

A lecture by Dr David Cleevly, CSaP Founding Director (2008-2015)

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**Chaired by Professor Dame Ottoline Leyser, Director of the Sainsbury Laboratory,
and Chair of CSaP's Management Committee.**

Introduction and background

The UK has scientific advisers at the top of government, but with science, engineering and technology playing greater and greater roles in our lives there is a correspondingly greater need for a broader understanding of these issues by policy makers.

One source of advice might be academic institutions, but there is a mixed history of working together partly because policy makers need solutions and decisions whilst academic institutions are concerned with understanding the complexity of topics – and both operate with different timescales and required levels of proof.

David Cleevly will argue that a better approach is to use peer to peer networking between members of the two groups, where each expose their own unique insights. He will draw parallels with systems of open innovation and open policy making, and set out why democracies need to draw more effectively on insights from science and engineering and how this could best be achieved.

David Cleevly was appointed the Centre for Science and Policy's Founding Director in 2008. As co-founder of networking organisations such as Cambridge Network, Cambridge Wireless and Cambridge Angels, David brought a unique perspective to the age-old issue of the exchange of insights between Policy Makers and Academic Institutions. The result was a unique organisation based on networking between peers, rather than attempting to formulate policy directly.

Now, ten years on, David is standing down after completing his term as the inaugural Chair of CSaP's Advisory Council. To honour David's foundational contribution, we are inviting people who have played a significant part in the CSaP's development over the past ten years to join with us in celebrating David's achievements.

I'm going to talk about getting academics and policy makers to work together, which is the objective of the Centre for Science and Policy or CSaP. I'm also going to talk about the journey that got us here. It's a journey full of risks and chances, of many ideas which never worked and some that did. It's a journey from which I have drawn important lessons, but I will get to that at the end of this talk.

First let me say that the success of CSaP would not have been possible without the hard work and support of a great many people. Some of them will be mentioned by name, but I apologise in advance as there's not enough time to talk about everyone.

So, what is CSaP's mission as we know it today?

The CSaP's mission is to improve public policy through the more effective use of evidence and expertise. We do this by creating opportunities for public policy professionals and academics to learn from each other.

CSaP is one of the odder organisations at the University. It sits within the Judge Business School rather than in POLIS or the School of Physical Sciences or the Office of External Affairs & Communications or the Department of Administrative Affairs or anywhere you might think it ought to sit. It does almost no research or teaching. Its expertise is neither in science nor in policy. Yet it has succeeded in its mission to connect academics and policy makers beyond anyone's expectations.

Its main activity is arranging for officials from all parts of government, mostly civil servants from Whitehall Departments, to meet individual researchers for an hour at a time. We call these government people "Policy Fellows". Each Policy Fellow draws up his or her starter questions and then we bring them to Cambridge and arrange 30 or so relevant meetings for each of them, around 6 per day for 5 days. We then help them to exploit the network that this creates over a two-year period of being a Fellow, and beyond this, as an alum

But why is this necessary? Surely we don't need more systems in place for policy making and for consulting experts? And in any case what value do the participants get from CSaP?

My intention is to answer these questions in this talk. For the moment let me say that there is value in a system which enables policy makers to get to the knowledge they need more quickly, and that CSaP has made what I hope is a significant contribution to making that process more efficient and timely. In particular it has tackled an age-old problem: there are many world class experts and innovative thinkers in academia – many of them at this University – yet getting access to that expertise is difficult. CSaP has solved part of this problem and has done this – as they say in business – “at scale”. In other words, its activities are large enough to have a recognisable impact, and they are based on processes which are efficient enough to do so at a surprisingly low cost.

Let me give you some idea of this scale.

We have over 300 Policy Fellows mostly drawn from the civil service have had over 8,500 meetings with the 1,500 researchers in our network.

In addition, we have held over 200 conferences, lectures, workshops and seminars.

What do our Policy Fellows think of the scheme?

All of them would recommend a Policy Fellowship, 9/10 report improved insights and networks, and a third report direct impact on the policy making process We are oversubscribed for Policy Fellowship places and many past Policy Fellows continue to contribute to CSaP long after their 2-year term has finished.

And all of this has been achieved with fewer than 7 people and a budget of just over £500,000 per year.

How and why does CSaP work so well?

The simple answer is it understands three things: the motivation of the people involved, the value of networks and finally the need to design a process which works without needing to change the protagonists' differing timescales and required levels of proof and evidence.

1. [But first some history](#)

In 1998 a group of heads of houses got together and began the "Cambridge University Government Policy Programme", or CUGPOP as it was affectionately known. They did this having discussed the idea with the Vice Chancellor who told them not to do it and the University would not support it.

This being Cambridge (and a college-based system) CUGPOP went on to hold 16 meetings on science and technology with Permanent Secretaries and other senior civil servants (and on one occasion the Prime Minister) until the prime mover, Gabriel Horn, retired in 2006.

In 2008 the Council for Science and Technology produced a report entitled "How Academia and Government Can Work Together". Some of the problems with the report are evident from the stock photograph they chose to illustrate the front cover: two people dressed in business attire shaking hands having hopefully buried their differences – at least for now. The report identified the difficulty which policy makers had in getting input from academia. It cited CUGPOP and concluded that "both academics and policy makers need to alter their behaviour to overcome the barriers". It was actually rather more direct than that: it talked about less than professional working relationships, ignorance on both sides of what good engagement can deliver, mistrust between academics and policy makers, and failure to value the relationship. A bit like social media in fact.

Recommendations were divided into three areas in descending order of usefulness and potential for being implemented:

1. *Build relationships and communication between academics and policy makers;*

2. *Build capacity to ensure a more productive engagement; and*
3. *Rate, value and reward the engagement*

Seen through the lens of the last 10 years there is much to commend in the report. However, it could and perhaps should have stopped at the first point. Building the relationships is the most important thing to do. Do that right and more productive engagement follows. As for 'rating valuing and rewarding the engagement' that is inviting all sorts of unintended consequences.

However, I am speaking 10 years later: at the beginning of the journey the priorities and strategy were much less clear.

I was appointed Founding Director of the Centre for Science and Policy towards the end of 2008. I had some outline ideas of what I wanted the centre to do. These ideas were about meetings, workshops and events to bring academics and policy makers together. I also had a clear idea that the centre would not spend its precious capital on doing research which could then be used to tell policy makers what to do. As Machiavelli said. "It ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things." But despite misgivings, the committee chaired by David Wallace agreed.

The following year – 2009 - was spent building up the ability of CSaP to run meetings and engage with people, aided by Jackie Ouchikh, Events and Operations Manager, the first recruit and someone who deserves much praise and thanks. Much of my time was spent talking to people: academics, policy makers, other institutions such as Harvard and MIT, experimenting with different ideas such as visiting fellows schemes, and trying to find the one thing that would make CSaP a success. I developed 7 different versions of the budget. I brought in my former Chief Operating Officer from Analysys, Nick Gray to help, and without whose assistance this might never have worked. I began to understand what Microcosmographia Academica described as "a young man in a hurry".

The breakthrough came in a conversation with Arnoud de Meyer late on the afternoon on Friday 18 December 2009.

I explained what we were doing, and he told me how he had hosted the Belgian Minister of Health who used the Judge Business School as a base to visit health policy makers and academics. Arnoud's point was that managers who visited researchers went back with useful knowledge and contacts for their day job, researchers who carried out projects for managers or policy makers just went back to doing research. Despite CSaP being something of an 'add on' for the Judge, Arnoud had obviously thought deeply about what we were trying to do, and I owe him a huge debt of gratitude.

I sketched out the Policy Fellows framework after the Christmas break and we recategorised Anne Holloway (then visiting from the Government Office of Science) as our first Policy Fellow. I filled in the detail afterwards – much of which has survived and much again has been modified as we learnt how it would work in practice. We recruited Chris Tyler as

Executive Director and began a new phase. Chris I'm delighted you are here this evening: thank you for all you did.

Pasteur said that chance favours the prepared mind. I'd spent more than a year talking to people, understanding the issues and coming to terms with the very different motivations of the people involved. I'd also spent some time reading about network theory and it was that framework which allowed me to see how a network of Policy Fellows could work effectively. To understand why this was so important I need to tell you why we often find ourselves remarking that we live in a very small world.

2. Network Theory

Most of us have experience of social networks or at least their effects. The small world phenomenon is one of those: we are often amazed at coincidences where people know each other. You might also have noticed that there are (at least) two kinds of networks.

The first is the 'small world' network. Groups of people who know each other contain members who link between groups – you might be a member of a college but know people who work in Australia or in an occupation far removed from academia – astrology for example. The important point about small world networks is that one link introduced at random has a big effect in reducing the number of steps it takes to get from one member of the network to any other.

The second is the aristocratic network: a few individuals have many more connections than the average. We all know people who seems to know thousands of others. If we can connect to these well-connected individuals, again we can reach anyone with very few steps. It's worth noting that extra random links in aristocratic networks don't have quite the same dramatic effect that they do in small world networks.

Most social networks have both small world and aristocratic characteristics, but they have one outcome in common: it takes a surprisingly few steps to get from any one person in the network to any other person, even if there are millions of people. I first read about this in an article in Scientific American when I was at school in the late 1960s where the term '6 degrees' was coined to describes the average number of steps to get from one person in the US to any other person. With the emergence of Facebook and LinkedIn is more like 4 degrees.

So why is the connectivity of a network important? If I have a policy problem and want to find an expert, then a poorly connected group isn't going to be much use. For a start the expert needs to be part of the group – they need to know someone who I know. I need to know someone who knows someone who knows the expert.

One important question is how much connectivity do you need for everyone to be connected? If each person in a group of 10,000 only knows on average very few people, then it is obviously unlikely that you can get from one person chosen at random to any other person. Not only can random links improve the connectivity of the network, it turns

out that there is a critical threshold above which you can guarantee that everyone will be connected to everyone else.

So what you need is a well-connected network, and well connected in the sense that no-one is more than a few steps away from the person they need to talk to. That's what CSaP has been creating and it turns out because of the small world and aristocratic phenomena in networks it is entirely possible to do it.

3. Productivity and What Works

Michael Porter said that strategy is about making choices, trade-offs; it's about deliberately choosing to be different. If your intention is to build networks, then you do not do research. You hire people like events and operations managers and build IT systems which allow you to identify people and schedule and run meetings.

To some – especially academics whose reason for existing is to do research (and sometimes teaching)- this is of course a complete waste of time and resources. In the early days I was asked to give out money for research which could then be used to influence policy. I saw plenty of research going on but very little money going into building networks, but without putting too fine a point on it this did not go down well with those who wanted funding for their projects.

Why are networks important?

Firstly, networks – often without us noticing – enable organisations to function. David Krackhardt and Jeffrey R. Hanson talked about this in their 1993 paper on Informal Networks, and they highlighted how networks of trust were more important than formal reporting structures.

As Dame Ottoline Leyser said at last year's Huxley summit on the subject of "Science and innovation in a post-truth world" we are beset by tribalism, adversarial approaches and lack of trust. It does not seem reasonable to expect that the results of research – however brilliant – being used to tell policy makers what to do would necessarily contribute to improving the situation. The notion of writing a report and then using this to browbeat policy makers is doomed to failure.

Secondly networks extend our understanding. We *cannot* rely on policy makers to know all the answers or indeed have sufficient breadth and depth of knowledge about specialist topics. And equally the research report will miss many of the points that are crucial for policies to be acceptable and to be capable of implementation.

In short, we are dealing with unknown unknowns. Both sides need to know more about the other's insights and understanding. And both sides need to acknowledge that neither has a monopoly on wisdom – and act accordingly.

Thirdly we don't know when we are going to need to know something. I'm surprised that as many as one third of our Policy Fellows say there has been a direct impact on policy.

Networks allow us to overcome the differences in timescale on which academics and policy makers operate. The point of the network is to have the resources available for when you do need them, so in the longer run I would hope and expect that figure to rise.

So what you need is a network – a network where everyone respects everyone else for the expertise they bring to the table, and where everyone can learn from everyone else.

Now building networks may not on the face of it seem a particularly productive activity and does not bring donors rushing to the door. How does it make for better policy? What government policies have been changed as a result? What KPIs are used for measuring outcomes? The Newton Trust expressed reservations when we first applied to them – and understandably as their remit is to fund research. But to their credit (and the persistence of members of the Management Committee) they gave us vital funding. But I highlight this because it demonstrates how difficult it can be to convince people of the merits of a different and unproven approach.

The problem is that on the face of it enabling policy makers to access research sounds like a straightforward task. After all there is an Aladdin's Cave just waiting for the magic words to be spoken and all will be revealed. But people are complex. They have their own motivations, interests and objectives. What they say they ought to work is one thing, what works in practice is quite another. I spent over a year talking to people – researchers and policy makers. Many of the hypotheses I started with fell by the wayside. I thought of others, tested those, some survived, some didn't. That's what CSaP continues to do. It's a process which is messy and unpredictable, just like policymaking or research.

For example, people say they want workshops and policy projects. These are easy to identify and explain and can even engender enthusiasm. The problem is that they are very expensive in time and money, and once the initial enthusiasm has worn off they quietly get lost and die. For example, we ran a series of workshops at the Treasury. These came out of a discussion when a group from Treasury came on a visit arranged by CSaP and we hit on the notion of academics visiting treasury once a month to talk on a topic of interest. We got through about 8 of these before the idea ran out of steam: everyone in Treasury who was interested had been to several and - in colloquial terms - the novelty had worn off.

Seen from the point of view of CSaP as an organisation enabling networking, the benefit of the Treasury workshops was not in learning about the subject as much as meeting fresh people and different ways of thinking, so after a few workshops the marginal benefit had dropped to the point it was not worth attending. The lesson from this is that such programmes should be short or sufficiently infrequent that the novelty of topics and attendees is kept fresh.

Networking is less costly and more sustainable. That is the way into Aladdin's Cave and this is what it really looks like:

This is the list of all people who met our Policy Fellows in 2017.

There is a waiting list to apply from CSaP Policy Fellowships and often those who have been rejected reapply. All Policy Fellows would recommend the scheme to others. Our pool of researchers wanting to meet Policy Fellows has grown steadily to over 1,500 with some seeing 4-5 Policy Fellows every year. The costs of arranging a meeting between a Policy Fellow and a researcher may not be lower than a workshop on a per person basis, but the value obtained from the time spent is much higher. Given the opportunity and direct costs for both parties it would seem that significant value is being generated. Researchers get a chance to explain their work to an important audience who they would perhaps find it difficult to reach and in return get fresh perspectives which they can use, and some of them may consider becoming government scientific advisors or policy makers themselves.. Policy makers get a chance to think and consider new ideas, as well as establish a network which has potential value for them in the future.

We applied all these lessons in creating the Policy Leaders Fellows programme, of which there are around 45 past and present members. This is for Permanent Secretaries or Director Generals (or equivalents) who are enrolled for 2 years. They gather on a Friday once a term for one to one meetings from breakfast time or lunchtime onwards and then in plenary from 4pm until 7pm followed by discussion over dinner. There are three important things to note about these meetings. Firstly, the Policy Leaders Fellows themselves choose the topic. Secondly half of the membership is replaced each year. Finally, they can add in any one to one meetings that happen to be relevant to them so building their own networks.

I am a hedonist. I like the hedonistic approach to the problem of measuring outcomes. If I observe demand far outstripping supply I conclude that there must be utility. After all, Policy Fellows are intelligent and ambitious people. And I believe them when a third say there has been direct impact that has changed the policy outcome. But I also believe that is an underestimate because we are building a network of trust that is able to meet future needs not just the questions of the day.

The obvious response to this is to ask how could CSaP be made even better, even more efficient, to have an even greater influence on policy. From there is but a short step to creating and measuring KPIs more closely related to preconceptions as to how the policy making process operates, introducing bias and suffocating the very thing which makes CSaP so successful. To use business jargon it is vital that you know your 'core competences' and 'the unique selling point'

Which brings me to the challenges facing CSaP.

4. Challenges

There are five challenges facing CSaP – and the University. The first four of these have been the subject of discussion with Rob Doubleday, our outstanding Executive Director as well as our brilliant Advisory Council. The fifth is entirely mine.

The first challenge is to be able to change. Structure is necessary for things to work, but the more efficient the structure the less room there is for chance and for exploiting new ways of achieving the goals. Improving processes will only get you so far and being finely tuned to a particular environment works as long as the environment stays the same and no one else comes along with a better way of doing. Neither of these conditions will hold indefinitely. It's essential that we strike the right balance: enough structure but not too much.

One strategic response is to experiment. CSaP has evolved into its current form by a process of changing and culling. We have tried many things and most of them have been stopped whilst the few successful activities have survived. Fortunately, the CSaP watchmakers are not blind: experience means we have changed the odds of picking something that will succeed – for example in creating the Policy Leaders Fellows programme. But they are still only odds, and some 'waste' of resources is inevitable and has to be part of what we do.

The second challenge arises from the first. CSaP faces an environment which is changing, and where other organisations are experimenting; our unique position could be in danger of being eroded. The strategic response to this is to expand and – hopefully – stay ahead of the game. And I expect some of you may be asking why is that important? The answer is that in a globalised world leadership in this field will be limited to a few institutions whose reputation will attract funding, and that cumulative advantage will accrue to those who start early and have a long-term vision. Cambridge has a chance to be amongst those few and perhaps the global leader. It should not waste this opportunity.

One way to do achieve this vision would be to link up with other academic institutions. We do this with a network of researchers based in Sheffield and Manchester amongst others and we have drawn on expertise in Oxford, Southampton, Kings College and Bath.

Others are attempting to copy us directly: the Mercator Foundation have funded two projects in Germany, The first, now in its third year, is between Goethe University Frankfurt, Johannes Gutenberg University Mainz, Technische Universität Darmstadt. The second, in its first year, is the 'science policy network' run from Mercator Research Center Ruhr, involving three other Universities.

We have had requests that we help set up the equivalent to CSaP elsewhere. The expertise we have accumulated has value and a franchise model based on our expertise might be an option. We may not have patent or trademark protection, but we have intellectual property embodied in the know how we have developed and that has value which we can use to become leaders in this field.

The third challenge is to persuade researchers to spend more of the research budget on marketing and networking. I am open to suggestions as to how to do this, but, having tried for almost 10 years in various ways and failed, even I have begun to wonder if it is possible. As I was warned nearly 10 years ago, researchers do research because they like doing research, not because they like marketing. At CSaP we treasure the response from a Professor of Neuroscience who declined an invitation to a networking event by saying "as

far as I can see this is just a social event, I am going to stay in my office and mark exam scripts".

The measurement system used to determine academic rankings does not help to change this. The dominant factors in the Research Evaluation Framework or "REF" relate to academic excellence – and that is as it should be. The REF also contains an assessment of 'impact' but this is relatively straightforward to demonstrate by showing that seminars and workshops have been held. If I were a Head of Department I'd focus on the core academic excellence and tick the box on impact – after all, that's my reason for existing. However, I cannot in all conscience advocate changing the way research is evaluated as any alternative is fraught with unintended consequences – not least of which could be the promotion of form over substance.

I don't have time here to talk about impact, but I want to make it clear that it is a poorly defined and potentially counter-productive concept. It is far more important to demonstrate the quality of research and to make many more people aware of the implications of the results and so enable others to make use of them.

CSaP has been told that new money for research has flowed because of the meetings we have held and as I said earlier, and a third of our Policy Fellows say there has been a direct impact on the policy making process. Understanding why this is the case and how this could be built through better marketing must surely be a strategic priority.

The fourth challenge is to make better use of the university's own networks. Hundreds of researchers and others visit the University every year, some for periods of several months. Members of the University visit other institutions around the world. How do people know who is visiting? Are there people who they should be talking to? What chance meetings that could lead to bigger things are not happening?

Models for encouraging this kind of networking exist in various forms throughout the University. The oldest of these is the college system itself. A more recent example is the Newton Institute which was created in the 1990s and represents a national resource located close to Mathematical Sciences and acts as a base for collaboration for visiting mathematicians. The Centre for Research in Arts Humanities and Social Sciences (or CRASSH) has a similar open policy of collaboration. Pembroke College runs a more formalised system through the Pitt Fellowship.

There is an opportunity to create a model involving a flow of researchers and mixing of people from many disciplines inside and outside the University, to develop an art of policy making that works based on how people actually behave not as you would like them to behave. (I hope I haven't shocked too many people by that remark). A first step could be to offer visiting fellows a programme similar to the CSaP Policy Fellows scheme: an opportunity to have one hour one on one meetings with people who might be of interest based on questions or topics which the visiting fellows would like to discuss. These people could include researchers, policy makers and entrepreneurs from the Cambridge cluster. We could ask for the same from other institutions that our researchers visit. Evidence from the last 10 years of the CSaP suggests that new ideas, new relationships and new projects would result.

Which brings me to my fifth and final point. I've chosen to illustrate this with Democritus, and I'll explain why right at the end.

Good policy making like good science relies on having an open mind and ensuring that all possibilities have been explored and relying on chance to turn up with the unexpected. When I started CSaP I visited BIS (now BEIS) and was told that the use of the word serendipity was frowned on as it indicated that you didn't know what you were doing. But my experience has shown me something quite different. It leads to good things turning up that could not have been predicted. Looking back on my career I see many instances where fresh information and chance meetings – such as the one with Jonathan Milner that led to us starting Abcam, one of Cambridge's great successes – have had far reaching consequences.

Of course, since I discovered confirmation bias, I've been seeing it everywhere. I experienced it early in my career. At the age of 23 I had to leave a Delphi panel because my views on the likely cost reductions in semiconductors were thought too extreme. That taught me that we need to recognise the dangers of looking to small groups of familiar faces believing we will get the best answers: they are often simply confirmation of our own views.

Here in the UK the creation of the role of Chief Scientific Advisor and the creation of similar posts within departments has gone a long way to creating new networks of advice. The CSaP has played its own role in opening up networks for policy makers – and I would argue has had a significant impact.

But the notion of networks is not a mere metaphor. The creation of the Internet and its use through the World Wide Web have enabled humankind to harness a general-purpose technology comparable to fire, writing or the wheel. Companies such as Google and Facebook have created new empires based on understanding the value we get from being networked together.

With science, engineering and technology playing greater and greater roles in our lives there is a correspondingly greater need for a broader understanding of these issues by policy makers. Artificial Intelligence, genetic engineering, neuroscience, climate change the internet and cybersecurity were all topics in the far-off days of CUGPOP. They have grown in importance, and the issues raised have become more complex. We do not understand the implications of enabling global organisations to target individuals with information based on preferences and personality, how AI will change the nature of work or how health systems based on equality cope with technology that might only be afforded by the few.

We need to understand better the science and technologies behind these developments and how profound these changes are. We cannot rely on policy makers basing decisions on what they learnt years ago at school and University. We need to have a network available to them, so that when they need the insights they can get them from people they can trust.

We also need – as we have done with CSaP – to think about these issues in a broad way. The reaction of culture, society, individuals and politics determines the outcome: unlike the technophiles of Silicon Valley I do not believe in technological determinism or unquestioning techno-optimism. I am open to debate. Democritus said, “the wise man belongs to all countries, for the home of a great soul is the whole world”. In an age where social media and nationalism are narrowing the mind we need to be not only alert to the dangers of relying on the same small groups of advisors: we need to build diversity into the governance structure, engender respect between all parties and build and manage networks that ensure that diversity grows and contributes effectively to policy and to a flourishing open society.