

## **Chapter 9: Where Next to Cast Lots:**

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9.1 Developing the case for random allocation

9.2 Develop a standard economic model

9.3 US university housing lotteries

9.4 University entrance in the UK

9.5 Employment: Randomised short-listing

9.6 Advocacy: Selling the Idea of Random Distribution

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### **9.1 Developing the case for random allocation**

Up to this point a descriptive case has been made for the use of randomisation as part of a distribution process. To go further in conventional economics would require the development of a theoretical framework, which will be outlined in the next section. More promising might be to take an applied approach, researching existing non-market mechanisms which make use of random distribution. I suggest three promising fields where some hands-on research could yield results which add to the economic understanding of non-market distribution using randomness, namely: The widespread practice in US universities of allocating student residences by lottery; developing the Dutch medical-school entry model in the UK context. It would also be highly condign to examine the use of random selection in employment and labour relations, examining equal opportunity effects. I conclude with a statement which summarises the benefits of random distribution, and could be used as the basis for advocacy.

### **9.2 Develop a standard economic model**

The inclusion of a number of case studies has been important in establishing credibility, but a more rigorous case needs to be made. In the allocations being

described here there are two main parties: Suppliers and Consumers. Both should have a functional relationship which they wish to optimise:

The *Supplier's function* will firstly relate to *costs*. In developing economic models for suppliers, it would be useful to establish, using field research, what are the cost structures and relative burdens of existing allocation mechanisms:

—for example: in social housing allocation, either local councils or housing associations, there will be fixed costs associated with setting up features like the waiting list points system, plus variable costs per applicant. In addition, to ensure compliance with legislation, monitoring costs may be incurred. To what extent all of these are a significant burden, and what could be saved if an alternative system such as random allocation were adopted needs to be investigated.

The *Consumer's function* is normally quite simple—acting out of self-interest, the consumer wishes to maximise his satisfaction from consumption. But, learning from the cases of random allocation studied, I am convinced that simple self-interest is insufficient to fully encompass the full range of consumers' motivations in non-market allocation situations; that there is an inherent social, interpersonal dimension involved. An example of this was in the fishermen's *padu*, a community-based redistribution. There are also the higher virtues of justice and fairness, which I concluded came into play in such widespread distributions like the US Green Card lottery. If a model for all of this were sought it would have three independent variable axes along the lines of

- q** - relating to quantity consumed, the self-interest component
- r** - welfare related to inter-personal feelings, especially in communities
- v** - how feelings of virtues like fairness and justice add to wellbeing

Moulin (1995) in his 'Cooperative Microeconomics' has gone some way towards describing a game theoretic approach which combines **q** and **r** (satisfying greed and avoiding envy, as Moulin might describe it). This has only been applied to a narrow range of special situations. The third category **v** is much discussed by philosophers, and touched on in economics. Combining all three attributes in a consumer's function, and developing meaningful conclusions from such models is a complex, and perhaps impossible task, which I do not intend to attempt.

An alternative to algebraic modelling might be to make use of experimental methods. This would certainly allow the focus to fall narrowly on the core issue—the use of randomness to decide who gets the prize. Any experiment requires careful formulation.

## **9.2 US university housing lotteries**

In the US, using a lottery (random distribution) as part of the mechanism to allocate housing to students is widespread. Economists have long been aware of this, and some have even used this phenomenon as a basis for analysis of other things. None, however has investigated the use of lottery as such (apart from the example of Boyce (1994) whose primary interest was environmental economics). An investigation which directly asks why US universities choose to allocate housing randomly, and whether the customers—the students—are happy with this mechanism—seems long overdue.

*In widespread use?* In order to find out more about the use of the lottery in allocating students to housing at American universities, I ran a Google search (18<sup>th</sup> March 2004) on ‘university housing lottery’. This produced 130,000 results which had all three words. On the first three pages I found examples of lottery-based student housing allocation at universities such as:

Stanford, Pacific-Oregon, Rowan-NewJersey, Clark-Massachusetts, Southeast-Missouri, West Florida, Quincy-Illinois, Butler, Scranton, Furman, Brown, Dennison, Connecticut, New Hampshire, Actors New School NY, Binghamton, De Pauw, Dayton, John Hopkins, Wesleyan-Illinois, San Jose, Harvard, Tufts. (all of these are in the U.S.A.)

From this it seems clear that using a lottery to allocate student housing is very widely used in American universities. A similar search restricted to Canada found a few examples (Guelph-Humber, Queen’s Ontario, Victoria), but only after extensive searching. Neither Australia nor the U.K. produced any results. So the use of a lottery in student housing allocations, it seems, is largely confined to North America,

especially the United States. The description ‘lottery’ is generally used, although some instances of ‘random selection’ can be found, for example at Vanderbilt.

*Economists aware of it?* Examples of universities which use a lottery as part of their student housing allocation procedure are mentioned (in a footnote) in a paper by Abdulkadiroglu and Sonmez (1998) (A&S). They identify: graduate housing in Stanford University, University of Michigan, and University of Rochester; undergraduate housing at Carnegie Mellon University were allocated by a lottery mechanism. In an earlier paper, Hylland and Zeckhauser (1979)(H&Z) were especially interested in this procedure, because of its introduction in their own university—Harvard. They describe in some detail, again in a footnote, the introduction of a housing allocation lottery for students in the 1970’s. Sacerdote (2001) drew on the lottery allocation at his own university, Dartmouth, to examine the effect of peer pressure.

*Why don’t the universities charge market rents?* It may be that the universities persist in their use of lottery-allocation through inertia, ignoring the revenue-enhancing potential of a more market-based approach. However, it seems most improbable that so many universities would persist in charging below market rentals, without good cause. There is doubtless pressure to increase revenue from all activities at U.S. universities as elsewhere: Higher rentals could be used to equate supply and demand for student housing, generate more profit, as well as avoiding complex (and resented?) allocation procedures.

I have no direct evidence from US universities or their administrators, but it could be speculated that universities adopt a sub-market rent strategy because:

- universities compete for students. Housing becomes a ‘loss-leader’.
- excess demand means that entry can be better controlled, and undesirables expelled.
- a belief that part of the costs of a merit good like university education should be subsidised.
- students are part of the community of the university, which includes the faculty staff as well as the alumni. Being subsidised as an undergraduate creates a

moral obligation to contribute later in life, that there is an implicit inter-generational contract.

Once a sub-market rent strategy has been adopted, then some means of coping with the inevitable excess demand has to be found. Why use a lottery as part of the process? Again I don't know, but speculate that:

- administrative convenience. A lottery is quicker and cheaper to run than some rule-based merit system.
- it avoids any taint of discrimination, which could be extremely damaging to the reputation of the university.
- University may aim to mix up students from different faculties, to achieve better socialisation, and awareness by students of other parts of the institution
- it is an enjoyable bonding experience shared by many students.

*But what of the students?* Are they just optimising customers of the university housing allocation system? Economists make the assumption, so strongly endorsed by Moulin, that Pareto-optimality is the one desirable characteristic of lottery or indeed any other system of university housing allocation. None makes any attempt to show that students wish to be treated solely as customers of a hotel-like operation, although this is probably a reasonable first assumption. Students, too, will act like hotel customers, wishing to be allocated the best room, with the nicest view. So the Pareto-optimising assumption of the previous section still holds. But there are other factors, peculiar to university room allocation:

- Inter-personal comparisons are inevitable and widespread. Students are sociable beings and will have plenty of opportunity to compare. Since room rentals are the usually the same for all properties, this sharpens the incentive to compare. Students, being more idealistic than the population at large (?) are more aware of situations that they perceive as unfair.
- Who is my neighbour? can be as important as the quality of the room allocated. It could be speculated that gloomy rooms would be most desirable if the 'leader of the pack' is already installed in one. Post-allocation swapping is generally allowed, and may have much more to do with being near friends, than achieving a better room.

- In a desire to become a member of the club of the university community, a communal ceremony like a room allocation lottery could be most attractive (mirroring the university's desire to engage students as members of the university).

There is ample opportunity to pursue a research programme, based on these questions and speculations.

#### **9.4 University entrance in the UK**

It may seem pointless to return to the topic of university entrance mechanisms. After all, in the example in Chapter 3, I seem to have produced the perfect example of a system which (almost) perfectly combines an appropriate measure of merit with the truly egalitarian mechanism of a weighted lottery. It only remains for some champion to pursue a campaign of advocacy for such a sensible policy. Not so. The commission which reported on admission to English universities in (Schwartz, 2004a) toyed with the idea of random selection. It was reported in a Times headline (Sept 6, 2003) 'Universities to pick students by lottery'. This did not appear in the final report. Instead the recommendations stuck to minor tinkering with the existing system.

Such timidity in the face of likely opposition is understandable. Any proposal to pick students by lottery would be greeted with distaste by the students (as evidenced by the elicitation examples in Chapter 1). Extreme ire would be the likely response of the parents expected to fund these students. However good the mechanism used in the Netherlands, however much the students there seem to accept and even cherish it, however well Professor Drenth has scrutinised it and found it is good, random distribution of university places will not be adopted in England. The design flaw is acceptability, so perhaps it is time to go back to the concept of the design of economic mechanisms.

Roth's (2002) paper on 'The economist as engineer' alluded to the methods of engineering design, although he took that line of reasoning no further. I believe I can contribute to the important field of design of economic mechanisms by introducing a recently developed technique from engineering design.

*Affective Design (Kansei Engineering) in Japan* is the title of a Department of Trade publication ca 2004, which gives a glossy version of this new development in engineering design. *Kansei design techniques* are described thus: ‘Manufacturers have tried many routes to understanding consumer preferences so that they can incorporate them into their designs. In the competitive market place, it is increasingly important to look beyond the obvious and to seek more subtle indications of what product designs will be popular. When asked to describe their requirements from a product, consumers will frequently include a mixture of functional features and descriptions relating to how the design appeals to them on a more subjective emotional level (for example, must look fresh, be comforting, sound fast, must feel dependable). A methodology which is new in Europe but well established in the Far East is being investigated in a European 5th Framework project called Kensys. Kansei Engineering is a technique aimed at translating subjective requirements into product design features and thereby incorporating consumer emotion into the product design process. The Kansei method involves extensive examination of the market, discussions with designers, customer surveys and data analysis. Techniques such as factor analysis and statistical modelling are used to extract underlying traits and make predictions. Issues of selection of a representative product sample, sample size when sampling the customer base and decisions on categorising some independent variables need to be considered.’ (This is a quotation from <http://conference.iproms.org/node/161> Conference paper: ‘Statistics supporting the design process via Kansei engineering’ by S Coleman, K Pearce and C van Lottum, University of Newcastle upon Tyne. )

It may seem a large conceptual leap from the design of a new sports car which titillates jaded consumer desires to the serious matter of deciding the mechanism whereby someone gets the prize of a university place. Not so. It seems that it is the negative feelings which the use of a lottery seems to evoke which are the main obstacle to its acceptance. Hence the need to tackle the design of the economic mechanism from the standpoint of ‘feelings and impressions’. What I would envisage is to engage with a group of local sixth-formers, who are the main target group for university entrance. With them I would explore the characteristics of different admissions systems. The technique for the analysis of their responses already exists,

and can be drawn on. This would be a highly innovative and speculative approach in economics, but it is already established in engineering design.

### **9.6 Employment: Randomised short-listing**

Since it was the transition processes of employment—hiring, firing and promoting—which figured so prominently in my thesis, it is only right that I should follow up this theme. My proposal that these processes should include an element of randomness is both controversial, and unlikely to be adopted without further research, followed by considerable advocacy. What form such applied research might take is unclear, but I am impressed by the models given by Audas, Barmby & Treble in their 2004 ‘Luck, effort and reward in organisational hierarchy’ in *Journal of Labor Economics*. Their methodology is based on a dataset of employees in a financial services organisation. Using this or a similar data set, it might be possible to infer some of the consequences when a random selection mechanism might be used.

In the troubled context of Northern Ireland using a randomisation process to produce short-lists has been used for some time. Explicit approval has been given by EOC (NI) in its Guidance Notes. It has also been subject to scrutiny. (Duxbury, 1999, p87). This presents an attractive research setting: One possibility is to use the elicitation method to test reactions of the ‘victims’ to the actual use of randomisation, and to explore its extended use. It could also be rewarding to discover the genesis of the idea: How did it arise? Who championed it? Who opposed it? How was the idea of using random selection finally adopted?

### **9.5 Advocacy: Selling the Idea of Random Distribution**

Ideas, like toothpaste, do not sell themselves, they need to be promoted. To finish, I suggest how the idea of random distribution could be ‘sold’:

‘Firstly, I am not advocating the use of random distribution in all cases, willy-nilly. When public assets are transferred to private firms, then the full market price should

be extracted. So using a lottery to give away telephone numbers, airport landing slots or whitewater rafting permits merely allows private interests to capture the economic rent, and exploit their prize to further increase their wealth at the expense of society at large. Economists such as Binmore have shown how disposal of public assets can be arranged to ensure maximum public benefit. The private firms benefit too, because they are freed from the burden of seeking to capture economic rents. They can then concentrate on their welfare-enhancing function: Producing good-quality products in abundance at the lowest possible price.

Commercial organisations might consider the use of random distribution as part of their marketing strategy. There is a limited role for distribution of tickets to sporting or entertainment events using a lottery. This might be for image-enhancement—‘we want to be fair to our loyal fans’, or it might be as a more satisfactory alternative to rationing by queuing. A simple calculus of costs and benefits for the firm, and with some regard to customer benefit should reveal if rationing by price, by queuing or by a lottery produces the best result.

In the interests of justice and fairness the benefits and burdens of Society should be distributed equally among its members, a case made by Zelleke (2005). When these are non-divisible, then a simple lottery represents a fundamental democratic response. Hence the military draft, where all 19-year-old men were at equal risk of call-up; or jury service, where all electors are liable for service. The US Green Card lottery, gives almost every member of the human race an equal chance of becoming an American citizen. The use of a simple lottery embodies the principle, that if there cannot be actual equality, then at least there should be equality of chances.

At a more mundane level, random selection should appeal to cost-conscious firms. The process of random selection is quick and easy, so should cost less than the more elaborate procedures currently adopted. As I have tried to show, these procedures only weakly identify talent, so a lottery will certainly be no worse. Other benefits of random selection for the firm are that it should contain much of the corrupt or biased behaviour by its own agents. This too, means that compliance with anti-discrimination legislation should be assured, relieving the firm of potential losses.

At a local level, simple random distribution can be the manifestation inter-personal values of reciprocity and consideration. In work groups which interact face-to-face, random distribution of earning opportunities or work stations together with regular rotation should enhance fellow-feeling. Human needs are more than just about self-interest. There is the need for fairplay, and regard for others in a social setting. The evidence that these needs are significant and should be addressed, not least by economists, is steadily accumulating. To encourage co-operation and improve the well-being of workers in groups, a neutral arbiter is needed. Since few if any humans possess such powers of detachment, recourse to the truly independent power of random chance is the best option.

There are advocates of Random Selection who see it as a cure for the democratic malaise: That reform of Government to make it more responsive to the needs of the people requires the replacement of voting with a form of jury service. Representatives could be chosen at random to fill the roles of MPs (Sutherland, 2004) or to become Lords (Barnett, 1998), are examples of this proposal. I do not disagree with these ideas, but am unsure how much significant change they would make for the lives of people. Corporate influence would still persist, and might find it easier to suborn the randomly selected representatives. Far more important to the lives of ordinary people is their ability to make their way in life.

We cannot choose to whom we are born, but after that we all hope to have the opportunity to advance. For most of us, it is jobs and education which determine what sort of lives we lead. The basis of the meritocratic ideal is that there should be fair, equal and open access to these. But, as I have tried to show, selection on merit has become a twisted charade. There is some evidence that simple indicators of merit, such as IQ give reasons to select some and reject others. The use of worthless interviews and the imposition of higher grades as gate-keeping devices distort the process. When other irrelevant indicators like hobbies are used in the name of selection on merit, the process ensures that those who are already advantaged get priority—a phenomenon known as ‘the sharp elbows of the middle class’.

This is, I believe, the real democratic prize. Certainly where evidence is established for necessary ability to undertake a job, or to have a chance of success on a particular

course of education, then it should be used to reject those patently not qualified. This will invariably leave an excess of applicants over places, especially the popular courses and prestigious jobs. Random selection is the right thing to do next. Anything else is undemocratic, violates our basic belief in an opportunity society. It would be better if the selection lottery was weighted to represent the likely chances of success on the job or on a course. Given the fuzziness of the relationship between measured ability and performance, the form of weighting is a matter of debate. Equal weighting would be the egalitarian choice, favouring the top-scorers would appeal to elitists. The application of validated merit plus a lottery for the award of jobs should extend to hiring, firing and above all promotions. Because it changes the things that matter most in our lives, applying random selection to the most significant prizes in our lifetimes will do far more to achieve a truly democratic society than would reform of Parliament.’

‘Let the dice, not frail and devious human judgement, decide my fate!’