



Assignment 1: Blog Posts 1-7

REFLECTIONS ON QUANTITATIVE RESEARCH

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Unless otherwise stated images were created by the author using the Canva online design tool.

Blog 1: The Oddity Part I

(Word count 442)



Figure 1: *The Hero's Journey* (Source: Wikipedia, 2018)¹

So I return to blogging as part of another programme of study, this time a DBA.

One year into my doctoral journey, this is the perfect time to critically reflect on how what I have learned to date has influenced my expectations and perceptions of the current module, Quantitative Research Methods.

“Critical reflection involves a critique of the presuppositions on which our beliefs have been built.”² Our perceptions and thoughts are strongly influenced by habits and beliefs that make up our frame of reference, i.e. a set of assumptions that inform the

¹ Wikipedia (2018) *Hero's Journey*. Available at: https://en.wikipedia.org/wiki/Hero%27s_journey (Accessed 10 October 2018).

² Mezirow, J. (1990) 'How critical reflection triggers transformative learning', *Fostering critical reflection in adulthood*, pp.1-20.

way we interpret our experiences.³ As I write this blog, I am cognisant of how the learning I have undertaken since commencing my doctoral journey and my experiences as a practitioner has influenced my thinking. Though I have formed beliefs as a result of these experiences, I find the ground constantly shifting beneath my feet, one moment solid with a well-defined path ahead but the next I am stuck in a bog with the mist descending around me.⁴

I recently came across a metaphor, the 'Hero's Journey'⁵, which resonates with my experience to date as a novice research and will serve as a framework for my reflection.

My path to becoming a doctoral researcher has been an oddity; I am first and foremost a practitioner with little prior knowledge of what it means to be a researcher and with no researcher identity to speak of. I saw the opportunity as a 'call to adventure' (stage one of the journey), but was initially filled with doubt about my capability to undertake such a quest and fear that I would be out of my depth (refusal of the call). I am still sometimes plagued by these feelings they are part of my 'road of trials.' As suggested by Gardner⁶ and Hawley,⁷ mentorship received from programme staff and

³ Mezirow, J. (2000) 'Learning to think like an adult', *Learning as transformation: Critical perspectives on a theory in progress*, pp.3-33.

⁴ Barnett, R. (2015) *Thinking and Rethinking the University: The selected works of Ronald Barnett*. Abingdon: Routledge

⁵ Campbell, J. (2004) *Pathways of Bliss: Mythology and personal transformation*. Novato, California: New World Library.

⁶ Gardner, S. (2010) 'Faculty perspectives on doctoral student socialization in five disciplines', *International journal of doctoral education*, 5(1), pp. 39-53

⁷ Hawley, P. (1993) *Being bright is not enough: the unwritten rules of doctoral study*. Springfield: Charles C. Thomas Publisher.

fellow students has been invaluable and has helped me to cross the 'threshold' into the unknown, knowing I have allies as I face the tests and enemies ahead. As I engage with this new module, my biggest challenge is knowing how I will bring all of the experiences and learning together and integrate them into a body of knowledge that will help me achieve my end goal. As the ground shifts beneath me, I am liable to fall into the cracks and as the mist descends, choose the wrong path, ending up as just another ABD (all but dissertation).⁸

I am grateful for the structure the module provides and proceed on my journey with an open mind, relinquishing my first love (qualitative methods) for the time being, and embracing the new. The abyss beckons!

⁸ Hawley, P. (1993) *Being bright is not enough: the unwritten rules of doctoral study*. Springfield: Charles C. Thomas Publisher.

Blog 2: #factsarefacts

(Word count 442)



Since Twain penned the statement “Facts are stubborn things, but statistics are pliable” the world has changed in ways he could never have imagined. We now live in a world where the “integrity of facts depends on the mode of their collection, the aims of the collector and the assumptions with which they operate.”⁹ Moreover, even where we accept the integrity of underlying fact, statistics can still be used to mislead us, typically through sensationalist headlines. A recent example, a headline in The Express¹⁰ claimed 7 in 10 Britons support a hard Brexit; it turned out the number of

⁹ Smithers, R. (2017) ‘Facts are stubborn things, but statistics are pliable’, *LinkedIn* [blog]. Available at: <https://www.linkedin.com/pulse/facts-stubborn-things-statistics-pliable-richard-smithers/> (Accessed 11 October 2018).

¹⁰ Gutteridge, N. (2017) Bombshell Poll: Seven in 10 Britons now support hard Brexit according to major survey. *Express*, 11th August. Available at: <https://www.express.co.uk/news/politics/839888/Brexit-news-most-Britons-support-clean-break-EU-major-survey> (Accessed 11 October 2018).

people polled wasn't large enough to provide any reliable insight.¹¹ This raises the question "how much of the 'fake news' that surrounds us today is based at least in part on bad statistics."¹² From climate change, to abortion rates and even choosing a toothpaste, we are continuously bombarded with statistics designed to mislead.¹³

Even a recognised expert in the field of statistics David Spiegelhalter argues, "graphs can be as manipulative as words. Using tricks such as cutting axes, rescaling things, changing data from positive to negative, etc."¹⁴ Research from the University of Edinburgh¹⁵ found 33.7% of scientists surveyed admitted to questionable research practices, highlighting that even scientists are guilty of 'cooking data.' However, misuse of statistics is not always an attempt to deliberately deceive but often arises

¹¹ Jain, L. (2018) The top ten fake and misleading news stories of 2017. Available at: <https://inews.co.uk/opinion/top-ten-fake-misleading-news-stories-2017/> (Accessed 11 October 2018).

¹² Leetaru, K., (2017) Lies, Damned Lies And Statistics: How Bad Statistics Are Feeding Fake News. Available at: <https://www.forbes.com/sites/kalevleetaru/2017/02/02/lies-damned-lies-and-statistics-how-bad-statistics-are-feeding-fake-news/#70b8077950ca> (Accessed 11 October 2018).

¹³ Lebled, M. (2018) 'Misleading Statistics Examples – Discover The Potential For Misuse of Statistics & Data In The Digital Age', *The datapine Blog* [Blog]. 8th August. Available at: <https://www.datapine.com/blog/misleading-statistics-and-data/> (Accessed 10 October 2018).

¹⁴ Rathi, A. (2016) A Cambridge professor on how to stop being so easily manipulated by misleading statistics. Available at: <https://qz.com/643234/cambridge-professor-on-how-to-stop-being-so-easily-manipulated-by-misleading-statistics/> (Accessed 08 October 2018).

¹⁵ Fanelli, D. (2009) 'How Many Scientists Fabricate and Falsify Research? A Systematic Review and Meta-Analysis of Survey Data', *PLoS One*, 4(5), e5738. DOI: [10.1371/journal.pone.0005738](https://doi.org/10.1371/journal.pone.0005738)

from lack of competence in statistical theory and methods, and honest error in their application,¹⁶ something a novice researcher like me must take heed of.

With a mind-boggling amount of data being created every day,¹⁷ it becomes increasingly difficult to separate fact from fiction and opinion. A recent study of 5,035 adults in the US found that roughly a quarter of respondents were unable to determine between factual and opinion based statements.¹⁸

To avoid being fooled by 'fake news' and 'alternative facts' we need to check our decision-making heuristics.¹⁹ In his book *Thinking Fast and Slow*, Daniel Kahneman²⁰ writes, "*human reason left to its own devices is apt to engage in a number of fallacies and systematic errors. If we want to make better decisions in our personal lives and as a society, we ought to be aware of these biases and seek workarounds.*" Simply doing a little research would reveal the inaccuracy of information but we are apt to take things at face value because it fits with our own belief system. Sadly, too often we are unaware of our own ignorance: trapped in 'moral bubbles'²¹ and social media echo

¹⁶ Gardenier, J., & Resnik, D. (2010) 'The Misuse of Statistics: Concepts, Tools, and a Research Agenda', *Accountability in Research*, 9(2), pp.65-74.

DOI: doi.org/10.1080/08989620212968

¹⁷ Marr, B. (2017) How Much Data Do We Create Every Day? The Mind-Blowing Stats Everyone Should Read. Available at: <https://www.forbes.com/sites/bernardmarr/2018/05/21/how-much-data-do-we-create-every-day-the-mind-blowing-stats-everyone-should-read/#56fc401960ba> (Accessed 26 October 2018)

¹⁸ McCall, R. (2018) How Good Are You At Telling Fact From Fiction? Available at: <https://www.iflscience.com/plants-and-animals/most-americans-have-a-hard-time-separating-fact-from-opinion-can-you/> (Accessed 26 October 2018)

¹⁹ Harari, Y. N. (2018) *21 Lessons for the 21st Century*. London: Jonathan Cape

²⁰ Kahneman, D. (2012) *Thinking Fast and Slow*. London: Penguin Group

²¹ Brady, W.J., Wills, J., Burkart, D., Jost, J., & Van Bavel, J.J. (2018) Moral Contagion: Echo chambers, source effects and behavioral consequences. #Outrage! Understanding the

chambers, our self-confirming newsfeeds reinforce our beliefs, and opinions masquerade as fact.²²

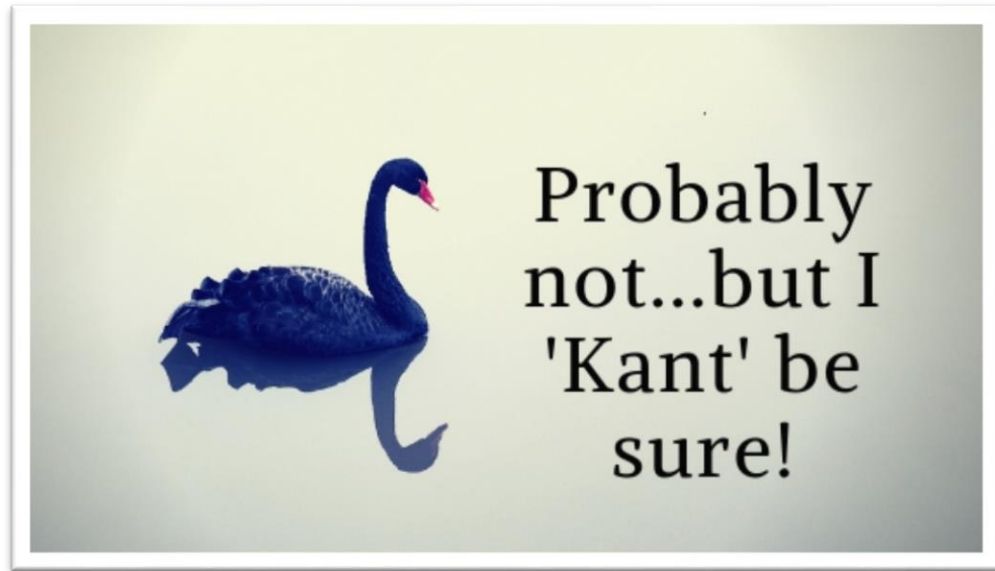
Therefore, it would seem facts, as statistics are more pliable than ever!

Spread of Moral Ideas in Online Social Interactions Symposium. Society for Personality and Social Psychology.

²² Harari, Y. N. (2018) *21 Lessons for the 21st Century*. London: Jonathan Cape

Blog 3: Are there purple swans?

(Word count 421)



Famously, Francis Bacon (1561-1626) one of the founders of scientific thinking, used inductive reasoning to determine if snow could delay the rotting process of meat, though he confirmed his proposition, it did result in him dying of Bronchitis, making him the first martyr of empiricism.²³

Along with Bacon, philosophers such as Hume and Kant debated the value of inductive reasoning at great length and considered it to have varying degrees of utility, though all would agree, any conclusion drawn from induction is only probable, not certain.²⁴

²³ Patton, M. Q. (2015) *Qualitative Research and Evaluation Methods*. 4 ed. Thousand Oaks: Sage.

²⁴ Hawthorne, J. (2018) *Inductive Logic: Stanford Encyclopedia of Philosophy*. Available at: <https://plato.stanford.edu/entries/logic-inductive/#InduArgu> (Accessed 20 October 2018)

Typically associated with qualitative research methodology,²⁵ inductive reasoning “involves the search for pattern from observation and the development of explanations – theories – for those patterns.”²⁶ E.g., ‘all swans are white’ (which we now know to be a misnomer). As a particular outcome can only be inferred from data about an observed sample, the truth of the conclusion cannot be guaranteed.²⁷

The process of induction is generally considered unsuitable for quantitative research, which is characteristically deductive in approach.²⁸ Whilst induction seeks to find patterns, themes and categories from which findings emerge,²⁹ deduction is the process of reasoning from one or more statements to reach a logically certain conclusion.³⁰ However, this is not an absolute and in some cases, inductive methods can be used in quantitative research.³¹

An example of this, is Exploratory Data Analysis (EDA). Based on the work of John Tuckey, EDA is an approach to learning from data, through a cyclical process of

²⁵ Bryman, A. (2016) *Social Research Methods*. 5 ed. Oxford: Oxford University Press.

²⁶ Bernard, H.R. (2011) *Research Methods in Anthropology*. 5 ed. Plymouth: AltaMira Press (p.7)

²⁷ Krawczyk D. C. (2018) ‘Deduction and Induction’, Reasoning: *The Neuroscience of How We Think* pp. 199-225. DOI: <https://doi.org/10.1016/B978-0-12-809285-9.00009-0>

²⁸ Cresswell, J. W. (2013) *Qualitative Enquiry & Research Design: Choosing Among Five Approaches*. 3 ed. Thousand Oaks: Sage.

²⁹ Patton, M. Q. (2015) *Qualitative Research and Evaluation Methods*. 4 ed. Thousand Oaks: Sage.

³⁰ Sternberg, R. J. (2009) *Cognitive Psychology*. Belmont: Wadsworth.

³¹ Research Methodology (n.d.) *Application of Inductive Approach (Inductive Reasoning) in Business Research*. Available at: https://research-methodology.net/research-methodology/research-approach/inductive-approach-2/#_ftn2 (Accessed 20 October 2018)

pattern extraction and pattern interpretation,³² which can be used for both qualitative and quantitative data.³³ EDA uses visual displays to reveal key information about the data under examination³⁴ and is an “integral part of statistical inference.”³⁵ Tukey used the analogy of detective work to describe EDA, a bottom-up process of hypothesis formulation, which involves looking for clues and forming hunches.³⁶ This is unlike the typical statistical methods associated with deductive research, which seek to “obtain and present formal evidence in order to gain conviction.”³⁷

In addition, Bryman argues, the final step in the process of deduction, the revision of theory, involves at least an element of induction; the researcher must infer the implications of the findings for the theory that prompted the research.³⁸

The evidence presented suggests though an inductive approach is usually associated with qualitative research, this is not an absolute and there are instances where quantitative methods can be used for the purpose of pattern interpretation, as in EDA.

³² Behrens, J. T. and Yu, C. (2003) *Exploratory Data Analysis*, in Schinka, J. A. and Velicer, W. F. (ed.) *Handbook of Psychology, Research Methods in Psychology*. New Jersey: John Wiley & Sons.

³³ Hartwig, F. and Dearing, B. E. (1979) *Exploratory Data Analysis*. London: Sage Publications.

³⁴ Hartwig, F. and Dearing, B. E. (1979) *Exploratory Data Analysis*. London: Sage Publications

³⁵ Chatfield, C. (1986) ‘Exploratory data analysis’, *European Journal of Operational Research*, 23(1), pp. 5-13. DOI: [https://doi.org/10.1016/0377-2217\(86\)90209-2](https://doi.org/10.1016/0377-2217(86)90209-2)

³⁶ Tukey, J.W. (1977) *Exploratory data analysis*

³⁷ Behrens, J. T. and Yu, C. (2003) *Exploratory Data Analysis*, in Schinka, J. A. and Velicer, W. F. (ed.) *Handbook of Psychology, Research Methods in Psychology*. New Jersey: John Wiley & Sons. (p.42)

³⁸ Bryman, A. (2016) *Social Research Methods*. 5 ed. Oxford: Oxford University Press.

As to whether there are purple swans, from the observed data we can assume not, but can we be certain?

Blog 4: Data Visualisation – Don’t Bore Me, Tell Me a Story!

(Word count: 453)

*“Having all of the information in the world at our fingertips doesn’t make it easier to communicate; it makes it harder. The more information you’re dealing with the more difficult it is to filter down to the most important bits.”*³⁹

A huge amount of data is generated by student surveys conducted within my workplace, but it’s not enough to just have quantities of data, it must also be presented in a way the audience can easily understand and remember.⁴⁰

Data visualisation is a term used to *describe “the representation and presentation of data to facilitate understanding.”*⁴¹ Patterns, themes and relationships that might be overlooked in text-based data can be revealed and understood more easily with data visualisation methods.⁴² These include such things as, your bog standard charts and graphs or, more contemporary tools, such as infographics, network diagrams and heat maps.

Infographics are used within my workplace to disseminate the results of surveys such as the NSS and PTES (see following [blog](#)). The purpose of this is to simplify the

³⁹ Knafllic, C. N. (2015) *Storytelling with data: A data visualization guide for business professionals*. New Jersey: John Wiley & Sons.

⁴⁰ Berinato, S. (2016) *Good charts: the HBR guide to making smarter, more persuasive data visualizations*. Boston: Harvard Business Review Press.

⁴¹ Kirk, A. (2012) *Data Visualisation: A Handbook of Data Driven Design*. London: Sage

⁴² Rouse, M. (2017) *Definition Data Visualisation*, Available at: <https://searchbusinessanalytics.techtarget.com/definition/data-visualization> (Accessed 14 December 2018).

large amounts of data gathered and make it more easily understood at a glance.⁴³ It's unlikely that students would take the time to pore over detailed spreadsheets or reports when they are considering which university to attend, so infographics are essential in communicating the messages that are intended to differentiate us from other universities.

There is definitely room for improvement in the way we produce and use infographics to promote courses for the university. Currently, they tend to be simplistic, including only one message (see image below), instead of attempting to convey a story about the experience of studying at the university.



Figure 2: Example infographic (Source: UWTSD, 2018)⁴⁴

⁴³ Rouse, M. (2012) *Definition Infographics*. Available at: <https://whatis.techtarget.com/definition/infographics> (Accessed 14 December 2018).

⁴⁴ UWTSD (2018) *Student Survey Results*. Internal publication.

In a workshop, I recently attended, delivered by Andy Pemberton, an expert in data visualisation, the key message I left with was that an infographic must generate some kind of emotion in the audience.

The image above is a typical example of an infographic produced to convey survey results but I can't say that it generates any kind of emotion nor does it create a compelling narrative⁴⁵ about what it is like to study at Swansea Business School. A far better example is shown below, as here we get an overall picture of what it might be like to study at this centre.

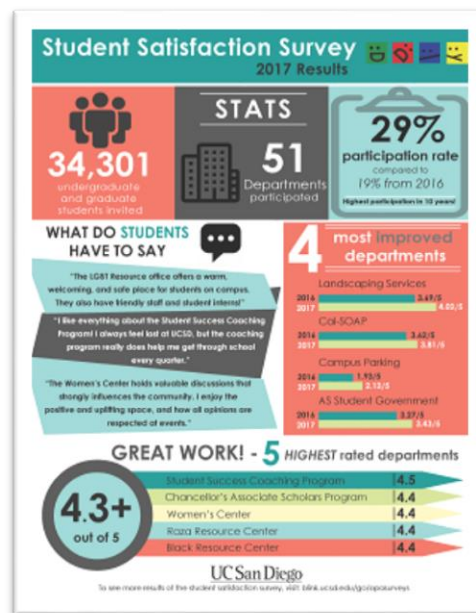


Figure 3: Student Satisfaction Infographic Example (Source: UC San Diego, 2017)⁴⁶

⁴⁵ Knaflitz, C. N. (2015) *Storytelling with data: A data visualization guide for business professionals*. New Jersey: John Wiley & Sons.

⁴⁶ UC San Diego (2017) *Student Satisfaction Survey*. Available at: <https://blink.ucsd.edu/files/sponsor-tab/operational-strategic-initiatives/opa/sss/sss-2017-infographic.pdf> (Accessed 15 December 2018).

To improve student numbers, the university must find ways of differentiating itself from the competition. Investing in becoming savvier with data visualisation could be one way to more effectively convey the message of why students should come to study with us.

There is also an opportunity for us to teach data visualisation in more of our programmes, in order that students can communicate their research findings in a more impactful way. A topic for another blog maybe.

Blog 5: A Survey Too Far?

(Word Count 474)



My current workplace, The University of Wales Trinity St David (UWTSD) participates in multiple surveys, including the National Student Survey (NSS), Whatuni, The Times Higher Education Student Experience Survey and Destination of Leavers from Higher Education Survey (DHLE), among others.⁴⁷ In addition, on the completion of programme modules students are asked to complete a module evaluation questionnaire (MEQ). As such, student surveys have become one of the biggest and most commonly used data sources for the assessment of quality in higher education institutions (HEIs).⁴⁸

⁴⁷ UWTSD (2018) *Ratings and Rankings*. Available at: <https://www.uwtsd.ac.uk/ratings-rankings/> (Accessed 01 November 2018).

⁴⁸ Klemenčič, M. and Chirikov, I. (2015) 'How do we know how students experience higher education? On the use of student surveys', *European Higher Education Area*, pp. 361-379

As is the case for many HEIs, there are numerous challenges for us at UWTSD in dealing with this plethora of surveys. One of these challenges is how to avoid respondent survey fatigue.⁴⁹

According to the National Research Centre (NRC), survey fatigue happens when the number of questions or the amount of surveys they are asked to undertake overwhelms respondents.⁵⁰ The result can be a drop in respondent motivation, leading to an increase in the likelihood of the respondent to satisfice⁵¹ (a tendency to minimize the amount of effort expended to arrive at an answer), rather than optimise their responses,⁵² something I have witnessed first-hand in response to MEQs I have issued when teaching. As students are amongst the most surveyed populations in the world,⁵³ survey fatigue has become an issue, especially during what has become known in HEIs as ‘survey season.’ As a result, many HEIs have created policies to try to combat this.^{54 55}

⁴⁹ Porter, S.R., Whitcomb, M.E. and Weitzer, W.H. (2004) ‘Multiple surveys of students and survey fatigue’, *New Directions for Institutional Research*, (121), pp. 63-73.

⁵⁰ NRC (2016) *How to Avoid Survey Fatigue*. Available at: <https://www.n-r-c.com/how-to-avoid-survey-fatigue/> (Accessed 31 October 2018).

⁵¹ Vanette, D. L. (n.d.) *The Qualtrics Handbook of Question Design*. Qualtrics

⁵² Bryman, A. (2016) *Social Research Methods*. 5 ed. Oxford: Oxford University Press.

⁵³ Klemenčič, M., Šćukanec, N., & Komljenović, J. (2015) ‘Decision support issues in central and eastern Europe’, In Webbe, K. & Calderon, A. (Eds.), *Institutional Research and planning in higher education: Global contexts and themes*. New York: Routledge Press

⁵⁴ University of Bath (2018) *Guidance on surveying students*. Available at: <https://www.bath.ac.uk/guides/guidance-on-surveying-students/> (Accessed 31 October 2018).

⁵⁵ Newcastle University (n.d.) *Policy on Surveying and Responding to Student Opinion*. Available at: <https://www.ncl.ac.uk/ltds/assets/documents/qsh-studentopinion-pol.pdf> (Accessed on 31 October 2018).

A further challenge is the perception of the utility of the survey data. There is much commentary raising questions about the widespread use of student survey data and its reliability and validity as evidence in higher education decision-making.⁵⁶

A purpose of the NSS, for example, is 'Enhancing the student academic experience within HEIs.'⁵⁷ However, findings of the Higher Education Funding Council for England suggest the "NSS's scope was too narrow in terms of students' experiences and their engagement in learning and teaching."⁵⁸ I tend to agree with one University of Oxford professor who likened the reliance on NSS for measuring teaching quality to using people's choice of food to evaluate nutritional content.⁵⁹ In fact, research indicates there is no correlation between student satisfaction and student results relating to degree outcomes.⁶⁰ Indeed, there is an argument that too much focus on student engagement may lead to an intellectual race to the bottom, as lecturers are pressurised to drop exams in favour of posters, cut reading lists and shorten assessments.⁶¹

⁵⁶ Klemenčič, M. and Chirikov, I. (2015) 'How do we know how students experience higher education? On the use of student surveys', *European Higher Education Area*, pp. 361-379

⁵⁷ Callender, C., Ramsden, P. and Griggs, J. (2014) Review of the national student survey. *Higher Education Funding Council for England (HEFCE)*.

⁵⁸ Callender, C., Ramsden, P. and Griggs, J. (2014) Review of the national student survey. *Higher Education Funding Council for England (HEFCE)*.

⁵⁹ Bishop, D. (2016) *NSS and teaching excellence: the wrong measure, wrongly analysed*. Available at: <https://www.timeshighereducation.com/blog/nss-and-teaching-excellence-wrong-measure-wrongly-analysed> (Accessed 01 November 2018)

⁶⁰ Lipsey, D. (2017) *Why the NSS is garbage*. Available at: <http://www.davidlipsey.co.uk/why-the-nss-is-garbage/> (Accessed 01 November 2018)

⁶¹ Williams, J. (2015) *The National Student Survey should be abolished before it does any more harm*. Available at: <https://www.theguardian.com/higher-education-network/2015/aug/13/the-national-student-survey-should-be-abolished-before-it-does-any-more-harm> (Accessed 01 November 2018)

In addition, Royal Statistical Society (RSS)⁶² and Office of National Statistics (ONS)⁶³ reviews of the NSS suggest it is '*statistical garbage*' and open to being '*gamed*' to encourage students to give positive results.

But, with so much at stake regarding University League Tables and the Teaching Excellence Framework, HEIs are obliged to participate in these surveys and students destined to face another round of almost endless questions.

⁶² RSS (2016) *RSS Response to BIS Technical Consultation on Teaching Excellence Framework*. Available at: <http://www.rss.org.uk/Images/PDF/influencing-change/2016/RSS-response-to-BIS-Technical-Consultation-on-Teaching-Excellence-Framework-year-2.pdf> (Accessed 31 October 2018).

⁶³ ONS (2016) *Teaching Excellence Framework: Review of Data Sources*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/556352/Teaching-Excellence-Framework-review-of-data-sources.pdf (Accessed 01 November 2018)

Blog 6: Big Data – Opportunity or Threat?

(Word count 474)



“Beware, your imagination leaves digital traces” (Bruno Latour)⁶⁴ so, “if you want to keep a secret, you must also hide it from yourself.” (George Orwell).⁶⁵

Algorithms are watching where you go, what you buy and whom you meet, they can monitor your steps, your breaths and your heartbeats, relying on big data and machine learning to get to know you better than you know yourself.⁶⁶ The hype goes that with this information, you can be controlled and manipulated and you won’t even know it is happening.⁶⁷

⁶⁴ Latour, B., 2007. ‘Beware, your imagination leaves digital traces’, *Times Higher Literary Supplement*, 6(4), pp.129-131.

⁶⁵ Orwell, G. (1949) 1984. London: Penguin Books

⁶⁶ Harari, Y. N. (2018) *21 Lessons for the 21st Century*. London: Jonathan Cape

⁶⁷ Steiner, C (2012) *Algorithms Are Taking Over The World: Christopher Steiner at TEDxOrangeCoast* [Video]. Available at: https://www.youtube.com/watch?v=H_aLU-NOdHM (Accessed 28 October 2018).

Is it possible that these big data algorithms pose the threat of an AI Big Brother, in which Orwellian surveillance regimes are monitoring us all of the time? Alternatively, is research using big data an opportunity for solving social problems for which the solutions have previously alluded us?

Though many are suspicious of big data and the possibility it will be used to coerce and manipulate, the opportunities to use it to revolutionise research, education and business can't be underestimated.

There are many opportunities for social researchers in embracing the use of big data⁶⁸ as doing anything on the web leaves behind traces that allow social scientists the opportunity to make observations previously unimagined. According to Latour, *"It is as if the inner workings of private worlds have been pried open because their inputs and outputs have become thoroughly traceable."*⁶⁹ An example of this is research into crime prevention recently conducted at Cardiff University using data from Twitter, combined with recorded crime statistics.⁷⁰

According to Mayer-Schonberger and Cukier,⁷¹ big data will change the nature of social research as access to more data will eliminate the need for sampling (and the associated biases) leading to greater insights and depth of analysis. One can only

⁶⁸ Bryman, A., (2016) *Social Research Methods*. 5 ed. Oxford: Oxford University Press.

⁶⁹ Latour, B., 2007. 'Beware, your imagination leaves digital traces', *Times Higher Literary Supplement*, 6(4), pp.129-131. (p. 2)

⁷⁰ Williams, M.L., Burnap, P. and Sloan, L. (2017) 'Crime sensing with big data: The affordances and limitations of using open-source communications to estimate crime patterns', *The British Journal of Criminology*, 57(2), pp.320-340

⁷¹ Mayer-Schonberger, V. and Cukier, K. (2013) *Big data: the essential guide to work, life and learning in the age of insight*. London: Hachette.

imagine the insights we might gain from looking at big data generated from student use of virtual learning environments, instead of relying on information generated by surveys for example.

The benefits to business are also extensive. Big data can be mined for information on market conditions, customer insight, brand reputation and new product development, resulting in time and cost savings.⁷²

According to Marr,⁷³ “eventually, every aspect of our lives will be affected by big data” and its widespread use will realise huge benefits. Even now big data is being used to understand and predict disease patterns. For example, simply by analysing social media status updates, i.e. “Feeling rubbish today - in bed with a cold” and integrating data from medical records has enabled the monitoring of flu outbreaks in real-time.⁷⁴

Though many fear big data, and well we might in light of recent high profile data breaches at companies such as Facebook⁷⁵ and Marriott Hotels,⁷⁶ it is time to see

⁷² Kwon, O., Lee, N., & Shin, B. (2014) ‘Data quality management, data usage experience and acquisition intention of big data analytics’, *International Journal of Information Management*, 34(3), pp. 387–394

⁷³ Marr, B. (2013) *The Awesome Ways Big Data Is Used Today To Change Our World*. [Blog] Available at: <https://www.linkedin.com/pulse/20131113065157-64875646-the-awesome-ways-big-data-is-used-today-to-change-our-world/> (Accessed 13 December 2018).

⁷⁴ Marr, B. (2013) *The Awesome Ways Big Data Is Used Today To Change Our World*. [Blog] Available at: <https://www.linkedin.com/pulse/20131113065157-64875646-the-awesome-ways-big-data-is-used-today-to-change-our-world/> (Accessed 13 December 2018.)

⁷⁵ Lee, D. (2018) *Facebook security breach: Up to 50m accounts attacked*. Available at: <https://www.bbc.co.uk/news/technology-45686890> (Accessed 13 December 2018).

⁷⁶ BBC (2018) *Marriott hack hits 500 million Starwood guests*. Available at: <https://www.bbc.co.uk/news/technology-46401890> (Accessed 13 December 2018).

beyond the hype and give greater consideration to the huge benefits that might be realised if we embrace the benefits of responsible big data research.^{77 78}

⁷⁷ Oguntimilehin, A. and Ademola, E.O. (2014) 'A Review of Big Data Management, Benefits and Challenges', *Journal of Emerging Trends in Computing and Information Sciences*, 5(6), pp. 433-438

⁷⁸ Zook, M., Barocas, S., Boyd, D., Crawford, K., Keller, E., Gangadharan, S. P., et al. (2017) 'Ten simple rules for responsible big data research', *PLoS Comput Biol* 13(3): e1005399.
DOI: <https://doi.org/10.1371/journal.pcbi.1005399>

Blog 7: The Oddity Part II: Julie's Account of Her Adventures

(Word count 467)



Figure 4: The Hero's Journey (Source: Wikipedia 2018)⁷⁹

It is hard to believe that 9 weeks have passed since I posted 'The Oddity: Part I' at the start of the module. In what seems like the blink of an eye, it is now almost the end. Reflecting back on that first post and my progress on the journey since then, I cannot say with any confidence that I have survived 'the abyss' and if indeed I did, there is every chance it spat me back out onto the road of trials.⁸⁰ Regardless, this part of the journey has still been a revelation, but the statistical elements delivered one of my greatest challenges on the journey so far.⁸¹

⁷⁹ Wikipedia (2018) *Hero's Journey*. Available at:

https://en.wikipedia.org/wiki/Hero%27s_journey (Accessed 13 December 2018).

⁸⁰ Campbell, J. (2004) *Pathways of Bliss: Mythology and personal transformation*. California: New World Library.

⁸¹ Vogler, C. (1998) *The Writer's Journey: Mythic Structure For Writers*. Studio City: Michael Wiese Productions.

One of the surprises that came out of the learning for me was the level of consensus in the literature accessed regarding a lack of statistical expertise in the social sciences.⁸² The fact that even seasoned researchers struggle with correctly interpreting such things as p-value⁸³ gave me some assurance about the level of expertise I might expect to achieve in this topic area in such a short space of time. In all honesty, I have progressed only from 'unconscious incompetence' to 'conscious incompetence.'⁸⁴ I am now all too aware of the vast body of knowledge required to practice rigorous quantitative research and in the past weeks, I have only scratched the surface of this. It became increasingly clear, as I worked through the module that quantitative skills are best learnt by extensive and repeated practice, which should have a readily visible purpose.⁸⁵ The practical elements introduced throughout the module certainly helped with this, but many more hours of application are required before I can claim to have reached the level of 'consciously competent.'⁸⁶

⁸² The British Academy (2012) *Society Counts: Quantitative Skills in the Social Sciences and Humanities*. Available at: <https://www.thebritishacademy.ac.uk/publications/society-counts-quantitative-skills-social-sciences-and-humanities> (Accessed 08 December 2018).

⁸³ Goodman, S. (2008) 'A Dirty Dozen: Twelve P-Value Misconceptions', *Seminars in Haematology*, 45(3), pp. 135-140. DOI: <https://doi.org/10.1053/j.seminhematol.2008.04.003>

⁸⁴ Mindtools (n.d.) *The Conscious Competence Ladder: Keeping Going When Learning Gets Tough*. Available at: https://www.mindtools.com/pages/article/newISS_96.htm (Accessed 08 December 2018).

⁸⁵ MacInnes, J. (2016) *Quantitative skills and UK higher education social science*. [Blog] Available at: <https://www.thebritishacademy.ac.uk/blog/quantitative-skills-and-uk-higher-education-social-science> (Accessed 07 December 2018).

⁸⁶ Mindtools (n.d.) *The Conscious Competence Ladder: Keeping Going When Learning Gets Tough*. Available at: https://www.mindtools.com/pages/article/newISS_96.htm (Accessed 08 December 2018).

Some of these hours will be spent with Zach (a character in Field's *An Adventure in Statistics*) as he proceeds on his own journey through Elpis.⁸⁷ My aim over the coming weeks, as I write up the findings of my own research project, is to better understand the landscape of 'Postverta,' the first stage of Zach's journey. I have a feeling, Zach and I will become close friends as I get to grips with foundational statistical concepts, data presentation and the available software I will use to analyse my data.⁸⁸



Figure 5: Postverta (Source: Field, 2016)⁸⁹

Aside from the statistics, the other elements of the module have served to reinforce previous knowledge and introduced many valuable resources, which will inevitably come in useful as I proceed to the next phase of the journey.

⁸⁷ Field, A. (2016) *An Adventure in Statistics: The Reality Enigma*. London: Sage

⁸⁸ Field, A. (n.d.) *Discovering Statistics*. [Blog] Available at: <https://www.discoveringstatistics.com/statistics-hell-p/> (Accessed 07 December 2018).

⁸⁹ Field, A. (2016) *An Adventure in Statistics: The Reality Enigma*. London: Sage

Though I will say I am now more confident in my knowledge, skills and competencies to use quantitative methods in my DBA research than I was 9 weeks ago, I also feel I am only on the first couple of rungs of a very long ladder when it comes to the level of learning achieved on this topic.