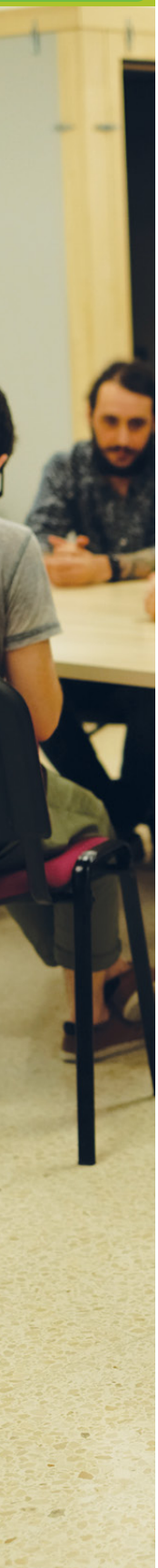
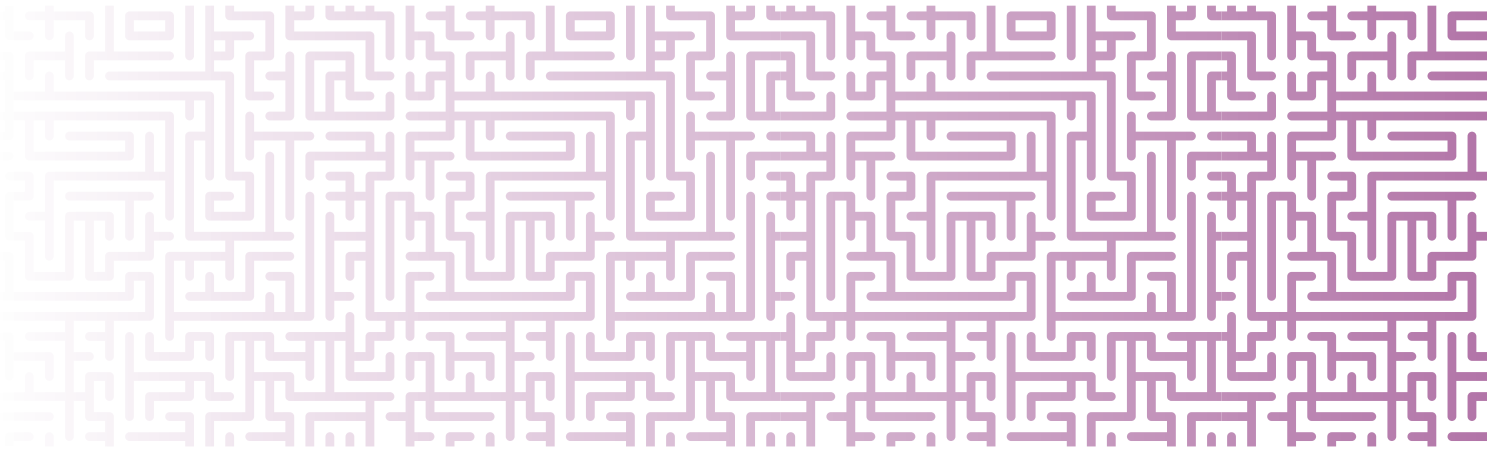


POLITICS, POLICY & RISKY BUSINESS

As a child, ***Prof. Noellie Brockdorff*** *was fascinated by the robots that inhabited the world of Isaac Asimov's novels. She wanted to know why humans are different to robots. So why are human beings not perfectly rational creatures like robots?* ***Dr Claude Bajada*** *finds out more.*

A deadly disease has just broken out in Malta. The World Health Organisation declares an epidemic. Malta is in a state of emergency. Six hundred people will die if nothing is done. The health minister has two options. The first intervention has a one third chance that all 600 will be saved and a two thirds chance that everyone will die. Option two will definitely save 200 people. Prof. Noellie Brockdorff outlined this scenario when I sat down to interview her. What should the health minister do?



Brockdorff is a cognitive scientist and dean of the Faculty of Media and Knowledge Sciences (University of Malta). She tells me that two psychologists, Amos Tversky and Daniel Kahnemann gave a similar scenario to participants in a famous 1980s experiment.

'Most people are risk averse,' says Brockdorff, 'they want to save 200 people. Tversky and Kahnemann then presented a similar scenario to another group of individuals. The logic of this scenario was identical but the presentation was different. This time, option one had a one third probability that nobody would die and a two thirds probability that all 600 people would die. Option two would kill 400 people. 'In this case,' comments Brockdorff, 'most people would advise the minister to go for the first option; the more risky option.' 'Intelligent' robots that live in the fantasy world of Asimov's novels would probably not make different decisons in the two scenarios; neither would a modern day computer. Why do humans behave so seemingly irrational? More importantly, when are humans prone to irrational behaviour?

Brockdorff wanted her work to improve people's lives. Evidence-based policy making was her chance to make a difference

'People have the impression that humans [...] make perfectly rational decisions. Indeed, other disciplines base whole theories on this [...] but it is not true!' exclaims Brockdorff. Knowing how people make decisions is an important area of research in the emerging fields of cognitive science and cognitive neuroscience. As Brockdorff explains, decision making is interesting as a matter of pure scientific interest; the quest for knowledge. More important to society, however, it is essential that governments and policymakers understand how people make decisions in order to do the greatest good. Her lab is particularly interested in studying decisions making to inform public policy. Her lab's researchers investigate the way people make decisions in risky situations. She is currently involved in two projects funded under the European Union's Horizon 2020 programme that aims to inform policy at a European level, so-called evidence-based policymaking.

As part of the CITYCoP project, the team designed an experiment to understand what causes people to feel fear of crime in different situations. Participants spend a

TOOLS OF COGNITIVE NEUROSCIENCE

Cognitive scientists use a variety of tools to understand human behaviour and the brain. The basic tools include questionnaires and surveys. More sophisticated measures used by University of Malta researchers include eye-tracking, electroencephalography (EEG), and motion analysis. Brain scanning such as magnetic resonance imaging (MRI) and positron emission tomography (PET) are also used to understand how behaviour affects brain function.

period of time logging any time they feel insecure on a mobile application designed with the assistance of the Department of Intelligent Computer Systems (Faculty of ICT). They are also encouraged to take photographs of the situations that make them feel uneasy. The researchers can then analyse the responses and photos to understand, in detail, what makes people afraid that they will be victims of crime and how that affects the decisions they make. The results then help create an EU-wide city community-policing mobile application.

TERMINOLOGY

COGNITIVE SCIENCE is an interdisciplinary field of science that aims to understand the inner processes that form a person's mind. For example, decision making, memory, language, and reasoning. A cognitive scientist may come from a diverse amount of backgrounds including psychology, medicine, engineering, and mathematics.

COGNITIVE NEUROSCIENCE is a recent development from the field of cognitive science. This new field attempts to reconcile what we know about how people behave with a mechanistic, biological understanding of how the processes are carried out in the brain—termed the biology of the mind.

EVIDENCE BASED POLICY-MAKING is the idea that governmental and other public policies should be based on rigorous and objective scientific evidence. Since policies often deal with human behaviour, cognitive scientists are well placed to be involved in collecting and interpreting evidence for public institutions.

The second project called CARISMAND concerns preparedness and response to disasters and after-crisis recovery. It aims to provide a toolkit for disaster managers. '[It] will make [policy makers] sensitive to the influence of different cultures and different types of risk perceptions,' explains Brockdorff. Her team holds citizen summits that investigate how people from different backgrounds perceive risk and react to disaster situations. The first two CARISMAND citizen summits were held in Romania and Malta earlier this year. The processed results of these summits are then discussed at stakeholder summits. Brockdorff goes on to note that a stakeholder is any person or organisation that 'can possibly have an interest in disaster management.' Draft policies and procedures are then written up and that information is fed into the next series of citizen and stakeholder summits to iteratively improve the policies.

Brockdorff was not always interested in evidence-based policy making. Her early career was focused on pure academic research with little thought to its practical implications. As her career progressed, she wanted her work to improve people's lives. Evidence-based policy making was her chance to make a difference. She ended up bringing an entire field of research to the University of Malta.

She ends our interview with a warning. It is easy to assume that humans behave rationally, like robots, after all, we are all human and no one likes to think of themselves as irrational. This is why scrutinising evidence when drawing up policy is so important, even if it contradicts one's own belief. 'Unfortunately, much policy is not evidence-based at all,' laments Brockdorff. There is a lot of evidence from the field of cognitive science that could guide governmental policy, but 'it requires a certain level of skill [and knowledge]' to interpret it and apply it to policy.

Cognitive science did not exist in Malta before 2011 and it is only last year that the first Master course was launched. From this year Malta will have its own graduates in this field. They will potentially have the skills to interpret evidence for the government and local authorities. Imagine if these graduates could start a revolution where all governmental policy is based on scientific evidence.

For more information visit
www.um.edu.mt
/maks/cogscience/master_of_
science_in_cognitive_science
www.citycop.eu
www.carismand.eu

FURTHER READING

- Kahneman, D. (2013). *Thinking, fast and slow.*