ADVANCING INNOVATION

Making the UK a world leader in new ideas

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DISCUSSION PAPER

INTRODUCTION

It is very important that the United Kingdom should become a world leader in innovation. As it strikes out along a new and independent pathway, it seeks to become a globally connected nation, trading openly and widely with the rest of the world. If it is to remain in the forefront of trade, it has to steer itself onto the bow wave of progress, designing and developing the products and services that will characterize the world of the future, and will make it an attractive trading partner to others.

The UK needs to be not only part of that future world, but at its forefront, developing the innovations that will boost productivity and enhance life's opportunities for future citizens of the globe. It can assure its place as a leader in economic growth and a major source of new ideas and developments if it makes itself an attractive locus for innovators, a place where its home-grown talent will be encouraged to develop, and somewhere that will act as a magnet to attract innovators from other countries to settle and to develop their innovations.

Although there is a role to play in making the UK an attractive place financially for innovation to develop, this is only a small part of the story. Dr Anton Howes has shown that the innovators of Britain's Industrial Revolution were spurred on in their work by much more than the prospect of financial reward.[1]

Joel Mokyr speaks of "A Culture of Growth," pointing out that it was ideas, not money, that provided the main spur to innovation. He points to "intrinsic motivations" that directed people to progress.

Some undoubtedly sought cash rewards, and pursued rivals in the courts for alleged breaches of patents. But the greater part of the inventors and innovators were motivated by a desire to improve their world. They fostered the idea of improvement, proselytizing it tirelessly to wider audiences, and making it something that won the acclaim and admiration of their peers. To some it was an end in itself, a way of making a mark upon the world and of changing it through their personal contribution to it. To others it was a pathway to respect, a way to win status and to be well thought of by people of intellect, ability and authority.

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1 Dr. Anton Howes: "Why Innovation Accelerated in Britain, 1651-1851" (King's College, London, thesis 2016)

Britain can be justifiably proud of that period. It essentially created the modern world and set humankind on the upward course away from subsistence and starvation and towards sufficiency and then comparative affluence. Some critics, notably Engels, saw the Industrial Revolution as a retrograde step. He saw the shortcomings of Northern industrial towns but had no knowledge at all of the wretched and abject rural squalor their inhabitants had escaped from. Britain's Industrial Revolution was the product of inventors and innovators using their talents to better their world and the opportunities it presents.

That revolution, which started in Britain, has not ended. We are still in an ongoing Industrial Revolution with new technologies changing our lives and bringing ever more opportunities. The difference is that today's advances are not only made in the UK, but in the United States, in China, South Korea, Japan, and elsewhere. Innovators are mobile, and recognizing the benign effects they have on economies and societies, nations vie to make themselves attractive places for innovators to develop in or to locate to. It is important for the United Kingdom to be up there as a place friendly to and supportive of innovators.

This is by no means a "race to the bottom," as some would describe a tax and regulatory system that seeks to encourage development. On the contrary, it is a race to the top, in which Britain can try to excel in making innovators feel their contributions are valued and they themselves are honoured. It is important that conditions should be such that innovators are helped rather than hindered, and light touches on taxation and regulation can certainly help in this respect, but it is even more important that innovators are esteemed and respected, and the two approaches can and should go hand in hand. Deirdre McCloskey emphasizes the "Bourgeois Dignity" that afforded status and respect to the Industrial Revolution innovators.

AN INNOVATIONS DATABASE

Many innovators have to patent their discoveries in order to protect themselves from future litigation. Copyright law, unlike patent law, recognizes prior usage as a defence against being sued for infringing what someone claims is their copyright. It is enough for someone to have that prior usage on record to protect themselves against charges of plagiarism. But if an innovator decides not to seek a patent for an innovation, someone else can do so when they go public with it, and can sue them for infringement of it.

Patent trolls notoriously pester companies with trivial and vexatious claims of patent infringement, knowing that the individuals and companies they target will have to spend time and resources countering their claims. They hope that in many cases their victims will find it cheaper to settle out of court than to go through the lengthy and expensive process of defending themselves against the charge of breach of patent.

Two changes can rectify this. The first is to change the law so that, as with copyright, a record of prior usage in the public domain can prevent anyone else obtaining a patent for the idea. This will enable innovators to protect their use of their

own idea by publicizing it. They would not be able to sue anyone else for using the same idea, but they would be able to prevent someone obtaining a patent for it.

The second change is to establish a public database of innovations online, enabling innovators to publish their idea without fear of subsequently being sued for using it. Any innovators who first publish their original ideas on line will thereby establish prior usage of it and protect themselves from subsequent litigation. This has the huge advantage that it will lead to widespread publication of new ideas and the cross-fertilization of them that this brings. Someone who thinks up a new idea will be able to check the online database to see if someone has already entered it there, or whether it is, indeed, an original and unpublished idea.

The setting up of such a register of innovations, combined with the change to make first usage protect ideas from subsequent lawsuits, will greatly speed up the development of new ideas. Putting them in the public domain will inspire others to improve and develop them. It will have the further effect of leading innovators to avoid patenting their ideas for self-protection, and will thus leave them open to be used and exploited by others. Again, this will speed up the pace of innovation.

ORIGINAL AND CREATIVE INNOVATORS

In 1969 the Republic of Ireland introduced tax-free status for the income that talented artists earned from the sale of their works. The avowed aim was to enhance Irish culture by encouraging Irish writers, painters, musicians and sculptors to remain in Ireland, while simultaneously enticing foreign artists of talent to become domiciled in Ireland.

Guidelines were drawn up by for determining whether a work is deemed to be an original and creative work and whether it has or is generally recognized as having cultural or artistic merit. The Revenue Commissioners take advice before making determinations as to which artists and works qualify. The scheme succeeded in achieving its aims, in that a community of artists, both Irish and foreign born, did indeed make Ireland their home. It did cause some problems, however, in that while it helped struggling authors to live off their talents, there was resentment that a pop group such as U2 paid no income tax on the many millions of euros they earned in royalties.

The Irish government responded in 2006 by placing a cap of €250,000 on the income from artistic works that could be tax exempt, a sum lowered to €40,000 in 2011 and raised to €50,000 in 2015.

This policy could serve as a model for the UK's treatment of innovators. Guidelines would set out what types of innovator might qualify, and a panel including distinguished innovators would determine which ones did. Those deemed "original and creative" innovators would pay no income tax on the income earned from their innovations for an initial period of 5 years, with a possible renewal for a further 5 years. This would apply to native-born innovators and to foreign-born ones who

chose to domicile in the UK. The question of whether the tax-free earnings should be subject to a cap would be reviewed after the first 5 years of operation.

Although innovators struggling to develop and market their ideas would undoubtedly be helped by the tax-free status as they tried to become established, the main aim of the policy is to elevate their standing in the community. By publicly recognizing their talent and worth to the country and their fellow citizens, the status of innovators would be raised. Others, especially young people, would be drawn to consider careers involving innovation.

Just as Ireland became a focus for a community of artistic talent, so would the UK become a focus for a community of innovators. The public recognition of their value and importance would be rather akin to the French accolade of the Legion d'honneur to those deemed of exceptional civil or military merit and value. Indeed, the recognition of an élite corps of innovators might be accompanied by the award of a special ribbon to be worn on formal occasions to denote their status.

ROYAL HONOURS

The desire for public recognition was one of the aims that spurred on many of the pioneers of Britain's Industrial Revolution. For many it was not the money they stood to make but the prestige they stood to achieve that motivated them. In some cases this prestige was conferred by the establishment in the shape of the monarch, the government or in some cases Parliament. Successful inventors and entrepreneurs were in line for titles, medals and honours bestowed by a grateful country.

In some cases they were awarded cash sums, but as some observers have wryly pointed out, titles and medals are cheaper. It is a policy that should be replicated today.

Innovation is already recognized to some extent in the Queen's Awards for Enterprise (originally Industry), given to businesses for outstanding achievement in four categories: International Trade, Innovation, Sustainable Development and the recently added category of Promoting Opportunity (through social mobility). These are mostly awarded to organizations such as businesses and charities, which are allowed to fly the award's flag at their corporate headquarters, and to use the award's emblem on their stationery and advertising.

The system is to a large extent process driven, designed to aid the economy, the environment and social mobility by turning the thoughts of businesses in those directions. Something more individual and more dramatic could boost the standing of innovators in the country at large, not just within the ranks of industry. The Queen's honours list has categories within it for political service, civil service, diplomatic service, etc. While there are honours for business people, these go mostly to top CEOs of substantial businesses rather than to newcomers. A separate category should be added for Innovators, with peerages, knighthoods and damehoods, and the various medals awarded to those whose innovations have been deemed to be sufficiently important to merit the award.

It is the public recognition of names such as Sir James Dyson that highlights the importance of inventors, entrepreneurs and innovators. If this were to become a regular feature of honours lists, with its own separate category, it would boost awareness of innovation, while the accolade of public honours would serve to make people aware of its importance and the stake it gives the country in its future. Furthermore, it would turn the attention of young people to the possibilities of winning distinction in that field, and encourage people who might not otherwise have thought of doing so to try their hand at it. By making it established and respectable, those in authority can make it more enticing.

It would generate yet more favourable publicity for innovation if its recipients of royal honours were to be invited to an annual dinner at the palace with the Queen or another high-ranking royal. It would highlight publicly the mark of favour that the nation bestowed upon its innovators, and the speech delivered on such occasions would be further opportunity to emphasize the high esteem in which they were held.

PRIZES

The use of prizes to stimulate research and innovation into solving nominated problems has an honourable history. The Longitude Act of 1714 which set prizes for solving the problem of measuring longitude at sea was by no means the first, in that Spain and the Netherlands had previously announced rewards for anyone who could do so. The British prize was won, though, by John Harrison and set a precedent. There is a new "Longitude Prize" today, offering £10m to anyone who can invent an affordable, accurate, fast and easy-to-use test for bacterial infections that will allow health professionals worldwide to administer the right antibiotics at the right time.

The 1919 Orteig Prize offered $25,000 to the first person who could fly nonstop between New York City and Paris, the prize won by Charles Lindbergh.

The most famous in modern times is probably the Ansari X-Prize, offering $10m to the first non-government organization that could manage to launch a reusable manned spacecraft into space twice within two weeks. It was won in 2004 by Burt Rutan's SpaceShipOne, the precursor of his SpaceShipTwo to be used by Virgin Galactic to ferry fare-paying passengers on suborbital spaceflights.

The X-Prize Foundation today has put up prizes for the solution of various problems, ranging from super-fuel-efficient vehicle engines to efficient clean-up of ocean oil spills. And a prize of $20m awaits the non-government team that can put a lunar rover on the moon to travel more than 500 metres.

This is a technique that should be applied in the UK to stimulate innovation in a variety of fields to tackle specific problems. Prizes should be publicly offered, with some of the money put up by government, and some of it by private foundations with their efforts co-ordinated by government. They should be offered to innovators in the UK who can do what is needed to win them.

A consortium of scientists and business people and perhaps charity leaders should formulate a list of problems whose solution would benefit humankind, and invite companies and foundations to put up prize money for any UK-based individual or team that can be the first to come up with a viable solution. This would not only stimulate innovation in the UK, it would serve to direct it into areas that could be of greatest benefit. In some cases the prize will direct the search for technological solutions to problems that might otherwise be unprofitable. This happened when the Society of Arts once offered a prize for a mechanical replacement for the use of climbing boys in chimneys.

Such a move would also arouse massive public interest. It would be presented as a series of challenges, expressing confidence that these problems could be solved and difficulties overcome if the ingenuity of innovators were stimulated and directed to tackling them. It would almost certainly boost national self-confidence, creating a feeling that the UK would be in the forefront of achieving the breakthroughs in various fields that could improve the future world.

COMMUNITY OF TALENT HUBS

People of ideas tend to associate with other people of ideas, and cross-fertilization takes place as information is exchanged. When such people cluster in groups, an informal infrastructure can develop which enables them to help each other, and stimulates the provision of services that all can draw upon. Knowing about the work that other people are doing can strike sparks and stimulate talent to move into hitherto unconsidered areas.

In a very real sense when talent is concentrated so that it is in regular contact with other talent, the whole is greater than the sum of the parts, and more can be achieved that could be done by individuals leading separate and unconnected lives. People can be motivated to strive for success when they see their friends and like-minded people achieve it. The example of some spurs on the efforts of others.

A famous talent cluster in modern times is the so-called Silicon Valley, the Southern section of the San Francisco Bay area. Branching out from initial concentration on silicon chip development, it now boasts thousands of startup companies in high-tech innovation and scientific development. Silicon Valley accounts for one-third of all of the venture capital investment in the United States, and has become a leading hub and startup ecosystem.

Similar, but smaller-scale, hubs have sprung up around Cambridge, where ‘Silicon Fen’ hosts a large number of companies dealing in software, electronics and biotechnology. So-called ‘Silicon Glen’ in Scotland attempted the same, but was harder hit by the decline in electronics manufacturing at the beginning of the century.

This is by no means a new phenomenon. The granddaddy of all such talent clusters is probably the Lunar Society of Birmingham, which flourished from roughly 1765 to 1813. Eminent figures of Britain’s Industrial Revolution would meet monthly to discuss new ideas and developments and to enthuse each other with the progress

they were making. Many of the most distinguished inventors and innovators of the day would meet socially, usually at the home of one of their members. Its name derived from the fact that they met on full moon nights, when they could make their way home safely in the absence of street lighting.

Participants included John Whitehurst, Josiah Wedgwood, Erasmus Darwin, Joseph Priestly, James Watt and Matthew Boulton, among other luminaries of the day, and they maintained contact outside the Society's meetings, regularly corresponding with and meeting each other. It is reckoned to have increased enthusiasm for innovation and scientific and technological advance.

Given the success and influence of such centres of advancement, there is a strong case for measures that could cause them to proliferate within the UK. To some extent they have to be organic, because the heavy hand of government would try to regiment their participants in ways that go against the grain of their independent and innovative minds. But likely areas could be identified and supported with improved transport links and with premises made available on attractive terms to potential innovators.

Areas around some of the Northern universities might be likely candidates in view of the excellent scientific and technological research already emanating from many of them. Royal patronage could be forthcoming for associations of individuals and groups at the leading edge of scientific and technological innovation. Research grants could be co-ordinated and directed towards them. Help from business leaders might be made available to see start-ups through the pitfalls of early development.

The aim would be to achieve self-generating and self-sustaining communities of talent that would act as magnets to lead others into similar efforts. The UK should aim to be dotted with such centres, and although a light touch would be desirable, the aim should be to make it easy for them to develop, and not to oppress them with controls and burdens that might stifle their emergence.

EXCEPTIONAL TALENT VISAS FOR INNOVATORS

Several countries try to attract people of outstanding ability by making available special visas for those regarded as excellent in their field. The UK has a 'Tier 1' visa for people of exceptional talent, provided they come from outside the European Economic Area and Switzerland. The process of admission requires them to have been "endorsed in their field" in science, humanities, engineering, medicine, digital technology or the arts. They must be a recognized leader with exceptional talent, or an emerging leader with exceptional promise. The number of such visas is limited to 500 places in April and a further 500 in October.

Australia similarly offers 'Distinguished Talent visas," and the United States has special visas for people "of extraordinary ability," with the understanding that this can leads to the award of resident alien (green card) status.

The take-up of UK 'exceptional talent' places is reportedly limited by Britain's reputation as a country to which immigration is by no means easy. The process of acquiring a visa is less than straightforward, and can be both expensive and lengthy. The UK has recently been thought of as somewhere relatively unfriendly to immigration, even of high quality talent.

Recognized exceptional talent in people at the top of their field is by no means the same as innovators, many of whom will be younger, and yet to make a significant reputation. The UK should therefore add a further 1,000 visas each year to approved innovators. This would mean that applicants had to produce evidence (that could include a contingent promise of funding from a venture capitalist) and perhaps submit to an interview, one that could be done by video link. If they satisfied a panel including innovators that they merited admission, they should be granted 'Innovator visas,' initially for a five-year period, but extendable if they managed to prove their worth within that time. This would make it easier for companies to hire innovators from abroad and form hubs.

To combat the UK's reputation on immigration, these Innovator visas should be widely advertised in such places as foreign and UK universities, and by British embassies and consulates overseas. They should feature prominently on the Government website. The aim would be to show that Britain welcomes and rewards innovators and is happy to welcome talented ones to settle here. The promotion should not only advertise the process of application for such visas to the UK, it should also promote the advantages and merits of doing so, and convey the image of a country that welcomes and values foreign innovators who choose to make this country their home.

LOW REGULATION AREAS FOR INNOVATORS TO DEVELOP & TEST NEW IDEAS

Britain's Financial Conduct Authority has approved so-called "sandbox" schemes in which Fintech firms, innovators in financial technology, will be shielded initially from having to comply with all of the regulations that apply to their sector. The idea is that they can 'play,' as children do in sandboxes or sandpits, testing new products and new approaches, even if they currently lack the resources to comply fully with burdensome regulatory requirements. The aim is to foster innovation, while keeping experimentation confined and separate from the sector as a whole.

The principle could and should be extended beyond the financial technology sector. It could be done in nominated areas, chosen on the advice of the business community, in which innovative start-ups would be exempt from some of the more burdensome regulations that were designed for larger firms more able to afford the compliance costs. The original Enterprize Zones of the early 1980s were designed to create a growth boost in selected areas by similarly suspending many regulations within them, but the approach was over-cautious in practice, leading most of them to achieve lacklustre results.

If "sandbox" areas were created to make life easier for innovative companies, it would be important to ask the firms themselves which regulations were unnecessarily burdensome and constituted a real problem to development. These would quite probably include local planning laws and employment laws, in addition to excessive and inappropriate health and safety rules. Observers have suggested that a firm such as Apple could never have started in the UK because it started in a garage that would not have met the UK's regulatory requirements for business premises.

This might be a valid process: a start-up would apply for a "sandbox" designation, which would allow them to then apply for the suspension of regulations on a case-by-case basis. This would have two effects: 1) it would allow for the discovery of which regulations are burdensome or restrictive; and 2) it would prevent the sandbox lacking teeth.

In addition to actual physical "sandbox" areas, the "sandbox" principle could and should also be applied to economic sectors, as it does apply in the Fintech sector. Innovative start-ups in other sectors should be able to apply for "sandbox" status and, subject to approval, should be shielded for a time from some of the regulations that might thwart their development. The idea would be for them to have leeway to "play" with new ideas without the sector as a whole being deregulated. Regulation obviously has a role to play in extending protection, but if the UK is to become a world leader in innovation, it needs to be applied in a manner that does not inhibit it.

PROGRAMMES IN SCHOOLS TO BOOST INTEREST IN INNOVATION

If the UK is to produce more innovators as well as attracting more of them from overseas, it must look to the next generation to produce them, and that in turn means promoting the idea in schools. The aim should be to make innovation included as a possible career option to young people following the completion of their education.

The Department for Education should commission the production of a series of videos to be played in schools setting out the steps than can be taken on the road to becoming a successful innovator. They should explain the help that is available, the pitfalls to be avoided, and should feature actual innovators who have succeeded, and who will recount how they did so.

The aim is to put across not only the practicalities of innovation as a career, but the thrill and excitement of doing something new, something that people will value for the improvement it makes to their lives. The videos should attempt to convey the sense of achievement in building up something from nothing, in building something of value that will create employment and wealth for the nation as well as for the individual, or something which might solve a major social problem.

The series should be combined with actual school visits by innovators and former innovators who can be persuaded to spare the time to enthuse the next generation.

Similarly there could be visits the other way, with parties from schools visiting the premises of innovators and learning on the spot how success was achieved and what it has meant.

Interest among schools could be spurred by an annual competition among school teams to produce the best innovations, with a panel of famous innovators judging the entries and determining the winners. There could be prizes, put up by businesses, for the successful schools and the teams who won.

FUNDED SPECIAL ENTREPRENEUR AREAS

Premises constitute both a difficulty and an expense when an innovator makes the move from domestic premises to business ones. There is first the difficulty of locating somewhere suitable, and second the problem of affordability. Several private firms already offer shared office space, usually open plan with connections for laptops and wi-fi, and with shared facilities such as toilets, coffee machines and basic kitchen areas. Some include rental computers. The people who use them are not necessarily innovators, though, and must have some access to funds to afford the rents.

Similar facilities might be offered rent-free for a limited period within the community of talent hubs to qualifying innovators. This might be combined with the visa programme, so that those who come into the country on the innovators visa might automatically qualify. They could be funded by a partnership of business and government, local and national. The aim would be to give innovators access to basic facilities during the period as they try to build up an income stream, or to attract the funding to secure the next phase of their development.

The advantage of locating such premises with the community of talent hubs is that fledgling innovators would be surrounded by people and businesses similarly engaged in striking out in novel directions with the products and services that could play a major role in the future economy of the nation. Help would be available locally in the shape of mentoring or of access to sources of investment and financial advice. There would also be a pool of local talent they might turn to when the time came to expand.

The facilities would only be rent-free for a limited period while the tenants were developing their innovation to the point where they were able to attract income of investment capital. The rent-free period might be a year, with the ability to extend it on successful appeal to a review board.

CONCLUSION

If Britain wants to be at the forefront of world innovation, ensuring it an important place in the world's economic future, there are steps it can and should take to encourage innovators, both home-grown and imported. Through a series of public accolades it can raise the status of innovators and thus make innovation more attractive as a possible career for people, especially young people. Honours and prizes have a role to play in that, as does the award of special visas to them, and the designation of a distinguished and tax-free status to the most talented.

Attention to the facilities available to innovators and assistance with the facilities they need will also help them to develop their ideas. Designation of special areas in which they can be encouraged to congregate will help them to strike sparks off each other and boost and speed up their development.

The ten proposals outlined in this paper should constitute a starting point, a checklist of measures that could be taken to boost the status of innovators and address and resolve some of the hurdles and difficulties they face.

What it takes to bring this about is a commitment to do so by government, combined with a determination to bring it about. The UK can be a world leader if it shows both of these qualities.

SUMMARY OF PROPOSALS

- Establish an innovations database where people can post their innovations and amend the law so this first usage protects against subsequent litigation.
- Award temporary tax-free status for original and creative innovators.
- Include a section in the Royal Honours list specifically for innovators.
- Set up prizes for innovative solutions to the major problems humanity wishes to see solved.
- Participate in setting up of several community of talent hubs in the UK.
- In addition to the Tier 1 visas, award a further 1,000 visas annually to innovators of exceptional talent.
- Establish light regulation "sandbox" areas and sectors to fledgling innovators.
- Launch programmes in schools to boost interest in innovation.
- Provide free premises and connections in designated areas for innovators.