



Administrative failure

Complex projects have been successfully brought to completion in the past. A notable example was the construction of the Crystal Palace in 1850–1 in Hyde Park, London, which housed the Great Exhibition of 1851. After becoming aware of an invitation to submit designs, the distinguished landscaper and gardener Joseph Paxton, who had previously designed glasshouses, including the world's largest (erected in 1836), took only two weeks to produce a detailed design including costings, which in July 1850 was unanimously adopted by the commission appointed to organize the Exhibition. The Palace, of modular design, used 300,000 glass panes (1.3×0.25 m) mounted on a cast iron skeleton weighing about 4000 tonnes; a team of 80 glaziers installed about 18,000 panes each week. The entire construction, by far the largest glass building in the world, then and for many years thereafter, was easily finished in time for the Exhibition's opening in the spring of 1851. More recent examples include the conference centre and residences for heads of state built in Baghdad to house the 1982 Summit of Non-Aligned Countries.¹

In our own time, on the other hand, examples of success seem to be limited to projects that are more or less isolated from their environment, such as a single very large office block or hotel. As soon as a project involves multifarious interrelated parts, failure of execution has a high probability.

Sometimes the result is a spectacular crash, such as the National Health Service's "Connecting for Health" project in the UK.² In other cases, such as the expansion of airport capacity for London, the response is administrative paralysis — after years of prevarication, the Independent Airports Commission was set up in 2012 in order to examine some of the options, namely the expansion of Heathrow and the expansion of Gatwick, and produced its final report in 2015,³ but despite a unanimous recommendation, no decision has yet been taken; other options, including a brand-new airport in the Thames estuary with an ultrafast rail link to the centre of London, were not even considered by the Commission.

In yet other cases, such as the new high-speed railway ("HS2") from London to the north of England, there seems to be hope that it is "too big to fail". The Act of Parliament authorizing its construction received Royal Assent on 23 February 2017; a great deal of preparatory work for the actual construction had already been carried out beforehand. One consequence of such a scenario is that the project becomes a bottomless pit as far as cost is concerned: the official budget for HS2 is now about 55 milliard GBP and it might well end up costing more than 90 milliard.⁴ Another

¹ S.A. Kadir, Exceptional times. *Nanotechnol. Perceptions* **11** (2015) 61–64.

² Officially known as the NHS National Programme for Information Technology. See G. Sampson, Whistleblowing for health. *J. Biol. Phys. Chem.* **12** (2012) 37–43.

³ Airport Commission (chaired by H. Davies): Final Report (July 2015).

⁴ A. Wild, *How much could HS2 end up costing taxpayers?* London: TaxPayers Alliance (2017).

consequence is that delivery of the actual objective (sometimes stated to be reducing journey times, at other times stated to be increasing passenger capacity) tends to be forgotten: Flyvbjerg has delineated four “sublimes” that drive such megaprojects:⁵ political rapture; technological excitement; economic largesse (distributed to workers, trades unions, consultants, bankers, investors, landowners, lawyers, developers and a myriad of businesses); and aesthetic appreciation (if the design is good)—a truly intoxicating environment. Needless to say, the boring details of the Government’s own appraisal and evaluation methodologies,⁶ old-fashioned in spirit as they are, are doubtless considered irrelevant with respect to the sublimity of a megaproject.

An example—the Cambridge–Milton Keynes–Oxford Corridor

In recent years it has become apparent that the geographical arc joining Britain’s most ancient, most famous and (according to the various published global rankings) best universities, with Britain’s largest and most economically dynamic new town in the middle, has the potential to be a powerhouse for the advanced technologies needed to assure Britain’s renewed ascendancy in the 21st century. The recently created National Infrastructure Commission (NIC) is a strong champion of the potential of the Corridor, and in the last two years has produced a spate of reports about it.⁷

Curiously, there is no mention in these reports of a parallel development championed by an earlier body (now disbanded), the Infrastructure Planning Commission (IPC). In 2013, it granted planning permission for the construction of a “resource recovery facility” at Rookery South, somewhat to the east of Milton Keynes, and only a few kilometres to the east of Cranfield University (formerly Cranfield Institute of Technology), Great Britain’s leading postgraduate technology institution and another jewel in the corridor. This facility is, in fact, a municipal waste incinerator so large (with a capacity exceeding half a million tonnes of waste per year) that it was deemed to be of “national significance”—it would be the largest in the UK—and, therefore, it fell to the IPC (rather than to the local authorities, which were all adamantly opposed) to consider the planning application.

This site chosen for the proposed incinerator is an abandoned clay pit, one of many between Milton Keynes and Bedford, from which clay was dug to supply the once numerous brickworks in the Vale of Marston. Today, none of these brickworks now exist, and there is an active programme to regenerate the industrial landscape; some of the abandoned clay pits had naturally filled up with water and become lakes, used for recreation (fishing, sailing and swimming) or serving as wildlife sanctuaries; and many trees are being planted to recreate a forest. The protagonists of these regeneration works have, naturally, assumed that, for this area, the heavy industrial era is past.

On the other hand, the protagonists of the incinerator presumably see many potential brownfield sites in this landscape where similar facilities could be built. For example, Millbrook Power Ltd has submitted an application for a Development Consent Order to construct and operate a gas-powered electricity generating station next to the proposed

⁵ B. Flyvbjerg, Introduction: the iron law of megaproject management. In: *The Oxford Handbook of Megaproject Management* (ed. B. Flyvbjerg), pp. 1–18. Oxford: University Press (2017).

⁶ HM Treasury, *The Green Book*. London: Stationery Office (2003, updated 2011).

⁷ Economic analysis and interim reports in 2016; planning, transport and final reports in 2017.

incinerator. The origin of the eagerness to promote incineration plants is not hard to discern. Formerly, abandoned clay pits were seen as attractive landfill sites in which municipal and other kinds of waste could be dumped. The government has recognized that the era of landfill is over, and now imposes a punitive tax—almost 100 GBP per tonne—on waste sent to landfill. This tax has given a great boost to incineration, because it is possible to incinerate waste for a great deal less than 100 GBP per tonne, while charging only a little less for doing it. Incineration plants offer, therefore, an extremely attractive return on investment.

The downside is the almost universal opposition to incineration from residents in the vicinity of any proposed facility, above all on the grounds of health hazards from combustion emissions. To be sure, in the Vale of Marston residents had become used to emissions from the brickworks—the emissions from the baking of Lower Oxford Clay have a distinctive sulfurous odour due to the humus embedded in it, but they are not particularly hazardous and, importantly, they were invariant because the source was invariant. Furthermore, the amount of fuel (coal) needed to heat the brickmaking kilns was negligible, because of the combustible humus within the clay itself, which was excavated from the surrounding clay pits by automated machinery and conveyed on belts to the adjacent brickworks; hence, the only need for transport was to convey the bricks away. Despite the large scale of the operations, the impact on the environment was proportionate to the economic benefit to the region.⁸ The same cannot be said of the proposed incinerator. It is so large that waste would have to be brought to it—by hundreds of lorries daily—from a range extending to hundreds of kilometres, a situation exacerbated by the fact that the local authorities have all refused to supply their waste to the facility. Furthermore, municipal waste is extremely heterogeneous and may contain a great variety of materials, including heavy metals.

For comparison, it should be noted that there is already one large — albeit only about half the size of the one proposed for Rookery South—incinerator in the Corridor, at Greatmoor near Calvert (also the site of a former brickworks), between Milton Keynes and Oxford. It was awarded planning permission (by Buckinghamshire County Council) in 2012; construction was completed in 2016. It incinerates waste from the county of Buckinghamshire and is situated in a very rural area. One might reasonably suppose that, with a locally approved and supplied facility, the inhabitants of the county will themselves assume responsibility to ensure that their own waste is as benign as possible (e.g., by rigorously excluding potentially hazardous materials, such as heavy metals). Given that modern civilization generates substantial quantities of waste, one can make a reasonable case for incineration but, given the possibly real and undoubtedly perceived health hazards engendered by combustion emissions, any incinerators of national significance need to be sited on a leeward coast with a dock permitting the delivery of a substantial fraction of their “fuel” by ship.

The NIC has identified “a lack of sufficient and suitable housing” as presenting “a fundamental risk to the success” of the Corridor. Recognition of the lack of housing is shared by the local authorities in Bedfordshire, whose Local Plan envisages the construction of up to 30,000 new houses in the Vale of Marston. But will anyone wish to live within a few kilometres

⁸ Including employment; the brickworks were notable in paying high wages (to hard workers) for relatively unskilled jobs. With the income at their disposal, these workers were able to ensure a good education for their children. Hence, the works were significant facilitators of social mobility.

of Britain's largest waste incinerator? Public Health England (PHE) stress that their "position that well run and regulated modern municipal waste incinerators are not a significant risk to public health remains valid".⁹ This statement would be more reassuring were it not for the fact that, in 2013, PHE commissioned Imperial College and King's College London to carry out a study of whether emissions from modern municipal waste incinerators indeed affect human health, but the study has not yet been completed.⁹

This example has been described at some length because it well illustrates the lack of coherence that seems to be typical of projects managed by administrators, ostensibly for the public good.¹⁰ Essentially, two visions for the Corridor are being pursued in parallel: one of waste incineration; and one of the knowledge-intensive activities hoped for in the original concept.¹² Given the aversion of people to live near incinerators, an aversion that grows in proportion to their size, the two visions for the Corridor are not compatible with each other. The situation is even worse than might first appear because the construction of a second large incinerator in the Corridor is likely to catalyse the construction of yet more, especially given the plethora of very similar sites around it.

The crucial question is, how did this situation arise? The public naïvely assumes that members of commissions such as the IPC and the NIC are appointed on the basis of their abilities, not least that of having both the breadth and depth of vision required to make a truly comprehensive assessment of any proposal submitted to them. It is fortunate, at least for anyone wishing to delve into the underlying intellectual strata, that it is now customary for decisions to be accompanied by extensive explanations of the reasons for them.¹¹ Depressingly, these explanations reveal an extremely pedestrian approach, which could likely have been accomplished by a not very sophisticated computer algorithm. One would hesitate to call the output of such an algorithm a manifestation of artificial intelligence; it would be more akin to that of an expert system. Generally, these reasons are derived from the conclusions of other official bodies (such as, in the present example, PHE). These conclusions are never critically assessed. Presumably it would not be in the spirit of administrative tradition to do so. Besides, given that the ruling motivation of the civil servant (whose mentality, one assumes, is shared by the members of these commissions) is for the file to be in order,¹³ it is, ostensibly, *good enough*

⁹ Personal communication from Public Health England dated 20 November 2017. The position paper referred to is entitled "The Impact on a Health of Emissions to Air from Municipal Waste Incinerators", issued in September 2009 by the Health Protection Agency (HPA), the immediate predecessor to PHE.

¹⁰ Especially in view of the fact that the incinerators do not appear to have been hitherto considered in appraising the potential of the Corridor (personal communication from Phil Graham, CEO of the National Infrastructure Commission, dated 24 October 2017). Reciprocally, there is no evidence that the Corridor ever entered the deliberations of the Infrastructure Planning Commission.¹¹

¹¹ *Rookery South Resource Recovery Facility Order. Panel's Decision and Statement of Reasons*. Bristol: Infrastructure Planning Commission (2011).

¹² The concept may be considered to be self-evident; it has previously been called the Oxford to Cambridge Arc (O2C). See D. Lock, The Cambridge–Milton Keynes–Oxford Corridor. *Town & Country Planning* (April 2017) 133–135.

¹³ "... because there is always the possibility of a public enquiry ... The civil servant wants to show that he took the right decision, gave the right advice, asked the right questions and obtained the right facts before placing the right minute before the right authority. What actually *happens* is of little consequence ..." C.N. Parkinson, *In-laws and Outlaws*, p. 134. London: John Murray (1964).

to adopt the conclusions of other official bodies. Another factor that intervenes has been pointed out by the Countess of Mar, especially applicable when scientific expertise is involved:¹⁴

The scientific community is very close-knit and because the numbers of individuals in specialties is small, they will all know one another. They are dependent upon one another for support, guidance, praise and recognition. If they wish to succeed, they must run with the prevailing ethos of their group, department or specialism. History is littered with stories of the establishment refusing to accept new scientific discoveries and of the ostracism of the discoverers ... There may be a number of reasons why scientists tend to take this stance. Their prestige, and therefore their position in the scientific hierarchy, depends upon the authority which is accorded to their work by their peers and by the wider public. They may therefore resist any challenges to their established doctrine for fear of losing face.

It may not, therefore, be necessary to postulate any malevolent desire on the part of the IPC to sabotage the O2C, or to make miserable the lives of the inhabitants of Bedford and its environs. Nor is it necessary to postulate actual incompetence, although the oversight, were it inadvertent, of such an important factor by the respective commissions surely comes close to it. It could well be that individual administrators and their committees work to the best of their abilities to deliver a result commensurate with what is expected of them in the narrow field delineated by their terms of reference. There is undoubtedly a problem with waste disposal, and central government has apparently decided to promote incineration as a matter of policy.¹⁵ The temptation then is to make the science fit the policy.¹⁶ The instance, quoted above,⁹ of PHE emphasizing that their “position that well run and regulated modern municipal waste incinerators are not a significant risk to public health remains valid” *before* studies commissioned by PHE to establish whether there are such risks have been concluded goes even further, by making the science irrelevant to policy. Could it be that this complex of events is inevitable in any administered situation?

The characteristics of *Homo administratus*

The appellation *Homo administratus* seems to have first been introduced by Austern,¹⁷ although it is generally accepted that the inventor of the concept was H.A. Simon.¹⁸ In his book, he writes that “whereas economic man maximizes—selects the best alternative from among all those available to him [so as to maximize his well-being]—his cousin, administrative man, satisfices—looks for a course of action that is satisfactory or ‘good enough’.” Simon went on to remark that “economic man deals with the ‘real world’ in all its complexity. Administrative man recognizes that the world he perceives is a drastically simplified model ... He makes his choices using a simple picture of the situation that takes into account just a few of the factors that he

¹⁴ *Lords Hansard*, col. 1556 (24 June 1997).

¹⁵ Numerous official documents issued by the UK government deal with waste; a thorough analysis of them must be left for another time and place.

¹⁶ Cf. the debate on the Second Reading of the Civil Aviation Bill. *Lords Hansard*, col. 1376 (13 June 2012).

¹⁷ H.T. Austern, Genus *Homo*—species *administratus*. *Am. Bar Assn Sec. Corporation Banking Business Law Proc.* (1950) 131.

¹⁸ H.A. Simon, *Administrative Behaviour: A Study of Decision-Making Processes in Administrative Organizations*. New York: Macmillan (1948). The work originated as the author’s doctoral dissertation.

regards as most relevant and crucial". Hence, "because he treats the world as rather empty and ignores the interrelatedness of all things (*so stupefying to thought and action*) [my emphasis], administrative man can make decisions with relatively simple rules of thumb that do not make impossible demands upon his capacity for thought".¹⁹

The crucial question for our time is, that in the present era of grand challenges for humanity,²³ is *H. administratus* up to the job? Is satisficing still *good enough*? If our world has reached a position truly as precarious as some would make it out to be,²⁴ it may well be that, although we could survive with "good enough" in the past, we can no longer do so.

The interrelatedness of things is captured in the concept of *system*. According to R.L. Ackoff,²⁵ two or more entities or activities constitute a system if:

- One can talk meaningfully of the behaviour of the whole of which they are the only parts;
- The behaviour of each part can affect the behaviour of the whole;
- The way each part behaves and the way its behaviour affects the whole depends on the behaviour of at least one other part;
- No matter how one subgroups the parts, the behaviour of each subgroup will affect the whole and depends on the behaviour of at least one other subgroup.

Most real-life scenarios encountered by *H. administratus* are systems. Stupefying their complexity may be, but ignoring it simply leads to error and, if there is limited room for manoeuvre, error is likely to lead to catastrophe. There seems to be a strong human aversion to considering *systems*; just as humans prefer to think of trends as linear rather than exponential, they prefer to ignore the interrelatedness of things. *All things* is, of course, an exaggeration: many things may very properly be ignored because they do indeed merely belong to the background noise.²⁶ Great difficulties arise when the number of significant factors is impracticably large for each one to be considered explicitly,²⁸ yet not large enough to be subsumed into statistical noise.³⁰

¹⁹ The reference to "economic man" goes back to *Homo oeconomicus* or *economicus*, a concept that is generally considered to have been introduced by J.S. Mill,^{20,21} and much criticized, especially on the grounds of its reductionist and amoral (morally low) nature, a criticism that could be at least partly answered by replacing *H. economicus* by *H. socioeconomicus*.²²

²⁰ C.H. Hinnant, The invention of *Homo economicus*: A reading of John Stuart Mill's "On the definition of political economy". *Prose Studies* **21** (1990) 51–68.

²¹ C. Rodriguez-Sickert, *Homo economicus*. In: *Handbook of Economics and Ethics* (eds J. Peil and I. van Staveren), pp. 223–229. Cheltenham: Edward Elgar (2009).

²² E.J. O'Boyle, Requiem for *Homo economicus*. *J. Markets Morality* **10** (2007) 321–337.

²³ E.g. D. Callahan, *The Five Horsemen of the Modern World*. New York: Columbia University Press (2016). The five "horsemen" are climate, food, water, disease and obesity.

²⁴ J.R. Schramski, D.K. Gattie and J.H. Brown, Human domination of the biosphere: Rapid discharge of the earth–space battery foretells the future of humankind. *Proc. Natl Acad. Sci. USA* **112** (2015) 9511–9517.

²⁵ J.J. Ramsden, *Bioinformatics* (3rd edn), p. 85. Springer: (2015).

²⁶ Noise is, however, sometimes amplified up to significance, generally unpredictably.²⁷

²⁷ R. Shaw, Strange attractors, chaotic behaviour, and information flow. *Z. Naturforsch.* **36a** (1981) 80–112.

²⁸ "Too large" may mean more than Miller's "magical" number seven.²⁹

²⁹ G.A. Miller, The magical number seven, plus or minus two: some limits on our capacity for processing information. *Psychol. Rev.* **63** (1956) 81–97.

³⁰ E.g., E.P. Wigner, Statistical properties of real symmetric matrices with many dimensions. *Proc. Canadian Math. Congr.*, Banff (1957), pp. 174–184. Wigner devoted considerable attention to this problem, and this is just one paper of several.

One approach to systems is *systems engineering*. Buede traces its origins back to at least the mid-20th century at Bell Laboratories,³¹ where, unsurprisingly, it seems to have been introduced for strongly heuristic reasons. The cybernetician, naturally enough, focuses on the challenges of controlling systems and, as Ashby has pointed out, one of those challenges is the possibly inadequate capacity of the communications channels available to receive information relevant to operation of the system.³² There is also a practical reason for this focus: a systematic approach to analysing and understanding the behaviour of systems is not possible for systems with more than two or three parts. Anything more complex requires an *ad hoc* approach, often called complexity theory.³³ While we do not doubt that this approach could lead to breakthrough solutions to some of the intractable socio-economic problems of Britain and other developed countries, such as penal reform and transport infrastructure (including HS2), *Homo administratus* will generally be bewildered and baffled by the tenets of complexity science. Expertise in applying it can generally only be attained through many years of devotion to achieving mastery.

A possible exit from the labyrinth

For isolated problems of whether to invest in a safety scheme (defined as anything that prolongs human life), a refreshingly objective and universal methodology has been devised based on the *life quality index*, defined as:³⁴

$$Q = G^{1-\varepsilon} X \quad (1)$$

where G is income per person (often taken to be GDP per capita), ε is risk aversion (and $G^{1-\varepsilon}$ is the utility of income), and X is life expectancy. Examining the effect of small changes in Q due to small changes in income G and life expectancy X , we can derive

$$\delta Q / Q = -(1 - \varepsilon)(\delta G / G) + (\delta X / X) \quad (2)$$

whence the maximum rational spend on any particular scheme occurs when $\delta Q = 0$, at which point the gain in Q through extended life expectancy is just balanced by the loss in Q through having to divert income to pay for the scheme. Thomas defines the Judgment(J)-value as

$$J = \delta \hat{G} / \delta G \quad (3)$$

where $\delta \hat{G}$ is the actual annual expenditure on the scheme and δG is defined by equation (2) when δQ equals zero; a scheme is worth implementing if $J < 1$. Some case studies are provided by Thomas et al.³⁵ It should be apparent that the J-value approach is superior to conventional cost–benefit analysis because no explicit assumptions have to be made about the monetary value of a prevented fatality (VPF).

³¹ D.M. Buede, *The Engineering Design of Systems* (2nd edn), pp. 6–7. Hoboken, New Jersey: Wiley (2009).

³² W.R. Ashby, *An Introduction to Cybernetics*, especially “The law of requisite variety” (pp. 206 ff.). London: Chapman & Hall/University Paperbacks (1964).

³³ P.M. Allen and M. Strathern, Complexity, stability and crises. In: *Complexity and Security* (eds J.J. Ramsden and P.J. Kervalishvili), pp. 71–92. Amsterdam: IOS Press (2008).

³⁴ P. Thomas, Does health spending need to outpace GDP per head? *Nanotechnol. Perceptions* **13** (2017) 17–30.

³⁵ P.J. Thomas, D.W. Stupples and M.A. Alghaffar, The extent of regulatory consensus on health and safety expenditure. Part 2: Applying the J-value technique to case studies across industries. *Trans. IChemE, Part B, Process Safety Environ. Protection* **84** (B5) (2006) 337–343.

If every aspect of a proposed scheme could be expressed in terms of life expectancy and cost, appraisal and evaluation would be considerably simpler than using conventional cost–benefit methods.³⁶ The J-value approach should be particularly attractive to *H. administratus* because, unlike conventional single-objective optimization, it does not require a function to be maximized or minimized: as long as $J = 1$ can be achieved, the corresponding solution is *good enough* (i.e., satisfices).³⁷

Many aspects of infrastructure projects such as HS2 cannot, however, be expressed in terms of life expectancy. But, although the conventional methods are currently used to appraise such projects,⁶ these methods are mired in problems. Most prominently, they rely on many assumptions with weak or no justification, giving rise to endless controversy. Such projects look like multi-objective optimization (MOO) problems. For HS2, one wishes to maximize passenger capacity and minimize journey time, cost, compulsory land purchase, environmental impact and so forth. They are conflicting objectives and there will likely be a set of optimal trade-offs, called the Pareto-optimal set.³⁹

Many such projects are undertaken by the State, in which case they encompass more or less nebulous social benefits or disbenefits as well as the more concrete objectives. MOO methods do not, however, appear to have been seriously considered for designing and deciding upon such projects. When a project is undertaken by private enterprise, there is usually just one criterion to be maximized, namely the return on investment. But when the project is discussed by state organs (such as the Planning Inspectorate of the National Infrastructure Directorate), in order to decide whether to permit the plan, social, environmental and other aspects are taken into account. Furthermore, a state-sponsored project may be initiated on political grounds and alternatives are not usually considered. For example, it is an immutable given that HS2 is a railway. Other modes of conveying passengers are not considered as alternatives. And, likewise, when a certain sum has been allocated to the project, other possible ways of spending that money in the national interest are not considered. Although most of the problems susceptible to administrative failure involve multiple objectives that need to be optimized simultaneously, MOO techniques have not been adopted by *H. administratus*. Despite the intensive academic activity around such techniques, they are still not ripe for application as a general tool; each problem requires *ad hoc* adaptation, and contemplation of the work required would doubtless be as stupefying to thought and action as contemplation of the original problem in all the richness of its interrelatedness.

³⁶ E.J. Mishan, *Cost–Benefit Analysis*. London: George Allen & Unwin (1972).

³⁷ Seeking the optimal J-value could be viewed as a kind of dual-objective optimization: life expectancy should be maximized and expenditure should be minimized, and the J-value reflects a trade-off between the two. Thomas et al.³⁸ have pointed out that there are in fact two trade-offs involved in J-value analysis: the one just mentioned rests on a prior trade between the balance of leisure and working time versus income.

³⁸ P.J. Thomas, J.O. Kearns and R.D. Jones, The trade-offs embodied in J-value safety analysis. *Process Safety Environ. Protection* **88** (2010) 147–167.

³⁹ Evolutionary (or genetic) algorithms,⁴⁰ and even better interactive evolutionary algorithms,⁴¹ are good for finding Pareto-optimal solutions.

⁴⁰ E. Zitzler, Evolutionary algorithms for multiobjective optimization. In: *Evolutionary Methods for Design, Optimization and Control* (eds K. Giannakoglou et al.), pp. 19–26. Barcelona: CIMNE (2002).

⁴¹ A.M. Brintrup, H. Takagi, A. Tiwari and J.J. Ramsden, Evaluation of sequential, multi-objective, and

A need for morality?

It is now in vogue to deploy artificial intelligence, and the suggestion that evolutionary or genetic algorithms might be well adapted to making administrative decisions indicates a possibly fruitful direction. Nevertheless, although it hints that *H. administratus* could be efficiently replaced by a computer, one should be mindful of the limitations of this approach. The much extolled machine-learning system for finance transactions developed by Ergon, which functions much better than the traditional rule-based systems for detecting possibly fraudulent transactions, nevertheless still merely recognizes abnormal patterns. As the former CEO of Ergon has remarked, the software does not deal with moral decisions.⁴²

Is that, then, the bottom line—the ability to make the needed moral decisions is the *raison d'être* of *H. administratus*? Certainly there is a need. Even if MOO is deployed, there is very rarely one dominant solution, but usually several on the Pareto front, and to choose one is likely to be a matter of morals. But when one reads and hears what prominent and, therefore, presumably exemplary instantiations, such as Alison Saunders, the Director of Public Prosecutions, or Dame Deirdre Hutton, Chair of the Civil Aviation Authority, or Sir James Bevan, Chief Executive of the Environment Agency (all in the UK), write and say on matters that, ultimately, amount to the selection of one from several Pareto-optimal possibilities, one looks in vain for indications of a moral sense. Instead one notices platitudes, extreme “political correctness”, and possibly even mendacity in the effort to avoid any kind of admission that there had been a mistake. There is a kind of regulator for these exemplars, namely the Committee on Standards in Public Life, chaired by Lord Bew, but it falls into the same trap, and *quis custodiet ipsos custodes*?

These people have a veritable terror of making a mistake. This is understandable—to admit to having done so would be a public admission of incompetence and, *a fortiori*, unfitness for office, upon which resignation should promptly follow. This, it seems, is a very hard step to take for *H. administratus*. It is futile to suggest that their training should develop the strength of character to enable that step to be taken with decisive resolve—were they to have that ability, the mistake would probably not have been made. Instead, one can observe that deceit and dishonesty are considered to be lesser evils than incompetence. Perhaps this can be understood by realizing that we are dealing with a coterie of *H. administratus*. If one is revealed to be incompetent, those who appointed him or her are also guilty of incompetence. Hence, mastery of the cover-up emerges as the most important skill of *H. administratus*.⁴³

Perhaps the deficiency—that is, the grading of deceit above incompetence on a scale of merit—arises through a disconnexion between responsibility *to* and responsibility *for*—a distinction perceptively made by Boulding,⁴⁵ and alternatively called *external* and *internal* responsibility,

parallel interactive genetic algorithms for multi-objective optimization problems. *J. Biol. Phys. Chem.* **6** (2006) 137–146.

⁴² P. Burkhalter (now President of the Board of Directors of Ergon Informatik AG, Zürich), interview in *ETH Globe* (2/2017), p. 16.

⁴³ A striking and well-documented example from the academic world concerns *The Disgraceful Lift*.⁴⁴

⁴⁴ A.W.F. Edwards, Notes from Cambridge. *Oxford Magazine*, Eighth Week, Michael Term, 2009, pp. 15–16; Second Week, Hilary Term, 2010, pp. 9–10; Eighth Week, Hilary Term, 2010, pp. 13–14; Noughth Week, Trinity Term, 2010, p. 12; Fifth Week, Trinity Term, 2010, pp. 20–21.

⁴⁵ K.E. Boulding, The principle of personal responsibility. *Rev. Social Economy* **12** (1954) 1–8.

respectively. Boulding points out the desirability of being responsible to those whom we are responsible for. If so, and in any case, one still needs to look further for a more deeply underlying cause.

En passant, one might recall Louis XI's maxim, "Qui ne sait dissimuler ne sait pas régner", which is sometimes used in an attempt to justify deceit in the exercise of power. It needs, however, little thought to realize that what might have been appropriate for an absolute monarch is highly inappropriate for a minister in a modern government, and much less for a public servant.

The world's greatest meritocracy?

This concept originates in a speech last year by the UK's Prime Minister.⁴⁶ As usual with political pronouncements, it reflects the *status quo* rather than indicating a new departure. "Meritocracy" is indeed a feature of contemporary British society. What is it exactly and how is it achieved? The dictionary definition of "meritocracy" is "a society governed by people selected according to merit". But, evidently, merit is multifarious yet, in any practicable sense, selection for this purpose—that is, including holders of high public office—must be enacted according to some rather formal, stilted process, such as evaluating the responses to stereotyped questions and, above all, satisfying a selection board whose membership has been determined by a similar process. Multifariousness is "stupefying to thought and action" and, hence, real merit is reduced by *H. administratus* to a shadow of what it really means.⁴⁷ The result is that "merit" simply means conforming to mainstream behaviour. Hence the observed absence of any spark of originality and true leadership; hence, also, the paralysing fear of making a mistake. In other words, we end up with a mediocracy rather than a meritocracy. The tragedy is that once a mediocracy is established, it becomes very difficult to transform it—especially if it is embedded in a culture of deceit—which is a, fundamentally, what a "cover-up" is. Furthermore, it is highly unlikely that those selected "on merit" have made the profound study of morality needed to make good (that is, beneficial, nay elevating, to humanity) choices from the options on the Pareto front.

It is now in vogue to promote the use of artificial intelligence and robots to achieve a great leap forward in productivity. Given that much manufacturing is already automated, *H. administratus* is ripe for replacement by computer algorithms that will unerringly present the Pareto-optimal options for any problem.⁴⁹ To make the final choice we need not the products of "merit-based" selection, but free minds honed by generations of robust independence—and "in favour with God and man".⁵⁰

J.J. RAMSDEN

⁴⁶ T. May, Britain, the great meritocracy. Speech delivered on 9 September 2016.

⁴⁷ An analogy is the determination of the degree of "excellence" of university research departments by a process such as the UK Research Excellence Framework (REF).⁴⁸

⁴⁸ D. Gillies, Lessons from the history and philosophy of science for research assessment systems. *J. Biol. Phys. Chem.* **10** (2010) 158–164.

⁴⁹ There will be collateral benefits from this replacement, not least an enormous reduction in the machinery of Government (and the corresponding tax burden), so much of which is constituted by members of *H. administratus*.

⁵⁰ Luke **2**, 52.