Circuit *Roth Greeting Cards v United Card Co*, 429 F 2<sup>nd</sup> (1970), 1106.

US Court 10<sup>th</sup> Circuit *Autoskill v National Educational Support Systems (NESS)*, 994 F 2<sup>nd</sup> (1993) 1476, following the district hearing, 793 F Suppl., DNM (1992).

US Court 11<sup>th</sup> Circuit *Bateman v Mnemonics*, 671 F.2d series 1276 (1982)

US District Court D Minnesota, *Johnson v Uniden*, 623 F Suppl. (1985), 1485.

US Code Title 17, the copyright title. Available from Cornell Law

UK Copyright Design and Patent Act (1988).

UK Copyright and Related Rights Regulations (2003).

Wagner, Alan *Patenting Computer Science*, J Marshall J Comp. and Info. Sci at 8, (Fall, 1998)].

Wirth, Niklaus *Algorithms + Data Structures = Programs* (1976).

## **DOW Adjustments due to Changed Regional Conditions**

### **Adjustments in Research are Reflected in the Final Report**

In phase three CAM will carry on two main activities: one as territorial catalyst and one more focusing on research. The two activities are strongly interlinked and interdependent.

#### **CAM as territorial catalyst:**

These new conditions are emerging in the East of England:

1. The dominance of regional funding for energy-conserving and green projects to the exclusion of most other avenues of research.

2. The over-whelming dependence of Peterborough on government funding. This applies at all levels of SME support, including start-up loans. This contrasts with Cambridge, where there is an established, stratified local investment structure, (Business Angels, Venture Capitalists, the University itself), in many sectors wholly contingent on possession of patent rights, which are increasingly sought.
3. The economic downturn, which will inevitably impact UK government funding for Peterborough. By contrast Cambridge will remain autonomous with respect to finance, being the current European funding main hotspot.

Peterborough yielded poor information and weak opportunities for catalysis. What was gleaned indicated that the environmental sector was insufficiently established there to study as a sector, which is not the position that Opportunity Peterborough advertises. In Cambridge the investment picture shows a plateau effect - even a decline. This has led to a chilling in environmental R & D advances in the research engine of the University and associated Science Park SMEs, hence the focus on the environmental sector with its sustainability ethos failed to materialise.

The CAM partner elected to engage public sector hubs for a role of catalysis as means to reach the SMEs. This effort was hampered by these factors:

1. The overwhelming factor in the equation was the rise of Public Private Partnerships as a means to deliver local goods and services, including ICT in the public sector. PPPs now dominate public sector procurement and exclude many SMEs, as explained in the Deliverable.
2. PPP contracts' confidentiality clauses excluded the release of information to the researcher as to the exact position and prospects for SMEs (notably ICT SMEs) in the new picture of aggregated demand which is leading to aggregated supply of services by huge consortia rather than collectivities of SMEs.
3. PPPs precipitate an environment of 'Arms Length Management' (ALM), where local hubs pass responsibility for ICT selection to the private partner, who is unlikely to choose OSS.
4. Reduction of key SME supports, for example Business Link, to a shadow of their earlier size and capability to assist the SMEs. (Due to financial constraints from 2007 onwards, and increasing fiscal debt).
5. The incipient abolition of the Regional Development Agencies (RDAs) after years of funding reduction. (Due to financial constraints from 2007 onwards, and increasing fiscal debt).
6. Redundancies of key public sector contacts of the CAM partner.

These issues are dealt with in the Introduction to Del 11.12, and in detail in chapters 2 and 3.

OPAALS autopoietic model, aspirations to create a fully distributed community system should fit well with low energy usage technologies, an increasing need for community developments. Therefore synergy between the two research programmes should be feasible, and would be desirable.

Here again the regional results were disappointing.

The previous UK New Labour government, through heavy emphasis on central policies being implemented without regional adaptation or modification, excluded much locally instigated self-organisation, which we in OPAALS promote.

Paradoxically the recently elected UK Coalition Government promotes the very attributes OPAALS has developed.

EC funding for the East of England under ERDF is wholly committed to environmental projects. It would seem rational, efficient and financially prudent to merge the research from funding streams from OPAALS and local ERDF projects. These have similar weights of social benefit. The CAM partner should undertake catalysis of such alliances, and formal presentation of OPAALS objectives, and if possible demonstration models.

Catalysis by the CAM partner was achieved to some extent, but local government seemed incapable of perceiving the benefits of our essentially communitarian goals.

Catalysis continues beyond the life of OPAALS because CAM has been able to harvest enough powerful friends of the OPAALS project to promote 'fit' of the OPAALS key drivers to the policies of the new UK Coalition government.

The thrust of the OPAALS philosophy in the UK is considered far more important now than at any point in its history.

### **CAM and the Role of Intellectual Property in Regional Innovation**

The CAM partner wishes to explore two emergent avenues of research

1. The impact of the patent culture on the accelerating rate of invention of vital environmental processes and devices. Thus far few patents have been granted in this sector. In development of advanced eco-buildings, innovative technologies are in extreme infancy. Cambridge has recently turned its collective attention to this sector, notably because, whereas biomedical investment is in decline, green technology investment is rising. This is a chance to watch the emergence of IP protection models, accelerated by intensification of need for products in these technologies.

As mentioned, the stasis of research growth in the sector makes difficult the tracking of new IP in a research culture starved of investment and development prospects by moribund markets, even for environmental goods and services.

2. The DMCA and equivalent legislation in Europe against circumvention of technological protection measures (TMPs) is already invasive of the public domain.

The CAM partner wishes to test a theoretical framework modelling the copyright privileged operations against threats to the public domain under recent TMP legislation.

There is now substantial evidence of dysfunction in current copyright operation in the field of digital objects such as computer programs and entertainment items held on digital media.

However copyright must be convincingly ontologically deconstructed before it is reconstructed.

A theoretical framework for an ontology of copyright is advanced in chapter 3 of the Deliverable.

Its focus is the unsuitability of the use of copyright law for computer program subject matter

Its premise is that a right designed for language works will falter and may founder when incarnations of the work **are other than language works.**

This theorisation points to the need for an ontological overhaul **followed by legislative adjustment.**

However, the CAM partner is not sanguine about the likelihood of these events, as there are powerful interests for Capital in grounding program licenses in copyright.

In this Deliverable, United States copyright law is used the exemplar. This is because, although the core tenets of copyright legislation converge amongst the major jurisdictions, US law is far richer in case studies that bring to the fore the key issues in contention, and further, it is the jurisdiction of incorporation of the world's most powerful software corporations.