9 Does it wash its face?

Introduction

Homo œconomicus is one, albeit the most prominent, application of the general notion of ‘the rational actor’ used as the cornerstone of much of the Philosophy of the Social Sciences. Supplied with a suitable set of dispositional properties and the machinery of calculative rationality, *Homo œconomicus* is the idealisation of the basic unit of economic action (prototypically buyers and sellers) where exchange is the equally idealised relationship they stand in. The aggregate of such transactions is a market. Hence, for Economics, *a priori* rational markets are institutions displaying the operation of economic rationality.

Not surprisingly, there is a tradition as old as Economics itself which contests these idealisations (or at least, contests their use in undiluted form) as the description of what actually goes on in any ‘real-world’ market. “‘Just how “economically rational” are real economic agents?’ and ‘How far do they actually deploy the machinery of calculative rationality in making their judgements?’ are questions that have motivated much debate both within Economics and between Economics and the other social sciences (Sen 1977; Gintis 2000).[1]

We do not want to step into that debate here.[2] Instead, we want to turn away from idealisations of economic exchange, and of calculative rationality in particular, to ask what some of the work of doing the latter looks like for actual social actors operating under particular sets of market or market-like conditions. What are the organisational conditions which make calculative rationality possible and how is the operation of that rationality achieved as the repetitive, cohort-independent *institutionalised* feature of markets that Economics supposes it is? We come at this question, then, from the vantage point of making a market – the decisions by which buyers and suppliers determine price efficiency for a product. Our aim is to elucidate the interior configuration of ‘market making’ as a socially organised process. We do not want to banish the idealisation of the rational actor to the outer darkness but rather to ask how calculative rationality might work so it produces the characteristics of markets which Economics seeks to explain.

For Economics, markets exist to coordinate the needs of buyers and sellers. This much is uncontested. Moreover, in a perfect market, these needs will be so matched that the market will ‘clear’. There will be no unfulfilled demand and no residual supply. The perfect market of economic theory is, then, a miracle of social coordination. However, just how this coordination is achieved remains something of a mystery. Notions such as supply, demand and price remain obscure labels pointing to unknown processes. Even though markets exist all around us, and with a lot of effort we might be able to estimate the level of operational demand and supply as well as current ‘market price’ in any one of them, exactly how demand, supply and price are arrived at resists empirical description. How do suppliers in the market determine the scale of the opportunity which the market represents for them (that is, the level of demand accessible to them, the level of supply they should provide, and the price which they should charge)? In microeconomic theory, this puzzle is resolved by conceptualising the market as a melee of transacting buyers and sellers somewhat like an idealised bazaar or street market (or their apotheosis, the stock market) with, as we have said, coordination being taken care of by the application of a set of assumptions about individual rational choice under perfect information, nil transaction costs, no barriers to entry or exit, and so forth.

Of course, Economics doesn’t much care if those in a market actually do coordinate their activities in the way it assumes they do, just as long as coordination is achieved. All it needs are the twin assumptions that the process is rational and based on valorisation of the kind it describes. These two are easily extended into markets where actors are ‘collective individuals’, such as organisations and companies. Yet what is being assumed away here is the central empirical problem of sustained economic action – namely how supply and demand are managed as a matter of large-scale, coordinated practical action across social time and space. If markets are coordination devices, how is supply matched to demand in the aggregate as a practical matter of economic life? For Sociology, this turns out to be just another instance of the general problem of social action. The institutionalisation of the market is of the same order as the institutionalisation of family life, religious practice, political competition, or organisational activity and is resolved by invoking the same explanatory device: normative compliance.

In this chapter, we try to disperse some of the miasma surrounding market coordination by treating it as a species of intersubjective consociation. Suppliers have, somehow, to ensure their ‘product offering’ remains aligned with what they perceive those in the market want. Buyers have to match their needs to what they perceive suppliers are willing to provide. Both have to ensure they do so without, to use a modern idiom, ‘destroying value’. How both are done are intriguing questions. Our tack will be to focus on product selection and the assessment of market viability, and in particular on the use of a computational tool, a costing model, to calculate financial value return for products.[3] We accept financial value is not the only criterion determining whether a product is offered to the market, though it is an important one. Indeed, one of our aims is to outline some of the ways financial and other value judgements are meshed in making these decisions. In focusing on this one piece of the market coordination jigsaw, we are trying to open up the possibilities of analysis, not exhaust them. While not quite a first foray, this discussion is certainly not the last word.

The context

The rationale

Many of the courses which CU inherited had been in existence for a long time. In the view of those in charge of the marketing strategy, many were 'tired' and in need of 'refreshing'. Some were plainly very successful (at least in terms of recruitment numbers). Others, though, were struggling. Finally, there was a whole raft of courses for which the position was unclear. One of the tasks which had been agreed early on was a programme of 'course renewal' whereby the portfolio was to be sifted and, over time, 'low value' courses replaced by newer 'higher value' ones. What was to determine value here was not, of course, simply financial return. Courses such as Business Studies, English Literature, History, Art and Design were those which an institution like CU would be expected to offer. Others, such as Nursing and Midwifery, were part of a long-term regional contract. Even so, there remained a large number where the argument for continuation had been taken as 'given', but where removal would provide opportunities for course innovation. Course renewal was to be a central part of annual planning. Senior academic managers were expected to assess the value of courses as part of planning and, where necessary or desirable, retire those which were low value in order to introduce new ones.

The value of courses whether existing or new proposals, was to be assessed against four clusters of measures:

Market positioning – measured by applications and market data;

Quality positioning – measured by entry qualifications, levels of awards and retention;

Quality enhancement – measured by curriculum update status and External Examiner reports;

Efficiency – measured by financial parameters and staff/student ratio.

Given the mix and multi-dimensionality of these measures, managers would be expected to use their judgement when assessing course value. It was recognised the criteria above would not produce a linear ordering where a clear cut-off could be applied. Rather, they give bundles of associated courses which would be labelled 'high value', 'satisfactory', 'refresh and renew' and 'terminate'.[4]

The model

A relatively simple course-costing model was developed for use in determining the economic efficiency of a course. An early prototype was deployed with senior managers. This 'Beta Release' was used primarily as an investigative tool. The present discussion concerns this version of the tool.

The model had three distinct uses. The first was within the major review of clusters of courses already underway. The second was as part of deciding whether a course had recruited enough students in its first year to be allowed to run. Here a 'quick and dirty' assessment would act as 'triage' to enable decisions to be made quickly. Once a course is being taught, an implied contract is in place between the institution and the student. The existence of this contract discourages terminating the course before it has run through its life cycle. Third, the model was to be used as part of planning new course provision. It would allow systematic setting of 'break-even' and other targets and aid decisions about the introduction of a new course. To do this, its results would be set alongside issues of brand, strategic importance, competition, market demand, and so on.

The model consists of four linked Excel worksheets.[5] The worksheets are structured as follows. The summary takes the user input (cells marked in blue) and presents the computed output. The income detail and cost detail sheets contain the calculations. The core data sheet is a data base of information about teaching contracts, course banding, space cost, and so on. The computations in the calculations call up this data as needed. It was expected the release version of the model would 'black box' the data base and computations so that all the user would see was the information input and the computations displayed on the summary sheet.

For the purposes of this exposition, the model has been populated with dummy data. In what follows, we will give a brief explanation of how the model works by walking through the sheets one by one. Detailed discussion of the reasoning needed to deploy the model's logic is presented later:

1 **Summary Sheet**: The user inputs data into the blue cells. The contract variables are HEFCE and SHA (Strategic Health Authority), the two teaching contracts held by CU. The faculty variables are ABS (Arts, Business and Social Science) and HWS (Health & Well-being and Science) which are the two Faculties. The course name is taken from the courses list held by SITS, the student information system. The table of annual teaching hours holds the timetabled annual hours for each member of staff teaching on the course. Course formats such as foundation years and post-graduate qualifying years for professional courses mean that some courses can take five years to complete. The norm, though, is three years. Three tables of outputs are presented. One table sets out year-by-year summary breakdowns of the income and costs associated with the course together with gross and net surplus positions. This table replicates at course level the kind of 'financials' which managers use to manage their teams. The next table summarises the total student number (in FTEs) and the equivalent staff resource associated with the course. In the example, year 1 has twenty student FTEs and requires 1.345 FTE of a member of staff. The SSR (staff student ratio) is computed as a ratio of these two FTEs. The final table presents a set of KPIs (Key Performance Indicators) for the course as a whole together with an (invented but not unlikely) set of targets. The variance of the KPI from the target would be one of the key issues when assessing the efficiency of the course.

2 **Core Data Sheet:** Data on this sheet comes from many different sources. Some tables are combinations of different data from different sources. The table containing the list of courses, for example, uses data published by HEFCE and the Strategic Health Authority regarding contract bands. It also holds measures of space usage. Both are held on SITS. The space charge table is derived from the Facilities Management Data Base and broken down by site and usage. The levels of Tuition Fees are also held on SITS. The overhead charges are taken from the financial breakdown in the Annual Plan. Student numbers are taken from SITS. The calculation of maximum working hours is derived from the standard academic contract. The data on this sheet are taken as given for the model.

3 **Income Detail Sheet:** The main table populates the contract process for the named course. The manager inputs the FTE numbers of students on each year or level of the course. A model which was fully integrated into the management systems would derive these numbers from SITS. In the version being analysed, the data has to be entered by hand. The same holds for grant and other forms of income. The table summarises the income by level/year. The results of the calculations are set out on the Summary Sheet.

4 **Cost Detail Sheet:** The first array labelled 'Academic Staff' translates the name and salary data given on the summary sheet into 'grossed-up costs' by adding in other costs of employment. For each member of staff, this grossed-up cost is then set out alongside the annual teaching hours on the course. The array labelled 'Direct Cost' allocates the total cost of employment of a member of staff to the course pro rata to their teaching commitment as a proportion of the total hours that could be worked. These allocations are aggregated as 'Total Staff Costs'. The 'Staffing Resource' is the sum of the FTE staff hours timetabled for the course. Looking at Year 1 for example, P. Picasso is timetabled for 10.9% of his time on the course. This is estimated to be a cost of £5195.45. The whole staffing commitment is 1.35 FTE member of staff and is estimated to cost £51105.95. Other Direct Costs are of two kinds. Bursaries are fixed corporately as a proportion of the student fee. Other values are free and input by the manager. Space usage and Overhead Costs for a course are picked up from the Core Data Sheet. The results of the calculations are set out on the Summary Sheet.

The model produces a set of computations derived from the data provided. These computations are standardised measures of financial and resource efficiency.[6]

The work of course costing

One of the central problems in the theory of computation turns on its dualities. On the one hand, computation seems to be manifest in material objects *and* an abstract logical structure. On the other, this ontological dualism is closely related to the problem that the program~~me~~ itself (its logical structure) seems to be both a mathematical abstraction and a causal process. As a result, just how we should theorise computational objects and what they do remains a deeply puzzling affair. In fact, Brian Smith (1996) among others has argued the ways computation is currently theorised are deeply flawed and that a whole new way of thinking through the relationships is required.[7]

For the manager, the dualities appear as the distinction between computational and calculative order. This distinction does not present itself as a theoretical problem but as a practical one: how to make the computations work to produce the required calculations. This requires embedding the calculative order of managerial objects in and then extracting it from the structure of computational objects making up the model. The working model is the lebenswelt pairing of these two orders and the objects they structure. Without such integration, the model can do no managerially relevant work. Managers are not interested in what might be said about managing courses 'in the abstract', 'in principle', or 'in an idealised case'. They are interested in gaining 'as good a handle' as they possibly can on what is actually going on and in using as specific as possible information to make decisions. Making models work by integrating computational and calculative orders is one of the ways they do this.

In addition, to determine the significance of the eventual run of calculations, two orders have to be integrated and extricated: the calculative model and the organisational setting. This is not a matter of sampling, abstraction, or generalisation, but of achieving synecdoche. The calculations produced have to be usable proxies for the course they represent, even though they are derived from just some of its features. Only some 'financial parameters' for courses have been included in the model. If synecdoche is not achieved from *these* calculations, the process of evaluation would have to be replicated for all relevant aspects of the course. As we have seen in previous chapters, determining the materiality of 'relevance' is a practical matter of closing the praxeological information gap and deciding when what is to hand is 'good enough'. Without this, reaching a conclusion might well be unending (or 'run in open loop', as system designers like to say). To be useable, the model needs to be embedded in and extracted from the organisation it stands for. Achieving the embedding and extraction is the manager's practical problem of arriving at a costing for a course.

In what follows, we will treat costing as a lebenswelt pair and the model as embodying instructions for this process of embedding and extraction; both are ~~both~~ 'designed for' and 'achieved by' the use of the model.[8] We will talk of the deployment of the model as involving both a *usable* device and as *intentional* device. What the device provides are 'for all practical purposes' solutions to the problems of embedding and extraction. The usable and intentional distinction does not imply using the model is not a matter of interpretation. Neither are we saying that the meaning and significance of the computations are entirely divorced from the way the model is used. The distinction is thematic, a way of framing different sets of practical management concerns – that is, getting results you can use and then working out what they mean. To get results you can use, you need to understand the device you are using. And when interpreting its results, you have to know how they were derived.

Our second objective is to bring out the recalcitrant character of computation. It takes work to make it work and much of this work ~~is~~ involves bridging the gap between abstraction and application.[9] This work is the 'double fitting' of the structure of the organisational representations to the structure of the computational requirements. It is work that has to be carried out every time the model is run. Such specification and operation is an improvised production process of step-by-step model use.

In using the course-costing model, then, the manager has to accomplish the following tasks:

1 Determine ~~of~~ the acceptable correctness of the working calculative order;
2 Determine ~~of~~ the plausibility gap regarding empirical reference;
3 Resolve the synecdoche problem through the projection of the outputs as elements of a reasonable summary of the operational characteristics of the course.

Managers accomplish these tasks by interrogating the model to find its 'calculative accountability'. This accountability is rendered as the relative correctness and plausibility of the proxy calculations and their implications for the overall assessment.

The intelligibility of correct calculative order

Materiality

The correctness of the calculative order is a relative matter. Data assembled for input and data stored in the model are selections from the range of sets which could be utilised. In addition, their provenance is variegated. In principle, this raises the possibility of an endless search for an exhaustive list of descriptors and for certainty in the numbers. To pre-empt this possibility, managers deploy an Occam's razor for materiality: 'Don't seek data validity and verification beyond need.' This injunction is summarised in two widely used managerial aphorisms: '"Good enough" is good enough!' and 'Pareto's Rule rules!'[10] Beyond a certain point (though precisely which point is a locally determined judgement), expending more effort to 'get better numbers' will give incrementally reducing returns. Whenever they feel they have reached this point, managers will decide it is enough to go with the numbers they have. The invocation of materiality acts as a stopping rule on the quest for certainty.

The stopping rule on the quest for certainty is an important feature of management calculative rationality. But what exactly shapes it? How is the level of materiality determined, recognised and implemented?

First and foremost, the model lives in an ecology of data. That ecology is constituted by organisational processes, many of which are metered or measured, or else explicitly designed to collect and store such measures. For the manager, these process measures and stores are organisationally to hand or within reach but, for this exercise, placed beyond enquiry. For reasons we have discussed in several previous chapters, to be of practicable use they have to be taken on trust. Running the model means setting aside any possible scepticism with regard to any given measure and its values. Whilst in the midst of deciding if a course 'washes its face', a manager cannot question why the rate for grossing up salaries should be 27% and by what process that inflator was arrived at. Neither can he or she question how Facilities Management arrived at the share/single-use space charge apportionment. These numbers are taken as organisational givens for the course-costing process.

Trust in the numbers prevents the task dissolving into a recursive search for certainty. This is a result of the operation of horizons of relevance and structures of interest. If any manager wanted to interrogate those numbers, such a ramifying and open-ended process would rapidly become a practical impossibility.[11] Each of the processes which generated the data is itself the outcome of process algorithms and their working interpretation. Decisions will have been made by others (or this manager on some other occasion) about how to accommodate oddities, incompatibilities, outliers, exceptions and other unruly data in order to produce the results which are now being used. Even if managers wanted to chase all these decisions down, they could not. The implementation ~~of these decisions are~~ buried in the intestines of the processes. They are known to be there, but very much ignored because it is not worth the effort of exhuming them.

Some of the information built into the model's use is corporate data collected and collated by others. This data is pre-defined and, as we have said, taken on trust (at least for the time being). There are also data which managers have to ensure is gathered and collated for themselves: student numbers, staff names, salaries, other income and costs, and so on. Assembling this data requires knowing one's way around the local ecology of organisational data as well as having enough 'organisational acumen' (Bittner 1965) to assess the state of any data set. Other data stores have to be interrogated and other data aggregation processes have to have been completed for the assembly process to begin. An obvious example is course and staff timetabling. Using the cost model during the course recruitment process requires the allocation of staff time to courses. But for this to be done, staff personal timetables have to have been completed and agreed. Without the list of names and numbers, direct costs cannot be estimated. Since course and staff timetabling is known to be a wicked problem,[12] the timing of the collection of data for staffing is an artful practice. It needs to be done late enough to have allowed the process to become relatively settled, but early enough to enable the consequential room allocation and similar decisions to be made, as well as to allow revisions in the whole process in order to adjust for over- or under-loading of staff, unanticipated course sizes, and so on.

Similar considerations surround student numbers. This is obviously tricky when using the model during recruitment since the 'number on SITS' and 'the bums on seats' may be very different.[13] However, it is equally germane when the model is used as part of a larger course review. As we discuss in Chapters 5 and 7, in its early years, the calculation of CU's student numbers was subject to a number of inaccuracies. These inaccuracies had implications for estimations for course viability. Assembling usable data is not simply a matter of knowing where to find the relevant numbers but also of understanding their provenance, making allowance for its variability and deciding if they are 'good enough' to use for the purpose in hand.

Structure

Format

In previous chapters and elsewhere, we have explored how formalised devices are designed to provide for their own intelligibility.[14] One prominent method for achieving this is the use of structured formatting. The formal objects in the devices are structured in ways that reveal their computational order. In running code, statements and functions are laid out to reveal their interrelationships. Similarly in modelling languages, graphical and other 'tools' are used to design a lay-out such as a flow charts, pipelines, directed graphs, or other visual representation. As we have already seen a number of times, spreadsheets are no different. The grammar of their objects (sheets, columns, rows, cells) provides for the intelligibility of the computational order they represent. Finding the interplay of the defined grammar of the objects and the specification of their instantiation as the management objects of 'this case' (measures of 'space cost', tallies of 'income', calculations of staff/student ratios and 'surplus', for instance) is the work of discovering their intelligibility. It is the work of finding the calculative and computational logic in the model.

The presentational ordering of the worksheets is critical to the intelligibility of the calculations but irrelevant to the computation. Excel doesn't care how the sheets are arrayed, nor, indeed, what they are called. In the absence of a 'local' name, the code will use the default (sheet and cell #). From the point of view of intelligible calculation, the order has to be seen to represent and preserve the calculative logic in ways that are managerially recognisable. The naming and separation of income and cost sheets mirrors the familiar accounting balance sheet structure of summarisations and has its own distinct trailing paths of calculation. These calculations are 'behind' the summary sheets and separately presented. The cells of the table on the Summary Sheet 'pick up' or point to locations on the relevant sheets. Looking at the Summary Sheet is looking into the supporting sheets. Managers are very familiar with how to multi-task along these separate paths in the construction of summary balances. The sheet listing bar provides the logic of this pathway summarisation.

The format of each sheet is also important. Although each is different, its logic is 'skimmable'. The left-to-right, top-to-bottom tallies of income build cumulatively. The cell and column structure is the standard one. Ignoring, for the moment, where the numbers come from (some are input by the user on the Summary Sheet and some picked up from the Core Data Sheet), the logic of column addition makes itself visible. Whatever the labels mean (and we come to this below), the relationships between cells and columns is the vernacular one. Although the Cost

Detail Sheet has far more data, its logic is precisely the same. Even if you don't know the meaning of the references, the logic of the calculative order is recognisable. In this sense, the structured design of the sheet is domain independent. If you know nothing about Higher Education, course costing and CU, you could still find your way about. The same is true of the Core Data Sheet, though this logic is simply an inventory. Again, if you know nothing about the context, you can see the rows are discrete co-classed items set out in lists. In all cases, the format of the sheet carries the recognisable intelligibility of the calculative order.

Names and numbers

Names and naming are important for the linking of the representational model and the computational model and hence their mutual intelligibility. The course-costing model uses a large number of standard or locally standardised accounting terms. Some of the more obvious are 'student', 'income', 'surplus', 'SSR' and 'space type'. Often, these have locally recognisable referents. On other occasions, the same term might be non-standard. Take, for example, the term 'student' at cells E44 and E46 on the Cost Detail Sheet. Here the reference is not to a count of individuals or even FTEs but to a ratio, the cost of space per student. The figure for Total Working Hours has a similarly specific local definition. Since the vast majority of staff are on full-time contracts, one might assume the total working hours would be 52 weeks × 37.5 hours per week minus the standard holiday allowance: in other words, 48 × 37.5 = 1800. However, the model discounts for a further 20 days of national and other paid holidays resulting in the total number of working weeks in a year being defined as 44. The working year is neither the calendrical year one is paid for, nor yet the working year, nor again the teaching year of 2 × 20 week semesters; it is a notional 'institutional operational year'. When the model was first deployed, this definition generated considerable consternation since managers interpreted the reference to Total Hours as an academic staff loading model. They pointed out staff worked far more than 37.5 hours a week and for more than 44 weeks a year *and* undertook research and other activities not accounted for in the way the model was designed. Learning the definitional lore of the model is essential to its use.[15]

Alongside the mix of standardised and non-standardised references for terms are standardised and non-standardised references for calculations. Travel costs, fee income and grant income might appear to be things subject to being calculated in obvious ways.[16] Space costing and overheads however are not obvious. Overheads are not the costs of delivering *this* course which have been absorbed by the overarching organisation, but the percentage of the institution's total income represented by the costs of Faculty and Corporate administration. Courses, then, are allocated a standard share of the global cost of administration based on their income, not the estimated cost of the demands they make.

A third set of idiosyncrasies can to be found in the mix of number types used for counts and costs. Numbers and costs might be actual, estimated, or assumed. Estimated and assumed figures may be organisationally determined functions (as in the case of the grossed-up salaries) or complex ad hoc derivations (as with space allocations). The range of types and their possible combination as mixes of measures, symbols and metaphors makes the use of these numbers an important issue in determining the meaning of the summary measures which they generate.

Managers usually adopt a variety of strategies to handle idiosyncrasies such as these. Some involve what Lindsey Churchill (no date) called 'everyday quantitative practices' whereby the materiality of possible misplaced precision, discrepancy, or lack of clarity can be managed. Projections of numbers such as 'students' will be treated as indifferently falling within groups of '5s' in the case of low numbers and '10s' with larger ones. Finding the precise count for an individual group is set aside. A similar rule is used for salaries. These are assumed to be 'correct' with a tolerance of £200 or so. In both cases, any imprecision is assumed to be washed out in the aggregations and summarisations. Other sets of numbers, though, will be aligned or triangulated to provide reality checks both on them and on the set itself. Staff number, cohort size and staff student ratio are obvious examples. Since the value for staff student ratio is calculated from staff number and cohort size, if these numbers are out of line with each other, further analysis will be required or a re-working of the calculation. Other numbers are known to be standardly 'iffy'. Projections of numbers and growth rates offered in new course proposals, for example, if not Churchill's 'WEGs' (Wild Eyed Guesses), they are certainly likely to be aspirational. The requirements of building a 'robust business case' often results in these numbers being inflated to make the case stand up. Managers expect this and regularly deflate these claims as a part of exercising 'budgetary realism'. In other cases, the 'strangeness' or 'opacity' of numbers is simply ignored unless or until the run of summary calculations fails a test of reasonability. Disregarding the status of these numbers is not a matter of trusting in the outcome of uninvestigable processes but of the organisationally known indeterminability-in-the-midst-of-calculating what the material impact of variation in such numbers might be.

Traceability

Two reasons for the use of Excel as a modelling platform were (a) the ability to exploit the natural management metaphor of linked worksheets and (b) the use of an 'English-like' programming language for specifying the arguments. In principle, this combination makes it possible to see the link between the computational and calculative logics in a relatively straightforward way. Although many arguments (for example, cells which invoke LOOKUP and SUM procedures) do precisely what you would think they would do, others do not. Take the argument which produces the number in cell G35 on the Cost Detail Sheet. This is a rate for bursaries and is:

=IF(G6= 'Health',0,0.35∗'Income Detail'!D25)

The argument contains no reference to the actual course being assessed (which is Fine Art), nor the rate of bursary it offers. The only recognisable organisational term is 'Health', which is not the Faculty in which Fine Art is located. Pinning down the calculative implications of the computational logic requires an understanding of the grammar of Excel. A full translation of the argument is:

> IF G6 = 'Health' then the value is 0; otherwise the value is 35% of the HEFCE Fee set out in D25 of Income Detail

However, the ratio of 35% for bursaries is a corporately defined standard of which managers are aware (one of their tasks is to manage the distribution of these funds). And D25 is easily looked up. This allows the manager to guess what a 'workable pidgin' translation of the argument might be; a translation that is good enough for all practical purposes.

The presumption of similar practices of pidgin translation can be seen elsewhere. Take a look at the code for the run of Indirect Space Costs at cells F32 to K32 on the Summary Sheet. This is:

> =IF(H21>=1,'Cost Detail'!M52,0)

Cell M52 on the Cost Detail Sheet is the summary of space cost for Fine Art, but what is the rest of the argument about? The full explication would go something like this.

> IF the relevant Total Income cell is equal to or greater than 1 then include in this cell the Total Space Cost from Cell M52 on the Cost Detail Sheet; otherwise set the cell at 0.

The pidgin version might be: 'Only calculate a space cost if there is an income to set it against.' A working familiarity with model's pidgin is yet another required element of the locally specified lore.

Empirical reference

Course costing is a consociate production process. The model's usefulness comes from the coordination of the calculative and computational models to produce a reasonable account of the course. Using and following that coordination in flight is an *intersubjective* achievement.

Costing is one process in a network of evaluative processes directed to supporting decisions. Seeing how its financial representations fit within that network requires an appreciation of its interdependency with these processes. In other words, it is necessary to have a working grasp of the operational configuration of the network. This involves scaling and, where necessary, closing the representational gap between the course as depicted in the summaries and the course as experienced – that is, the course as a complex organisational, teaching and learning consociate experience.

Closing the representational gap

Closing the representational gap for any particular course involves determining the degree of empirical reference of the course summaries and assessing the robustness of the causal logic of the model. It also involves judging the 'realism' of the targets for *this* course and hence what the variance in performance from target actually means. This scaling allows a calibration of the course as represented with the course as experienced.

The tallies on the Summary Sheet are relatively coarse absolute and relative financial measurements. In this setting, the absolute measures of gross and net surplus and SSR are self-explanatory. Clearly, managers have expectations of where the numbers should lie relative to the size of the course. These rules of thumb reflect the well-known problem that large-scale operations have large-scale costs and demand lots of resources. So big courses can generate big surpluses, but still be poor value. Equally, small courses can have low SSRs and still be resource hungry. It is the KPIs which point to comparative performance and hence relative managerial value of the course. The summary provides a pair of tables allowing absolute performance to be 'read off' and a further table of comparative positioning. But this positioning is relative to managerially defined planning targets. They are not *course-tuned targets* in the sense of targets derived from the detailed examination of what the course could deliver. Rather, they are derived from targets set by fiat in the Annual Plan. They are fixed by that plan. Comparability, therefore, is not with other courses and relative expectations about their performance but with the requirements of the Annual Plan. Unlike the caucus race where everybody wins, in this evaluative competition even the winners – that is, those with 'the best' scores – could fall below the derived targets set for them and so 'fail' to be viable. The question is how that judgement of 'failure' or otherwise is arrived at from the absolute and comparative numbers. How are they used to come to that determination?

The significance of variance to target turns on the weight placed on the 'realism' of the financial summaries compared to other evaluations which managers have to hand and their experience of the course as a delivered programme of teaching and learning. A course with strong income which makes a surplus and has low SSRs might be a 'good course' financially but because of factors such as the calibre of the students, the material to be taught, the physical environment of the teaching rooms, it may well be viewed as being 'difficult' because of the support demands it makes or the configuration of the teaching rooms used. Equally, despite drawbacks such as low retention rates, low progression and achievement levels, courses popular with employers may be thought of as 'good' or 'worth putting on'. For courses that have been in existence for a while, the relative balance between 'quantitative and qualitative measures' and 'objective and subjective assessments' is generally known. What is being looked for in the model is the degree of reinforcement provided for that expected balance. For new courses, or courses that have undergone major revision, such expectations are projections of the likely variance between performance and target and are based on managers' experience of similar cases rather than 'like for like' comparisons.

To make the necessary assessment, the manager uses a variety of practices to balance a number of things. First, from what is known about this course, is *this* level of variance expectable and acceptable in *this* case? Second, is the known degree of possible 'play' in the numbers spilling over into the scaling of the 'realism' of the summaries? 'Play' here refers to the tightness or 'goodness of fit' of the measure for the construct it is measuring.[17] FTEs are notorious for their potential play. As we have said already, the numbers of students registered on SITS, the number listed on the class register, and the number who actually turn up to be taught, may be very different. Similarly, classrooms are not uniform, let alone identical.[18] The 'space norms' for different courses might be satisfied by very different actual teaching arrangements, even though the standard space charge is applied. Thus the cost of a practice lab for nurses, say, or a sports science lab may be charged at the same rate as for a drama group or fine art studio, even though the quality of the space in each case is very different, the standards of maintenance very different and the expectations of those who teach and those who are taught in the space very different. Laboratory courses are known to be 'expensive' as are Drama and Fine Art, but what this 'expensiveness' means is not fixed. Drama and Fine Art might be taught in very cluttered, unkempt and overcrowded conditions compared to laboratory sciences and as a consequence are not viewed as being as hungry for facilities support.

Play is also known to apply to 'overhead charges'. One reason is the known differences in expectation about course materials, especially photocopying. Some courses such as Business Studies generate 'good numbers' in terms of income, surplus and SSRs. However, to ensure the professional accreditation of these courses, students on every module have to be provided with highly structured and standardised courses of learning based on reproduced teaching and learning materials. At this point in CU's development, big numbers here imply big reprographics costs. But reprographics as a service was funded at the corporate level and so the reprographics costs of any course are hidden in the total volume of reprographic work undertaken. At this point ~~in time~~, no tracking process was in place to itemise the specific contribution of each course to the annual cost of the reprographics unit. The known play in this aspect of overhead meant that for a course like Business Studies to be taken to have 'washed its face' financially, it was required to over-perform against target by a considerable margin.

CU managers know their courses and most of the time the summary values fall within their expected margins. But occasionally this is not so. The response to such 'surprises' is a process of 'exceptionalising' through rolling back the computational logic. Rolling back the computational logic does not mean re-running the calculations but checking the data being input. The working assumption is that the case is 'an exception' not the symptom of global modelling error. The model is trusted but the data is not. We have seen some possibilities for this exceptionalism already (FTEs, overheads, space charges). Others are found in the character of particular course cohorts and learning experiences. A course may incur a negative outcome only when there are no obvious grounds for making an exception. This throws light on an important managerial tension in processes such as course reviews (and other reviews in other settings), namely, between the local management team's predisposition to follow a line of least resistance and where possible continue with what they have simply because change means more work, more disruption and uncertainty and, on the other hand, senior managers' predisposition to continuously tighten the margins for discretion on refreshing, renewal and change. The predisposition towards inertia is not itself entropy. It is, in fact, the preservation of current organisational structures in the face of possible entropy-engendering change. What the tension expresses is differential estimation of the risk of entropy *and a difference over who will have to carry those risks*. It is the local team and their managers who will have to manage the potential 'disruption' of re-design, re-validation and re-launch, not the senior managers of the organisation.

The synecdoche problem

We said that use of the course-costing computational model involves determining calculative correctness and empirical reference. These are not steps in a decision-making process but interrelated contingent aspects of unfolding assessments. As we have just shown, in determining 'correctness for all practical purposes' or 'for all practical purposes realism' of the summaries, reference is often made to 'how the data sits' in regard to a range of complementary measures and assessments. In producing the evaluation as a standardised assessment, these themes are interwoven threads of the patterning of that displayed standardisation.

The 'assessed course' which emerges from the assessment exercise is the gestalt contexture of assessment and experience. It is not the result of a serial process, even if each individual process has a stepwise, structured feel. What the course comes to as an 'assessed course' emerges from seeing measures like course costing 'in the round', whilst at the same time gleaning what else is known about it. It is more like the *annealed crystallisation* by which frost forms than a beginning-to-end, component-by-component build-up of the final assessment from the measures, computations, resulting calculations, commonly known and locally known organisational knowledge, and so on. Whatever structure the assessment has (one way to think of it is as the topology of a phenomenal field of interpreted numbers, perceptions and understandings), that assessment emerges out of the process rather than being constructed Lego-like from component parts. The assessment is a conjoint shaping of expectations, interpreted numbers and projected outcomes cast in future-perfect terms: 'From what we have so far, this is what it looks like it will have turned out to be . . .' There is no mystery or magic in this, simply locally known and deployed artful practices producing an emergent gestalt of assessment.

Conclusion

Our intention here has not been to deny the calculative rationality of economic decision making. Rather, we want to bring out how that rationality is undergirded by a melange of interpretive practices which tie it into and lift it out from the environment of organisational processes within which it is situated. Each and every use of the model to assess the financial viability of a course requires this embedding and extraction. This is how an operating organisation is fitted together in the understanding and planning of senior managers as the continuous outcome of everyday management. In the flow of management, this fitting is a blending of financial and other judgements to produce an annealed assessment of the 'value' of a course and the consequential folding of that judgement into the planning processes of which it is part. This socially organised ecology of standardised processes and their recognised and expectable outcomes radiates through the particular judgements being made about individual courses. In this very strong sense, then, market making – the fixing of what products should be offered on the market and at what price (and, no doubt, what products should be acquired and at what price) – rests upon a panoply of consociate practices produced and reproduced as organisational management.

Notes

1 Often enough such objections have carried very little weight, as they tend to be variations of the Irishman's advice when he was asked for directions: 'If I was going there, I wouldn't start from here.'
2 We have had our say before in a number of places See, for example, Anderson et al. (1988)
3 In that sense, this is a preliminary exercise in what Espeland and Stevens (2008) call the 'sociology of quantification', which, paraphrasing John Austin, they define as 'Doing Things with Numbers'. Our interpretation of their paraphrase, though, is somewhat different to their own.
4 There was an obvious rationale for this. Quality Assurance demanded that decisions about course provision be justified on academic grounds *as well as* financial grounds and be taken by academic managers. Grouping allowed managers to make those judgements rather than to apply a mechanical rule (though many, for their own local management reasons, would much have preferred the latter).
5 The model is set out in the Appendix to this chapter.
6 Standardised for CU, of course, though the forms of the calculations are not that dissimilar to those used by other HEIs.
7 See the materials provided at www.ageofsignificance.org
8 The working model's Excel spreadsheets are a calculation account of the cost modelling computations.
9 With tongues firmly in cheeks and caps reverently doffed, we might want to call this whole analysis 'Good Organisational Reasons for Flawed Computational Logic'.
10 'Pareto's Rule rules!' refers to the widespread management assumption of organisational assymetries. For example, only a small portion of the customer base usually provides the overwhelming proportion of profit, or only a small number of technological innovations yield major returns on investment. In management mythology, the discovery that the ratios are typically 80/20 is attributed to Vilfredo Pareto (2014).
11 This closing off of the open texture of questioning is a familiar characteristic of practicability. We first looked at it in Sharrock and Anderson (2011).
12 The process is never closed but is constantly being re-run and revised though with incremental reductions in the scale of change at each run.

13 The effect of 'churn' at the start of term and the importance of 'Post A-level results recruitment' were very important for CU. The variances between what was 'on SITS' and who was 'in the class' could be quite large.
14 See Anderson and Sharrock (2013; 2016).
15 See Baccus (1986) on a similar order of issue regarding the lore of work objects and tools.
16 There is another relevant aspect to trust here which we have not brought out, namely trust in the intentions of the user. The model provides no cross-checks on the deliberate use of inflated or deflated values. Although the model assumes the integrity of the data, when managers come to review outliers, odd cases, exceptions and surprises, the possibility that the numbers may have been 'massaged' or 'manipulated' is among the first, if not the very first, thing they will think of.
17 Without any embarrassment, we are borrowing this term, but not its precise use, from Derrida (1985).
18 One problem encountered in building the model was the poverty of the data which CU had on some of its buildings. As a consequence, the new data base modelled the space norms on 'standards' derived from prior experience in other HEIs.

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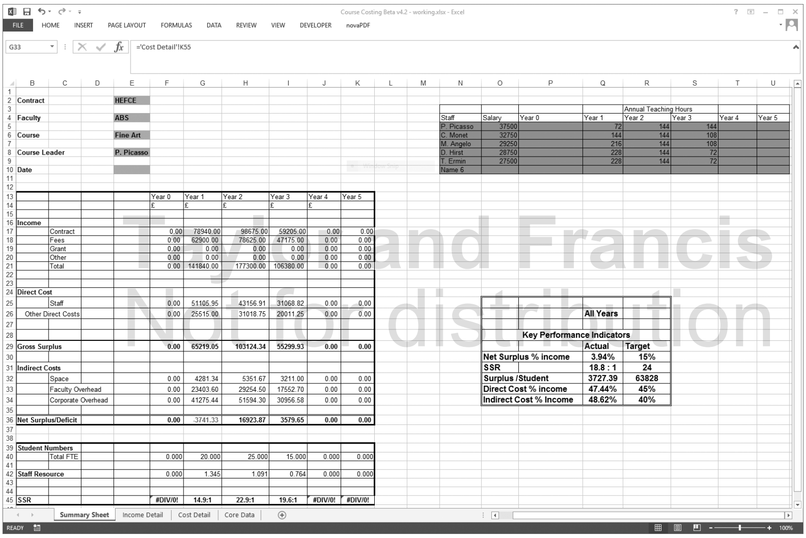
Appendix

Screenshots of Course Costing Model

Cost model sheet 1



Contract	HEFCE
Faculty	ABS
Course	Fine Art
Course Leader	P. Picasso
Date	

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
		£	£	£	£	£	
Income							
	Contract	0.00	78940.00	98675.00	59205.00	0.00	0.00
	Fees	0.00	62900.00	78625.00	47175.00	0.00	0.00
	Grant	0.00	0.00	0.00	0.00	0.00	0.00
	Other	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.00	141840.00	177300.00	106380.00	0.00	0.00
Direct Cost							
	Staff	0.00	51105.95	43156.91	31068.82	0.00	0.00
	Other Direct Costs	0.00	25515.00	31018.75	20011.25	0.00	0.00
Gross Surplus		**0.00**	**65219.05**	**103124.34**	**55299.93**	**0.00**	**0.00**
Indirect Costs							
	Space	0.00	4281.34	5351.67	3211.00	0.00	0.00
	Faculty Overhead	0.00	23403.60	29254.50	17552.70	0.00	0.00
	Corporate Overhead	0.00	41275.44	51594.30	30956.58	0.00	0.00
Net Surplus/Deficit		**0.00**	-3741.33	**16923.87**	**3579.65**	**0.00**	**0.00**

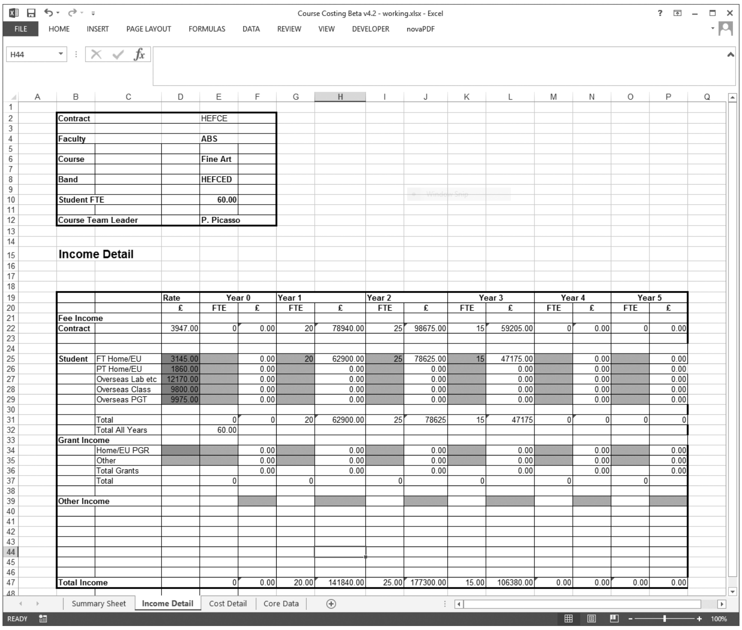
		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Student Numbers							
	Total FTE	0.000	20.000	25.000	15.000	0.000	0.000
Staff Resource		0.000	1.345	1.091	0.764	0.000	0.000
SSR		#DIV/0!	14.9:1	22.9:1	19.6:1	#DIV/0!	#DIV/0!

				Annual Teaching Hours			
Staff	Salary	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
P. Picasso	37500		72	144	144		
C. Monet	32750		144	144	108		
M. Angelo	29250		216	144	108		
D. Hirst	28750		228	144	72		
T. Ermin	27500		228	144	72		
Name 6							

All Years		
Key Performance Indicators		
	Actual	**Target**
Net Surplus % income	**3.94%**	**15%**
SSR	**18.8 : 1**	**24**
Surplus /Student	**3727.39**	**63828**
Direct Cost % income	**47.44%**	**45%**
Indirect Cost % Income	**48.62%**	**40%**

Appendix 9.1

Cost model sheet 2



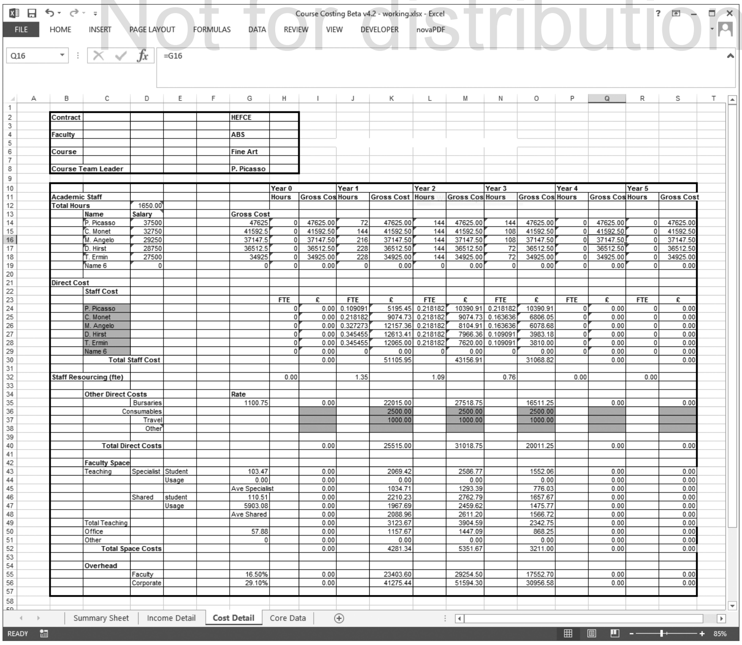
Contract		HEFCE	
Faculty		ABS	
Course		Fine Art	
Band		HEFCED	
Student FTE		60.00	
Course Team Leader		P. Picasso	

Income Detail

		Rate	Year 0		Year 1		Year 2		Year 3		Year 4		Year 5	
		£	FTE	£	FTE	£	FTE	£	FTE	£	FTE	£	FTE	£
Fee Income														
Contract		3947.00	0	0.00	20	78940.00	25	98675.00	15	59205.00	0	0.00	0	0.00
Student	FT Home/EU	3145.00		0.00	20	62900.00	25	78625.00	15	47175.00		0.00		0.00
	PT Home/EU	1860.00		0.00		0.00		0.00		0.00		0.00		0.00
	Overseas Lab etc	12170.00		0.00		0.00		0.00		0.00		0.00		0.00
	Overseas Class	9800.00		0.00		0.00		0.00		0.00		0.00		0.00
	Overseas PGT	9975.00		0.00		0.00		0.00		0.00		0.00		0.00
	Total		0	0	20	62900.00	25	78625	15	47175	0	0	0	0
	Total All Years		60.00											
Grant Income														
	Home/EU PGR			0.00		0.00		0.00		0.00		0.00		0.00
	Other			0.00		0.00		0.00		0.00		0.00		0.00
	Total Grants			0.00		0.00		0.00		0.00		0.00		0.00
	Total		0		0		0		0		0		0	
Other Income														
Total Income			0	0.00	20.00	141840.00	25.00	177300.00	15.00	106380.00	0.00	0.00	0.00	0.00

Appendix 9.2

Cost model sheet 3



Contract		HEFCE	
Faculty		ABS	
Course		Fine Art	
Course Team Leader		P. Picasso	

					Year 0		Year 1		Year 2		Year 3		Year 4		Year 5	
Academic Staff					Hours	Gross Cost	Hours	Gross Cost	Hours	Gross Cost	Hours	Gross Cost	Hours	Gross Cost	Hours	Gross Cost
Total Hours		1650.00														
	Name	Salary		Gross Cost												
	P. Picasso	37500		47625	0	47625.00	72	47625.00	144	47625.00	144	47625.00	0	47625.00	0	47625.00
	C. Monet	32750		41592.5	0	41592.50	144	41592.50	144	41592.50	108	41592.50	0	41592.50	0	41592.50
	M. Angelo	29250		37147.5	0	37147.50	216	37147.50	144	37147.50	108	37147.50	0	37147.50	0	37147.50
	D. Hirst	28750		36512.5	0	36512.50	228	36512.50	144	36512.50	72	36512.50	0	36512.50	0	36512.50
	T. Ermin	27500		34925	0	34925.00	228	34925.00	144	34925.00	72	34925.00	0	34925.00	0	34925.00
	Name 6	0		0	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Direct Cost																
	Staff Cost															
					FTE	£	FTE	£	FTE	£	FTE	£	FTE	£	FTE	£
	P. Picasso				0	0.00	0.109091	5195.45	0.218182	10390.91	0.218182	10390.91	0	0.00	0	0.00
	C. Monet				0	0.00	0.218182	9074.73	0.218182	9074.73	0.163636	6806.05	0	0.00	0	0.00
	M. Angelo				0	0.00	0.327273	12157.36	0.218182	8104.91	0.163636	6078.68	0	0.00	0	0.00
	D. Hirst				0	0.00	0.345455	12613.41	0.218182	7966.36	0.109091	3983.18	0	0.00	0	0.00
	T. Ermin				0	0.00	0.345455	12065.00	0.218182	7620.00	0.109091	3810.00	0	0.00	0	0.00
	Name 6				0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
	Total Staff Cost					0.00		51105.95		43156.91		31068.82		0.00		0.00
Staff Resourcing (fte)					0.00		1.35		1.09		0.76		0.00		0.00	
	Other Direct Costs			Rate												
		Bursaries		1100.75		0.00		22015.00		27518.75		16511.25		0.00		0.00
		Consumables						2500.00		2500.00		2500.00				
		Travel						1000.00		1000.00		1000.00				
		Other														
	Total Direct Costs					0.00		25515.00		31018.75		20011.25		0.00		0.00
	Faculty Space															
	Teaching	Specialist	Student	103.47		0.00		2069.42		2586.77		1552.06		0.00		0.00
			Usage	0.00		0.00		0.00		0.00		0.00		0.00		0.00
				Ave Specialist		0.00		1034.71		1293.39		776.03		0.00		0.00
		Shared	student	110.51		0.00		2210.23		2762.79		1657.67		0.00		0.00
			Usage	5903.08		0.00		1967.69		2459.62		1475.77		0.00		0.00
				Ave Shared		0.00		2088.96		2611.20		1566.72		0.00		0.00
	Total Teaching					0.00		3123.67		3904.59		2342.75		0.00		0.00
	Office			57.88		0.00		1157.67		1447.09		868.25		0.00		0.00
	Other			0		0.00		0.00		0.00		0.00		0.00		0.00
	Total Space Costs					0.00		4281.34		5351.67		3211.00		0.00		0.00
	Overhead															
		Faculty		16.50%		0.00		23403.60		29254.50		17552.70		0.00		0.00
		Corporate		29.10%		0.00		41275.44		51594.30		30956.58		0.00		0.00

Appendix 9.3

Cost model sheet 4

HEFCE Contract		Course Title	Band	FEE	Specialist Space	Specialist Use	Shared Use	Usage Space Charge	
	ABS							Specialist	Shared
	ABS	BA Business Management (inc Marketing and HR Management)	HEFCED	3947			1	0.00	5903.08
	ABS	BA Creative Industries Management (not offered 2009/10)	HEFCED	3947			1	0.00	5903.08
	ABS	BA CYPPA	HEFCED	3947			1	0.00	5903.08
	ABS	BA Dance in the Community (new)	HEFCEC	5131.1	Yes	0.8	0.2	25736.17	1180.62
	ABS	BA Early Childhood Studies	HEFCED	3947			1	0.00	5903.08
	ABS	BA Early Learning (L3 only)	HEFCED	3947			1	0.00	5903.08
	ABS	BA English	HEFCED	3947			1	0.00	5903.08
	ABS	BA Event et al.	HEFCED	3947			1	0.00	5903.08
	ABS	BA Family and Community History (new)	HEFCED	3947			1	0.00	5903.08
	ABS	BA Film and Media	HEFCED	3947			1	0.00	5903.08
	ABS	BA Fine Art	HEFCEC	5131.1	Yes	0.6	0.4	19302.13	2361.23
	ABS	BA History	HEFCED	3947			1	0.00	5903.08
	ABS	BA IS	HEFCED	3947			1	0.00	5903.08
	ABS	BA Social Studies (L3 only)	HEFCED	3947			1	0.00	5903.08
	ABS	BSc Games Design +Programming (from 2008)	HEFCEC	5131.1	Yes	0.7	0.3	22519.15	1770.92
	ABS	BSc IT et al.	HEFCEC	5131.1	Yes	0.7	0.3	22519.15	1770.92
	ABS	BSc Psychology/ Sociology/YS/Crim	HEFCED	3947			1	0.00	5903.08
	ABS	CIMA	HEFCED	3947			1	0.00	5903.08
	ABS	Fd Early Years	HEFCED	3947			1	0.00	5903.08
	ABS	Fd EBIS (replaced by FD L/M 2009/10)	HEFCED	3947			1	0.00	5903.08
	ABS	Fd Financial Services (not offered 2009/10)	HEFCED	3947			1	0.00	5903.08
	ABS	Fd Leadership/Management (new 2009)	HEFCED	3947			1	0.00	5903.08
	ABS	Fd Network and Communications Technology	HEFCEC	5131.1			1	0.00	5903.08
	ABS	Fd Sports Management (not offered 2009/10)	HEFCED	3947			1	0.00	5903.08
	ABS	Fd Supporting Inclusive Learning	HEFCED	3947			1	0.00	5903.08
	ABS	MA HRS	HEFCED	3947			1	0.00	5903.08
	ABS	MBA Tourism (not offered 2009/10)	HEFCED	3947			1	0.00	5903.08
	HWS	Midwifery	SHA1	8363	Yes	0.7	0.3	12813.57	15595.55
	HWS	ODP	SHA2	7273	Yes	0.5	0.5	9152.55	25992.58
	HWS	PgC Employment Law	HEFCED	3947			1	0.00	5903.08
	HWS	PGC/D Management/MBA	HEFCED	3947			1	0.00	5903.08
	HWS	PgC/D/MA Design Context and Practice	HEFCEC	5131.1	Yes	0.7	0.3	22519.15	1770.92
	HWS	PGCE/Cert Ed	HEFCED	3947			1	0.00	5903.08
	HWS	PGD Personnel Management	HEFCED	3947			1	0.00	5903.08
	HWS	Post Qualifying Nursing	SHA2	7273	Yes	0.7	0.3	12813.57	15595.55
	HWS	Pre-Reg Nursing	SHA2	7273	Yes	0.7	0.3	12813.57	15595.55
	HWS	Radiography	SHA1	8363	Yes	0.8	0.2	14644.08	10397.03
	HWS	Science Foundation	HEFCEB	6709.9	Yes	0.9	0.1	16474.59	5198.52
	HWS	Social Work	HEFCEC	5131.1		0.9	0.1	16474.59	5198.52
	HWS	Sports Science	HEFCEB	6709.9	Yes	0.9	0.1	16474.59	5198.52
				Total Usag	ABS	4.7	27.3		
				HWS	HWS	4.9	3.1		

	HEFCE Contract	Band	Fee
		HEFCEB	6709.9
		HEFCEC	5131.1
		HEFCED	3947
	SHA Contract	SHA1	8363
		SHA2	7273
		SHA3	9201

	Student T	Full Time	3145
	Home/EU	Part Time	1860
		Lab Based	12170
	Overseas	Class Bas	9800
		PGT	9975

	Overhead Charge	
	ABS	16.50%
	HWS	15.75%
	Corporate	29.10%

Students	
ABS	1490
HWS	1249
Max Working Hours	1650

Space Costs		Rate/Stude	**Student Numbers**	
Abs Office	78165.52	53.53803	ABS	1460
Abs Specialist	151067.41	103.4708	HWS	1249
Abs Shared	161346.79	110.5115		
HWS Specialist	77561.12	62.09858		
Other	58170.84	46.57393		
HWS offices	84038.28	67.28445		
HWS Shared	161346.79	129.1808		

Space Costs			Site	M2	Rate	Cost	Rate/Student	Rate/Course
	ABS	Offices	CNR	98	75	7350		
			WFT	548	129	70692		
		Exec Dean	WFT	63.6	129	8204.4		
		Total Office		709.6		86246.4	57.88	
		Shared Teaching	CNR	470	75	35250		
			WFT	976	129	125904		
		Total Shared Teaching		1446		161154	108.16	
		Specialist Teaching	CNR	2016	75	151200		
	HWS	Offices	CNR	229	75	17175		
			WFT	518	129	66822		
		Exec Dean	WFT	63.6	129	8204.4		
		Total Office		810.6		92201.4	73.82	
		Shared Teaching	CNR	470	75	35250		
			WFT	976	129	125904		
		Total Shared Teaching				161154	129.03	
		Specialist Teaching	CNR	1035	75	77625		
			VERT	85	142	12070		
		Total Specialist Teaching		1120		89695		

Appendix 9.4