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Power and Perception in the Scandal in Academia

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ABSTRACT

The Scandal in Academia is a large-scale fictional ethical case study of around 17,000 words and fourteen separate revelations. They are delivered as newspaper extracts from a newspaper reporting on an ongoing crisis at a Scottish educational institution. The scandal case study as presented in its original form comes with only limited commentary on the ethical issues raised, concentrating instead on providing the scenario in isolation. This paper is a companion piece to that case study, discussing the third and fourth revelations with reference to the issues raised, the mainstream media, and the formal academic literature. The discussion presented here is not intended to be exhaustive or definitive. It is instead indicative of an approach that could be taken within a formal educational context, and illustrative of the kind of discussions that ideally emerge from the effective use of the material.

Categories and Subject Descriptors

K.7.4 [Professional Ethics]: Codes of ethics; Codes of good practice; Ethical dilemmas.

General Terms

Security; Human Factors; Legal Aspects

Keywords

Ethics; Morality; Professional Issues; Human Factors; Killer Robot; Academia; Case Study

1. INTRODUCTION

The Scandal in Academia [11] is an extended case study intended for use as a teaching and discussion aid for educational practitioners looking to introduce elements of computer ethics into their curricula. Computer ethics instruction is an important element of gaining accreditation for many professional organisations [5], and offers an opportunity to discuss important social trends. Inspired by Epstein's seminal Case of the Killer Robot [8][9][10], the Scandal in Academia is a full-cycle scenario involving many individuals examined via an extended case-study which touches upon the complexity and interrelations of modern computer ethics. However, while it has been trialed and evaluated as a teaching tool by the authors [13] its utility as a general resource is limited without the academic context that supports deeper investigation of the material. It is to address this issue that the authors offer a commentary on the scandal, with a focus on the third and fourth newspaper items presented within. This paper then should be considered a companion to [11] and cannot be fully understood without reference to the original.

In these articles, we are introduced to some of the context of Professor Blackbriar's research work, and the likely financial consequences if the allegations levied against him are true. We discover that his research has informed the development of several important collaborations, and that there have been millions of pounds invested into work that directly draws from the conclusions of his research. We also hear from the postgraduate students who were suspended from the university, and the tales they tell of academic serfdom and the power of social contexts. They discuss the importance of playing politics when dealing with a respected colleague and the impact that preferment from the same may have on their future careers.

In these articles we encounter a large number of important issues: The issue of corporate influence in academia, and the impact of academia on industry; the risks of speculative 'casino' investment on the basis of uncorroborated research; the mental biases that impact on good decision making; the management of workplace relations and the power differentials such relations imply; the role of the postgraduate student in modern academic structures; closed data sets and the publication imperative; workplace bullying; and issues of the accessibility of information resources.

As with the previous analysis we have published regarding the first two articles of the scandal we make no claim that this is the only interpretation that can be placed on the material. Readers are invited, indeed – encouraged, to disagree with any and all of the commentary we provide. This is not intended to be a definitive analysis, but an illustrative one. As with the original paper, we also provide the disclaimer that while this discussion is informed by our real life experiences, none of the institutions where we have worked are directly referenced.

2. ACADEMIC AND CORPORATE

Within the article 'Multimillion Pound Consequences for Research Fiddle' [11, p25], the Scandal in Academia discusses the relationship between the University of Dungen and its industrial partners in the North Sea. We find out that there is a great, and growing, worry that the North Sea Algorithmic Exploration (NSAE) project may have based much of its future planning on research data that has become suspect. There is talk of lawsuits being levelled at everyone involved. It's an awkward situation and one with potential professional and personal consequences for a large number of partners.

The tensions between industrial and educational research policies and philosophies are a long standing, on-going issue. Ethical standards, levels of confidence, and requirements for corroboration all vary enormously within academic disciplines; within research practitioners **within** disciplines; and within the interfaces between university departments and faculties.

Expectation of authorship on papers may not be shared by all and the level of assumed contribution before co-authorship is conceded may create tensions. Within academia itself, collaboration can be politically vexatious. When industrial collaborations are incorporated into this, the problems magnify because not only do large industrial partners suffer from the same issues, they also approach the matter from an often completely different perspective. Thus, in addition to internecine conflict within organisations there is an external conflict at the interfaces between groups. No matter the will to collaborate or the mutual respect that may be found on both sides, a lack of common ground can create difficulties, and these in turn can lead to violations of cultural and professional norms when the work is to be published. Issues of commercial sensitivity, for example, are anathema to principles of free academic disclosure.

Within academia, the differentiation between ‘research’ and ‘teaching’ is usually well observed – as a matter of course, academic research is not conducted directly on students unless it is educational in nature. Research projects are clearly demarcated, at least in theory, and have formal start and termination points. The funding for academic research is most often provided by external bodies and this places an emphasis on clearly delimiting activities for the purposes of economic auditing and accountability. University governing bodies require strict adherence to ethical codes of conduct, and research which involves working with real people at any time will be scrutinised for its conformance with overall university codes of practices. It is usually possible then, within a university, to point at a body of work and say ‘This forms part of this distinct research project, which was led by this individual, and funded by this external body in this particular way’

Within industry, these distinctions can become blurred – there is a fine line between ‘improving a process’ and ‘testing a hypothesis’. Consider for example the widely publicized case of Facebook’s ‘experiments’ over the emotional impact of news feeds on their users¹. Much heat was generated as a result of Facebook, in collaboration with university academics, publishing some conclusions they had drawn from what was essentially a large scale experiment on human subjects through modification of the Facebook news feed. Commentators variously described the research as unethical, noble, deceptive or as a violation of privacy. Leaving aside the efficacy or value of the research itself [26], which is disputed - what is most clear about this incident is the differing expectation of what research actually involves within an industrial context. Within academia, ethics forms would be submitted, funding obtained, proposals scrutinised before being approved, and the results would be submitted to a journal for full peer review, followed by an affirmation that sector norms for ethical conduct had been observed. Within Facebook, and other large scale industry organisations, it is a common part of day to day practice to engage in repeated and regular A/B testing on cohorts to improve, for some given value, the interaction

experience for all. That testing may involve adjusting the load order of dynamic web elements, changing the algorithms used to retrieve information, or altering the precedence given to information as it is presented. The agility that industrial organisations can muster for this in many ways determines their ability to keep pace with their competitors, especially in fast moving fields such as computing. For most corporations the results of such testing are usually kept internal and employees are bound by their existing employment contracts and codes of conduct. The tension arises when this research transgresses this ‘invisible’ boundary and interfaces with both academia and the public. The Facebook research was published in the Proceedings of the National Academy of Science of the United States of America (PNAS) as a collaboration between Facebook, the University of California and Cornell University. The PNAS has as one of their submission criteria a requirement that research is conducted according to the Declaration of Helsinki² – this is where the offence lies, because the research does not meet that criteria. Had the research never been published however, there would have likely been no outcry. Within large organisations, such ‘research’ is largely just a part and parcel of an ongoing adjustment and refactoring of internal systems.

For academics, access to large and restricted data sets can be seductive – the original paper [26] had a sample size of just over 689,000 users. It simply would not be possible for an academic partner, acting in isolation, to recruit so many people to a trial. For industrial partners, the credibility of a respected academic collaborator can burnish up results, as well as ensure that they are presented, analysed and contextualised according to the rigorous expectations of primary research publications. Drafting research for academic outlets is a specialised skill, and requires familiarity with the linguistic conventions not just of the discipline, but the editorial policies of the journal or conference and the wider sector beyond.

Consent for participation in such internal research is usually permitted as part of a blanket acceptance of terms and conditions on the part of the users. In the case of the Facebook study, there is some evidence to suggest that consent for research was added to the user agreement after the research had been conducted³ but in most cases a blanket exemption is in place that covers the service provider for a wide range of activities. This in itself is a shallow defense, given how few people read the terms and conditions and how explicitly impenetrable they are often made to be [28]. Core to the objection that many have had to the research is that while it may be consent in its simplest, most shallow form, it doesn’t meet the criteria for **informed consent** which has gradually become the academic consensus since the Second World War [40]. Industrial bodies, such as Facebook, are rarely bound by formal codes of conduct or even institutional review boards (IRBs) that sanction studies, even those involving human participants. Universities, on the other hand, have a more institutionally

¹ For example:
<http://www.theguardian.com/technology/2014/jun/30/facebook-emotion-study-breached-ethical-guidelines-researchers-say>,
<http://www.forbes.com/sites/kashmirhill/2014/06/28/facebook-manipulated-689003-users-emotions-for-science/>, and
http://www.nytimes.com/2014/06/30/technology/facebook-tinkers-with-users-emotions-in-news-feed-experiment-stirring-outcry.html?_r=0

² See <https://www.sciencebasedmedicine.org/did-facebook-and-pnas-violate-human-research-protections-in-an-unethical-experiment/> and <http://codingconduct.tumblr.com/post/90242838320/frame-clashes-or-why-the-facebook-emotion>

³ <http://www.forbes.com/sites/kashmirhill/2014/06/30/facebook-only-got-permission-to-do-research-on-users-after-emotion-manipulation-study/>

rigorous infrastructure for reviewing the ethical implications of research.

However, the tensions of corporate influence in academia extend beyond simply differences in expectations of ethical consent. One of the primary ways in which industry partners with academia is through the route of funding or sponsorship. We discussed the impact of commercial interests in our first paper on the Scandal [11, p47], but we also have to consider the powerful influences that corporate money can have on academic freedom. While there are real world limits on just how far academic freedom stretches, it is in general considered to be a principle worth defending. Support for the principle though is tempered. There exist tensions – for example, advocates of Intelligent Design as a scientific principle have sometimes claimed to find it difficult to obtain advancement in their institutions. It is hard though to unpick in such cases the ratio of academic suppression as compared to the self-correcting nature of the scientific process. Within the United Kingdom, the Education Reform Act of 1988 codified academic freedom as a guiding principle for higher education institutes. While the right is under legal protection that does not prevent industrial partners from leveraging the power differential implied by funding to suppress results or encourage undue prominence being given to minority views that coincide with their economic interests. Corporate interests can result in delays on publication, or harmful secrecy clauses on results obtained [27]. They can result in papers or reports with written conclusions that are contrary to an analysis of the data, because it is the introduction and conclusion to which many popular press outlets will refer. They can result in academics acting in part as the Public Relations arm for corporate influence within specialist publications. Consider for example the role played by Stossel in [6]. The support of an academic, or their institutional brand, can bolster the reputation of an organisation. Such bolstering may be worth the cost if it can be leveraged effectively.

Fairly or unfairly, the source of funding for research has become as important an element of full disclosure as data-sets and methods. There is an element of backlash against this expectation, alleging it has become a tool through which vested interests can undermine unpopular research and that this in turn hinders progress [36]. Stossel is quoted in [22] as saying the following:

Disclosure policies are no longer a way to honour the sponsor of a study, but rather they have been turned into a type of confession. In practise, disclosures are being used by the media to embarrass people. We have gone from bad to worse. We have immense regulatory issues and massive confessions where we disclose our relationships to industry and those are used to initiate a variety of inhibitions of freedom of speech, freedom of association, and rewards for excellence.

However, a critic may argue only that which is commonly considered to be shameful can be used to embarrass, and if a relationship with a funder is shameful then it is symptomatic of the often incestuous relationship between industry and academia. The now infamous Paxil Study 329 [23] [41] liberally selected from those data points most likely to show a positive result of the medication under review. In this respect, the principal investigator for this is very similar to our own Professor Blackbriar who has adjusted the data of his own research in part

to assuage the powerful corporate interests who have been funding his work.

3. MENTAL BIASES

In our case study though we are not talking about how corporate sponsorship may violate the principles of academic research, but instead about how academic research may undermine the work of industry. Here we have an experimental algorithm which has been incorporated into a large scale industrial project, and it's not giving the results people are hoping for. A lot is riding on the success of the project, and that success is highly tied up in the question of whether or not the Blackbriar Algorithm works at all.

It's easy for an external party to look at some situations that occur and think 'well, the real solution is to not get into that situation in the first place'. This is superficially compelling, but ignores the vast array of factors that result in bad decisions being made. In teaching computer ethics, the first task we have as educators is to disabuse students of the idea that it's all 'just common sense' [13]. We must counter the idea that we are immune to the psychological and social factors that influence others. In fact, the belief that we are somehow calmer and more rational than others is in itself a demonstration of the cognitive biases under which our minds labour. This particular bias is called **illusory superiority** [19]. Most of us believe, regardless of the evidence to the contrary, that we are above average – that what impacts on others will not impact on us quite so intensely.

The human mind is a remarkable tool, honed by evolution to a fine point. However, it is also a product of our historical context, and as such it contains not only the cognitive architecture that we need for human society as it is now, but as it was hundreds of thousands of years ago. The human subconscious is also a tremendous filter, protecting our conscious mind from the vast amount of information our senses pull in on a second by second basis. As part of that apparatus, there is a need for our mind to balance cognitive overload. Often, this is done through cognitive shortcuts that allow us to quickly arrive at a judgement that is 'good enough' for most purposes. These lead to cognitive biases which systematically influence the way in which we think about the world. The collection of these identified biases is considerable and many of them are relevant to the issue of why people make bad decisions.

Perhaps most germane to this example is the **Sunk Cost effect**, or what is often known as the **Concorde Fallacy** [4]. When the Concorde was being built, the British and French governments continued development long beyond the point where there was a reasonable expectation of economic return on the project [2]. So much time, effort and political capital had been invested in the project that it was inconceivable to simply stop the work. However, economic theory argues that when deciding on a future investment, sunk costs should be entirely discounted. They have been spent regardless of the success or failure of the project and thus should not feature into future decision-making. This is a difficult lesson to internalise for most people, and this difficulty leads to what is colloquially known as 'throwing good money after bad'. After investing so much money into Blackbriar and his work, it may have been the case that his funding partners simply decided they had invested too much already to abandon the project.

However, this is predicated on an assumed understanding on the part of the research partners – it presumes that they understood the algorithm as it was presented was a bad investment.

However, we have other biases that stop us being able to make that rational assessment of complex sets of information. Consider for example the **confirmation bias** – the cognitive shortcut that leads us to preferentially seek out (or consciously notice) information that supports our existing beliefs [25]. If we believe that the algorithm works, we're more likely to 'weight' evidence that it works in our mind – even if that evidence is not as strong or as common as evidence that it doesn't. Likewise, the **hindsight bias** [3] which leads us to a kind of mental revisionism in which we believe we had assumed an event was going to happen the way it did all along even if we had no way of predicting. The hindsight bias can lead to memory distortions in which we not only believed we were right, but remember actively predicting that the result would occur.

There are a lot of funding partners in the NSAE, so we also have to consider socially contextual cognitive biases, such as the **bandwagon effect** – that the more we encounter people who believe a thing; the more likely we are to believe that thing ourselves regardless of the underlying evidence. That in turn leads to a **sampling bias** where we are mistakenly led to believe that those around us are representative of a group at large, even though they may be an unusually skewed cluster. This then can lead to **groupthink** [20], in which presumed consensus acts as a barrier to exploration of risks, pitfalls and counter arguments. Or consider the **Status Quo bias** [24], where we are more likely to accept a situation as it is presented rather than attempt to change it. The latter bias has been manipulated to startling effect in 'opt-out' versus 'opt-in' initiatives. If participants are asked to opt-in to an organ donor register, donor rates are about 40%. If people are asked to opt-out, donor rates rise to around 80% [21] because most people simply will not tick the 'opt-out' box. The power of this effect has been noticed, with many websites requiring that you opt-out of receiving their email notifications upon registration, as opposed to opting in.

Even leaving aside these cognitive biases, we can't discount the simple placement or emphasis of information and the role it plays in prompting a decision. Consider for example the two related concepts of **anchoring** [39] and **framing** [37]. Anchoring refers to the technique of setting early expectations in a comparison, and framing refers to the selective placement or information as it is presented. A good demonstration of anchoring can be found in the donation pages of sites such as Wikipedia or the purchase page Humble Bundle⁴ where you are asked to choose a sum to provide, or allowed to select from a series of radio buttons that have pre-determined amounts. This is shown in figure 1.



Figure 1 - Anchoring within the Humble Bundle

Presenting relatively large default sums anchors our value judgement – when we decide to pay a lesser sum, it is a larger lesser sum than it would have been if there were no anchoring offered at all. In this way, we are skewed towards paying more than we otherwise may have.

Framing works by offering multiple options at once, with one being contextually much better than the others. [1] discusses one

such example of this in relation to the subscription options for the Economist:

I read these offers one at a time. The first offer-the Internet subscription for \$59 seemed reasonable. The second option-the \$125 print subscription-seemed a bit expensive, but still reasonable.

But then I read the third option: a print and Internet subscription for \$125. I read it twice before my eye ran back to the previous options. Who would want to buy the print option alone, I wondered, when both the Internet and the print subscriptions were offered for the same price? Now, the print- only option may have been a typographical error, but I suspect that the clever people at the Economist's London offices (and they are clever-and quite mischievous in a British sort of way) were actually manipulating me. I am pretty certain that they wanted me to skip the Internet- only option (which they assumed would be my choice, since I was reading the advertisement on the Web) and jump to the more expensive option: Internet and print.

In this case, the option is framed in such a way as to skew the choices people make – they're more likely to go for Digital + Print even if they just want a Digital copy, purely because that deal seems like so much better than the Print option alone. With the Print+Digital option, it appears as if digital access is a free bonus of having purchased print access. Such techniques are used often in retail to skew people towards a 'mid-range' option when they may have otherwise have purchased a cheap option. Often this kind of 'nudging' is entirely incidental, but it can be used to subtly, and powerfully, change the way in which our minds analyse the information in front of us. It is easy to conceive of a meeting in which an academic pitches four projects – one extremely expensive, one merely very expensive, one cheap, and one that is a more middling cost. If presented each individually, the cost may have been prohibitive for all but the cheapest option. If presented collectively, or framed, the moderate option becomes more attractive because it is seen in comparison to two expensive options, rather than assessed on its own merits.

There are many more of these biases that are relevant to the issue of sensible decision making – there's the **Gambler's Fallacy** [38] or the **IKEA effect** [33], or the **Optimism Bias** [36], or the **Experimenter's Bias** [34] and many more than we can hope to even touch on in this short section. However, the key point here is not that any of these biases were in play, but that they could very easily **have been** in play. Any one of them would have impacted on cool, rational decision making – often without the people involved having any idea that there was anything wrong with their thought processes. We often assume that our decisions are the result of the calm, sober application of rational analysis. To assume such is to ignore the gaping holes in our minds through which conscious or unconscious manipulation can enter our thinking. It is easy to judge based on hindsight but in order to understand what may happen in the future, we need to be mindful of the limitations of our mental architecture. We need to be aware that, if placed in a situation ourselves, we are likely to be subject to the same powerful cognitive forces.

⁴ <https://www.humblebundle.com/>

4. WORKPLACE RELATIONS

Within these two Scandal in Academia items, we also see the first stirrings of the workplace issues that will become important themes. Our postgraduate students, Sharon and James have been suspended for their presumed roles in the alleged academic misconduct, and have told their story to the newspaper in an attempt to get their views heard. What they tell is a tale of academic serfdom and the hope of future nepotistic preferment because of their relationship with Blackbriar. What they also do is open our eyes to the way in which modern academia sometimes utilises transient resources such as postgraduate and postdoctoral researchers.

There is a growing body of what has become known as ‘quit-lit’⁵ emerging in the semi-popular educational press. This term broadly encompasses a range of revelatory blog posts, education periodical editorials, and social media updates. As a general theme, these revelations cover postgraduate students, postdoctoral researchers, and even full time faculty members who have been driven to publicly quit their positions as a result of administrative pressures, job insecurity, or career ennui. The stories are not just from those who have failed to find success within modern academic institutional structures, but also those who have found such success and discarded it regardless. Full quantitative figures on the trend are hard to uncover, as unpicking these incidents from larger employment trends is a complex task. It is hard to say whether the trend to publish ‘I’m leaving academia’ literature reflects an increase in dissatisfaction or simply a decrease in discretion. However, within the body of quit-lit we see many views of a dehumanising system of employment and promotion, and a research process which prizes funding and quantification over longer term scholarship. Obtaining a permanent position as an academic is difficult. There are some thirty or forty PhD graduates being produced for every single academic vacancy, with positions at high profile institutions sometimes receiving hundreds of applications per job⁶. Under such circumstances it is only natural that those with transient working contracts will look for whatever advantage they can find in their collaborations. Getting noticed as a new researcher too is challenging – with little track record of individual accomplishment, grant funding is difficult to obtain and temporary research contracts usually relegate a researcher to second or third authorship. Attaching one’s name to a prominent researcher in the field can be a useful way to gain some notice. A certain amount of professional discomfiture might be expected and accepted as the cost of doing business. A kind of ‘competent by association’ impression can be generated by your name being attached, via co-authorship, to the prominent publications of an academic luminary.

The growing trend of quantification of research exacerbates this issue – assessment exercises such as the Research Excellence Framework place considerable weight on algorithmic analyses of research output, such as citation counts and H-Index [29]. Automated tools such as Google Scholar index scholarly publications across much of the internet and produce crawled citation lists. These are an easily checked resource for both researchers and those looking to employ them. However,

anything quantifiable can almost always also be gamed, and the H-Index is no exception. Those looking to inflate their H-Index can easily do so if they are able to publish regularly – self citations are often excluded in more comprehensive analyses, but not in most of the automatically generated values. However, that kind of engineered ‘citation inflation’ requires a regular stream of published papers, and that in turn requires a regular stream of insight generated via new work. Access to a colleague with research funding can facilitate this, but usually only for short term contracts of two or so years. It’s exceedingly difficult to plan a life around institutional and structural career instability. The emotional toll of this system is often not discussed, but includes systemic depression, mental health issues and increased rates of illness due to stress. Researchers report difficulties in balancing work and family life, the gradual erosion of vacation time, and long, unsustainable working hours.

Talking about these issues is difficult for many – the system as it currently stands is not geared up to seriously consider the emotional toll of short-termism in research planning. A full solution to the problem would be expensive, and require root and branch reform of academic promotion structures, the supply and demand of postgraduate researchers, and the way in which research funding is competitively allocated. It is easier in many cases to simply ignore the problem and hope that the professional consequences of disclosure temper revelatory desires. That is not to say the problem is entirely unacknowledged – welcome steps are now being taken to openly discuss these issues, but for those already suffering the emotional toll it is often too little and too late.

Discussing these issues from a position of career instability is risky and requires a considerable degree of personal bravery – not only to admit that you need help, but also to ‘speak truth to power’. Power differentials are a common feature of the workplace environment, and those in positions of authority may, or may not, be aware of the suppression effect those differentials may have on those around them. It is clear from our case study that Blackbriar is not reticent in wielding the differential in his favour, but for many employers they may simply be so distant from the day to day impact of the issue that they are unaware that it is choking off dissenting voices. Career stability and professional security are moderators of this problem, but neither of those traits can accurately be ascribed to those on a succession of research contracts. This is especially true when every extension to the contract is dependent on the will and desire for colleagues to seek additional funding for later projects. As with many things, some progress has been made in this area to improve, at least legally, the tenuous position of those who are on successive fixed-term contracts. However, institutions have been as quick to respond through the use of punctuated contracts or zero-hours contracts to ensure that their legal obligation does not stifle their organisational flexibility. As a consequence, postgrads and postdocs can come to seem like interchangeable resources.

The desire to distinguish oneself can lead both to working long beyond what could be considered reasonable hours but also for the **willingness** to work those unreasonable hours to be seen as a **pre-requisite deliverable** of scholarly dedication. After all, if I can choose between two otherwise equal research staff members where the difference is their willingness to work weekends, why wouldn’t I pick the one that ‘goes the extra mile’? With that in mind, how willing might a transient researcher be to rock the boat

⁵ <https://chroniclevitae.com/news/216-why-so-many-academics-quit-and-tell>

⁶ <http://www.timeshighereducation.co.uk/news/hundreds-of-phd-students-chasing-every-early-career-post/2016799.article>

by kicking up a fuss about the quality of the analysis being performed on data sets?

Principal investigators too are under enormous institutional pressures, and one shouldn't underplay how valuable those 'free' hours can be to a project. Similarly, when it comes to providing full recognition of contribution, the dynamic can lead to a kind of **Matthew effect** [30]. Those with the most power and professional reputation tend to accumulate even more power and reputation because of their ability to shut-out or over-ride the concerns of transient researchers. It is not uncommon, for example, for the principal investigators on research projects to insist that they are afforded first author status on all papers generated as a result of their project. This may be required even if their actual contribution was minimal. Most journals and academic outlets have strict rules on how authorship is to be decided but such policies and procedures must always work on the honour system.

This set of interrelated issues make seeking employment in academia a high-stress game of obtaining research funding, rolled into the dominant paradigm of 'publish or perish', within an environment where demand is vastly oversupplied and career stability may be as limited as 'the next three years'. This has created an environment where academia is often no longer considered a viable and attractive career destination, with a resultant brain-drain to the private sector. Some in America argue persuasively that the position of university professor is no longer considered to be a middle class profession⁷. The American academic system in particular is full of examples of adjunct professors living on food stamps and picking up a few classes per semester to scratch out a subsistence wage⁸. While it is true that many of these adjuncts are working in fields where employment prospects across the board are weaker, it doesn't change the fact that those considered expert enough to teach and research are not always considered worthy enough to offer legitimate career stability. The effect is to create an ongoing, inexorable attrition where your willingness to play against a stacked deck is as important as your ability to do the job itself. There is little economic incentive for a principal investigator, or even an institution, to address this head-on. The cost associated with exacerbating a condition of long-term burn-out won't be felt within the limited constraints of a single research contract. By the time the worst of the mental toll will be felt, it's highly likely it'll be someone else's problem entirely.

5. Sociological and Physical Accessibility

The final issue to be discussed in this paper is that of accessibility – the degree to which technology, facilities and information can be used by people with extraordinary requirements. Generally, this can be broken down into two categories of accessibility – **sociological accessibility**, and **physical accessibility**. These

terms apply equally to all kinds of modern resources, from government services to computer programs to vehicles. Within this paper, we will primarily refer to the accessibility of computer programs and research data sets, as it is that aspect of the concept that is more relevant to our purposes.

Whether due to cultural constraints, perceived stigma, or general disinterest it is often the case that certain technological and societal trends are not accorded equal value within different groupings. The degree to which factors internal to these technologies and trends permit generally equal participation defines its sociological accessibility. The way in which certain things are presented or contextualised however can greatly impact on how an individual chooses to perceive its worth. Technology is rarely truly apolitical and often demonstrates the underlying cultural assumptions of its creators[7][25]. Consider for example the issues of male versus female wish fulfilment represented by many video games [12], and consider how the way in which explicitly gendered protagonists may appeal, or otherwise, to groups of men and women. Consider the cultural connotations of colour choice in children's toys. Traditionally this is blue for boys and pink for girls. Consider how that impacts on the choice of early play for both children and their parents, and the stigma that may be experienced by obviating cultural norms. Sociological accessibility is a deep and important topic, and one to which we will hopefully return in a later discussion of the scandal.

More pertinent to this particular case study is the issue of physical accessibility – when someone has overcome whatever sociological barriers may have been in the way, and actively wishes to engage with technology. While things have gotten much better in recent years, it is still the case that software is often inaccessible to people with physical and mental handicaps. Blind users often find screen-reader technology works well for the most part. However, such technology has occasional missteps as a result of software not being designed to work with standard tools such as JAWS. Users who are colour blind may find that they are unable to distinguish visual cues when the only differentiating factor is the colour (for example, a green cursor that turns red, or red warning text). Where sound is used to deliver important interface information, deaf users are often disadvantaged, especially when viewing videos without subtitles. Users with mobility impairments may find that software requires too much fine-grained movement, or too many simultaneous key-presses, or is simply tiring to use with non-standard interaction devices such as head-wands or mouth-sticks. The more intensely interactive a piece of software is, the more these issues become important and the more difficult it becomes to truly compensate for all interaction regimes. For most desktop software packages interaction is not intense and does not come in short bursts. For these packages inaccessibility tends to be an oversight or as a consequence of a lack of awareness of the issues. However, for some highly interactive software packages, such as video games, the problem may be more difficult to fully address [14].

Large corporations can afford to have dedicated developers whose sole job is to work on accessibility. Small projects, open source or otherwise, tend to be mostly auteured products. Research software in particular, especially that written for a particular project or research team, can rarely muster development time beyond the lifespan of the funding [17]. It is primarily written to test a concept or fulfil an immediate need. Such software is only

⁷ <https://www.guernicamag.com/features/the-teaching-class/>

⁸ For example, see the discussion of this issue in http://www.salon.com/2014/09/21/professors_on_food_stamps_the_shocking_true_story_of_academia_in_2014/, http://www.huffingtonpost.com/kate-quick/professor-working-poor_b_4645217.html and <https://www.insidehighered.com/blogs/confessions-community-college-dean/adjuncts-food-stamps>

incidentally accessible unless explicitly written for the purposes of accessibility research (c.f. [15][16]).

In our case study, our postgraduate student has encountered an inaccessible piece of research software. The additional logistical overhead this creates has put restrictions on his operating flexibility. He could only access the research data that other people could provide for him. We already know from earlier articles in the study that the set of people who had any access to the data was highly restricted. Such constraints make full, effective oversight of data and its analysis extremely costly, extremely time-consuming, and likely to be de-emphasised in an environment where other, more pressing needs had to be immediately serviced. We know that the postgraduate students were engaged in teaching, seminar work and marking for Blackbriar – all of these come with deadlines, oversight, and committee work. Ensuring the utmost veracity of already trusted data may have been a luxury that simply could not be afforded in the context of the working environment.

There is much that can be done to ensure accessible software but it requires both the will to invest the effort and the skill-sets to make structural changes to the underlying programming code. In many research environments, we cannot assume either – software is not being written as production ready products, but instead as stop-gap solutions that meet an immediate, but likely non-persistent need. Sometimes, temporary software solutions evolve into a core element of an organisational workflow, but there are inertial pressures that come into play when the need comes for changes. Sometimes software is so tightly bound up in its original assumptions that making an adjustment requires a complete rewrite of the code. Sometimes the source-code was only ever stored in the personal directory of a postdoctoral researcher who left the institution ten years ago. Sometimes the institution is no longer subscribed to the development tools that were used to create a software solution. When making improvements for accessibility purposes, there is a relatively specialised skillset required to make sure that changes don't have an overall negative effect [31]. There is always a reason why something shouldn't be done, and with the maintenance of software the reason may be 'nobody can actually do it'. The fewer people impacted by a problem with the software, the less likely it is that the need for change will gather sufficient urgency or the critical mass to turn 'this should be done' to 'this is being done'.

With larger software suites which are purchased from commercial outlets, we may also be restricted to what can be done within the context of an established extra-institutional user-base. There may be thousands, or tens of thousands, of users who all have their own views on how the software should be improved. A larger user-pool would mean that accessibility issues were experienced by a larger number of people, but they are likely still only a subset of the installed user-base. Economic self-preservation must come into play. A company looking to profit from its users must see to the needs of the many before it can justify seeing to the needs of the few. It's possible to marshal any number of moral and ethical arguments as to why software should be made accessible as a first priority, but such arguments may not convince an organisation dealing with the ongoing triage implied by competition within complex and unpredictable economic restrictions.

Thus, we see situations like this where people 'find a way' around the issue, often by following a tortuous chain of importing and exporting until the right data can be presented in the right way

with the right level of accessibility. Such compensations are invariably fragile – if any part of the compensatory chain is altered, the entire thing may fall apart. Software changes on a regular basis if it has active developers, and these changes can often be substantial, such as changing entirely the default interaction metaphor; dropping support for whole families of tools; or removing the ability to import or export particular formats. Each time a compensatory process is broken, it takes time to repair. It is rare there is no route to accessibility through these kinds of improvised solution spaces, but that too occasionally happens.

6. Conclusion

It is much too early in our case study to make a valid decision as to where blame should lie for the problems being encountered by the University of Dungen. We are already peeling back some of the more obvious layers of the case study to see that underneath is a tangled web of complicating factors – ethics, in the real world, is often messy. If it were not, we wouldn't have any difficulty working out the right thing to do. A black and white moral code may allow for instant, quick judgements – but a nuanced unpicking of the various inter-relating elements means that we rapidly end up with a far richer perspective on the way things happen.

In this paper, we've discussed a wide range of relevant issues which have been introduced by two of the newspaper items in the original Scandal in Academia. We've discussed the different expectations between academia and industry, and how collaborations between the two can transgress ethical boundaries of which neither side may be fully aware. We've discussed the cognitive biases that cut at the heart of any claim that we are simply rational thinking engines – the combination and culmination of these biases debunks almost in its entirety the fictional construct of *homo economicus*. We've seen how workplace dynamics and the transient nature of many modern research contracts creates an environment where meaningful oversight is all but impossible. We've also seen that attempting to become part of the stable and collegiate family of academics is an inherently self-destructive act that undermines the quality of both research and the life of researchers. Leaving all of this aside, we've also discussed how even with the best will in the world, it's not always possible for those with different accessibility needs to meaningfully contribute all they can when the systems they work within aren't designed to support their specific requirements.

As outlined in the introduction, we make no claim that this is the definitive analysis of the two indicated newspaper items. We seek only to offer a lens through which the scandal in academia can be contextualised within its broader context. We seek to demonstrate why each of the individual articles opens up wider and deeper discussions of the issues of modern ethics and the factors that influence them. We hope that this analysis of the scandal helps inform educators looking to use the case study within their own courses.

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