

MANCHESTER  
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The University of Manchester

# POSTGRADUATE SUMMER RESEARCH SHOWCASE

2015



# LIST OF IMAGE AWARDS FINALISTS

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## HAIFA ALROQI

haifa.alroqi@postgrad.manchester.ac.uk

Faculty of Humanities

School of Arts, Languages  
and Cultures

### Your child needs YOU

The children in this picture are my children glued to handheld screen devices. A scene like this has become a familiar sight worldwide at homes, restaurants, buses, and malls. Children in the digital age are exposed to screen media at a very young age.

The American Academy of Pediatrics recommends zero screen time for children under the age of two and no more than two hours for older children. Research has found that heavy screen viewing for children aged 2 and under could be deleterious for early language development.

My research investigates the impact of the media viewing habits of young children on their language development. The results of the current research are expected to give parents and caregivers information on language development and on its relationship to media viewing. Screen viewing takes time away from human interaction.

Research suggests that parent-child interaction in particular is crucial to language development. For your child to grow and glow, your child needs YOU not your devices.



### EDMUND CHOW

edmund.chow@postgrad.manchester.ac.uk

Faculty of Humanities

School of Arts, Languages  
and Cultures

### Performing an Improvised Drama in an Public Park in Afghanistan

The growth of the cultural sector in Afghanistan, especially theatre, is still stunted due to decades of war and years of Taliban repression. While non-governmental organisations had external aid to fund smaller theatre productions such as circus arts and puppet theatres, many local actors are still struggling to make their voices heard in a climate where public entertainment is frowned upon.

In fact, in December 2014, a bomb blast went off in the audience during a theatre performance, a shocking indication that theatre is still taboo. Radio dramas, however, are more commonly accepted in Afghanistan.

But will taking drama out into public spaces encourage a different form of education and entertainment? This picture shows two actors improvising a scene in a park in Kabul which attracted a huge enthusiastic crowd. Their applauding this performance, including police officers taking videos of the show, might indicate a new trend for further research.



### JENNIFER CHOW

jennifer.chow@manchester.ac.uk  
Faculty of Humanities

School of Arts, Languages  
and Cultures

#### The last sailors on the Mary Rose

This Environmental Scanning Electron Microscope (ESEM) scan shown here is of a single strand of wood fibre from a wooden fragment off of the Mary Rose warship that sank on the 19th of July, 1545. Understanding how the wood had survived for more than 400 years in the seabed is vital towards allowing us to know how we can preserve underwater wooden heritage better.

In the picture, an oval structure and several other worm-like structures are shown, they are known as diatoms. They are considered to be one of the most successful group of unicellular algae, with their distinctive siliceous cell walls which resist degradation, allowing us to use them to understand more about the history of the sea.

Diatom shells are extremely robust structures that are usually found within sediment layers in marine and fresh waters.



## ALEX CLARKE

alex.clarke-3@manchester.ac.uk

**Faculty of Engineering  
and Physical Sciences**

**School of Physics and Astronomy**

### **Giant Telescopes For Giant Galaxies**

9 km east of Narayangaonin in India, I use one of the worlds largest arrays of radio dishes, the Giant Metrewave Radio Telescope (GMRT) to detect light from some of the biggest structures in the universe - Giant Radio Galaxies.

These rare objects have jets that extend millions of light years out into space from a central galaxy. Whilst hidden in the visible part of the spectrum, we see the jets glowing brightly at radio wavelengths, which is why we require arrays of large dishes to capture images of these striking structures.

One of the reasons these jets are truly gigantic, is that they are powered by supermassive black holes that accelerate electrons to relativistic speeds. Combined with the presence of large-scale magnetic fields, these electrons emit the radio waves that we receive on Earth. My research aims to understand the unique environment required for such astonishing structures to form.



**KATHERINE CROUCH**

katherine.crouch@manchester.ac.uk

**Faculty of Humanities**

**School of Arts, Languages  
and Cultures**

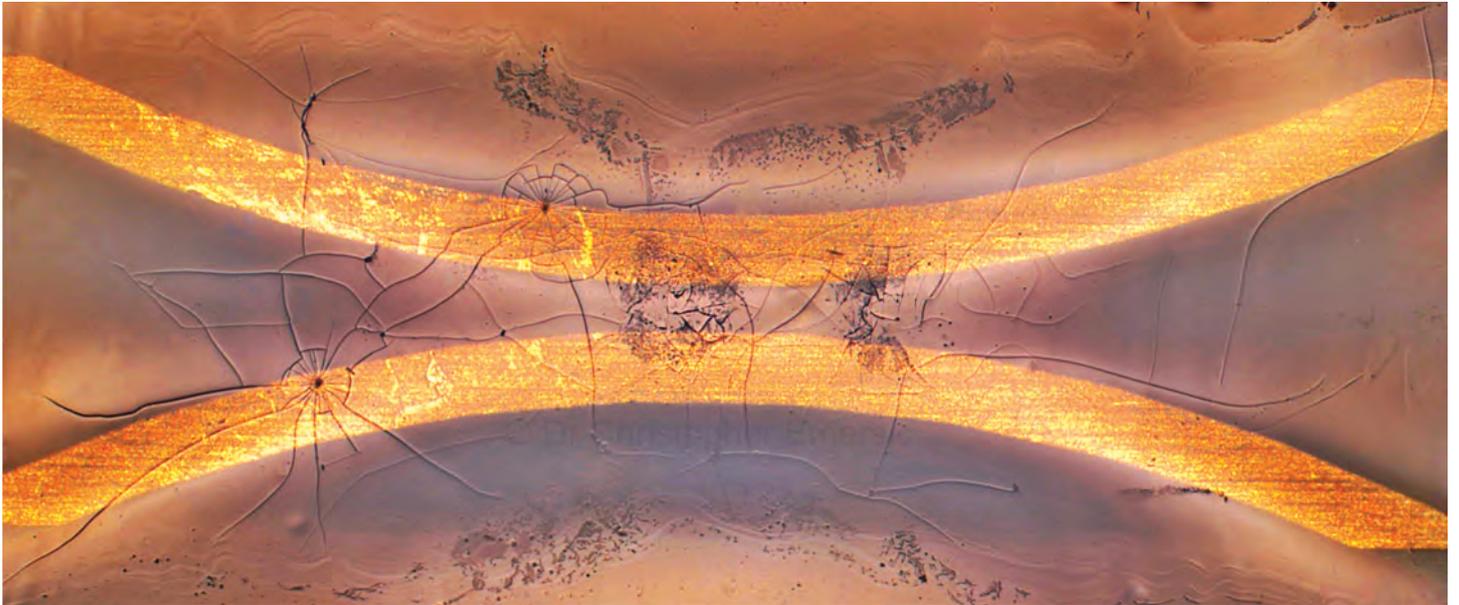
**“They say you never forget  
your first...”**

Your first skeleton, that is. This is but one of the many jokes shared with me during my fieldwork with an archaeological unit last summer.

I joined them during the excavation of a former medieval cemetery, yet I wasn't there to study the archaeology but rather the archaeologists themselves. This is because my PhD research explores the practice of UK mortuary archaeology – the archaeological investigation of past practices relating to death and burial – and the emotive impact of working with human remains on its practitioners, an issue which remains largely undiscussed by the profession itself.

Whilst the majority of archaeologists report feelings of honour and privilege at the opportunity to excavate the remains of the dead – hence why you always remember 'your first' – such experiences can also prove disquieting: it is a taboo to disturb the dead in any culture where burial is the norm.

Thus, whilst laughter and banter might seem incongruous during the excavation of human remains, a robust sense of humour can act as a displacement mechanism that eases any underlying feelings of guilt or unease.



**CHRISTOPHER EMERSIC**

christopher.emersic@manchester.ac.uk

**Faculty of Engineering  
and Physical Sciences**

**School of Electrical  
and Electronic Engineering**

**The Future of Air Travel:  
The All-Electric Aircraft**

The future of our air travel lies with the next generation of aircraft technology and the so-called 'all-electric' aircraft. Our continuous drive towards a greener and more sustainable use of aircraft requires reducing to a minimum their harmful impact on the environment and global climate change.

Future aircraft need to become much lighter and more energy efficient, and this can be achieved by replacing heavy mechanical systems with efficient all-electrical ones.

This, however, dramatically increases the demands on the electrical power systems, which need to be run at much higher voltages.

But higher voltages can lead to an increased chance of electrical discharge in the power systems, causing them to fail, and so this research in action looks at ways in which the aircraft power electronics can be designed and protected so they can deliver increased power at higher voltages while maintaining maximum safety levels.

One approach to achieving this is to coat circuit boards with a protective layer, and our research looks at ways to maximise their protective properties. My photo shows a failed coating under the microscope that cracked and did not protect the circuit well. But this provided us with valuable insights into how to prevent such failure.



### ASAD GHALIB

asad.ghalib@manchester.ac.uk

Faculty of Humanities

Institute for Development Policy  
and Management

### Contentment as wealth – reflections on the life of a rural vegetable vendor

Microcredit provides credit services to poor clients. My doctoral research assessed its impact on rural livelihoods. During my fieldwork in a remote rural village in Western Pakistan, I met Ali, who ran a small vegetable vending business from the front room of his small house.

After going through the regular structured interview questions, the discussion led to why he had decided not to avail a microcredit facility. Sitting in front of empty shelves and empty containers and displaying limited stock, he said 'I find no reason to borrow and as a grandfather pushing 70, I have played my innings and I am content with what I have'.

Such informal discussions and ethnographic observations led to deep insight to the lives of ordinary people like him. He yearned for neither fame nor fortune and I felt that despite having little, he was not poor. He explained that while he might not have modern luxuries, he was content with what he had.

I left his shop with several lingering questions....how should we really define poverty, which factors make a man really poor, is poverty the lack of material wealth or are people poor because they lack inner peace and contentment?



**STAVROS KEPPAS**

stavros.keppas@postgrad.manchester.ac.uk

**Faculty of Engineering  
and Physical Sciences**

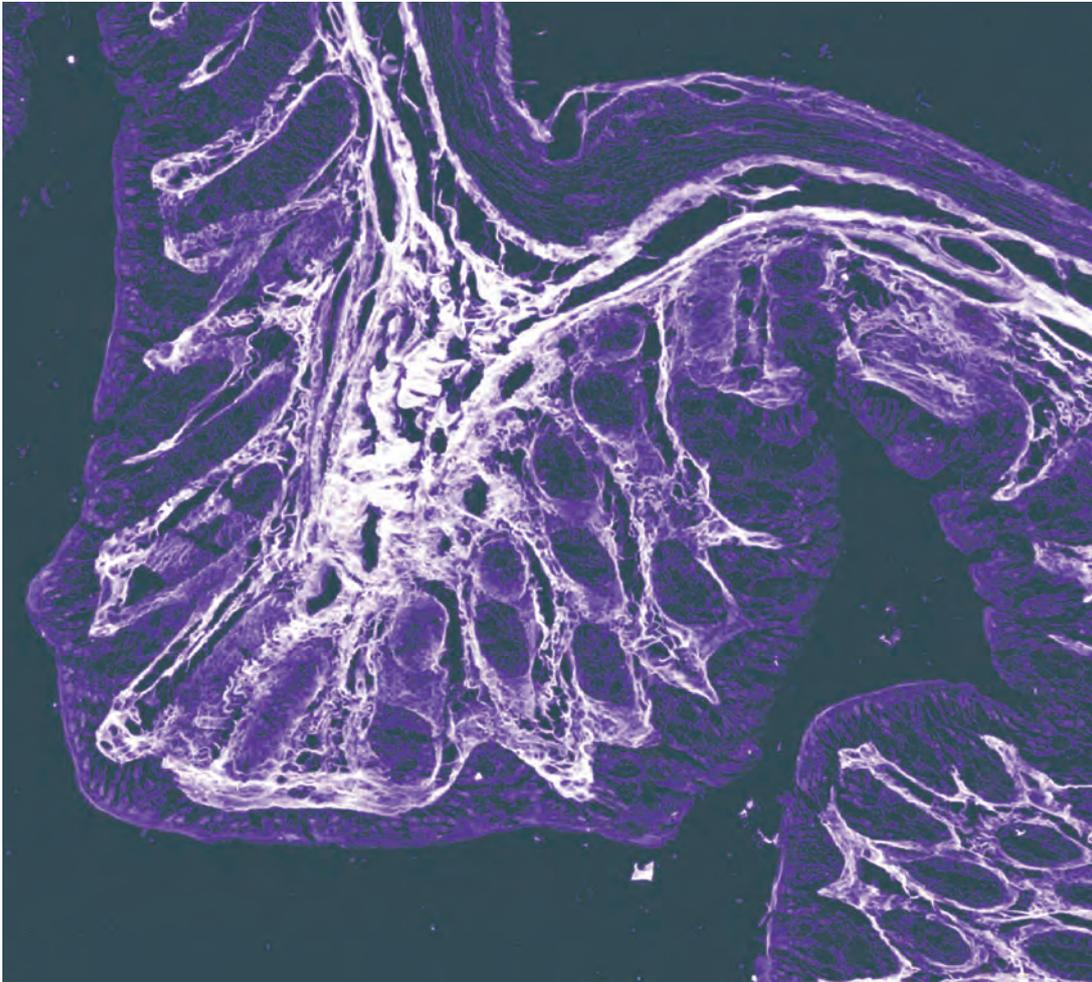
**School of Earth, Atmospheric  
and Environmental Sciences**

**"Cloud explosion"**

This photo was captured on May 24th (2014) in Thessaloniki and depicts a Cumulonimbus, thus a storm, cloud. Actually, it seems like a nuclear explosion.

My PhD project is on linking in-situ and radar measurements and developing an algorithm that can recognize different hydrometeor types and their traits in the atmosphere using radar data. This photo depicts the real target of my work, which is the clouds. Such clouds might cause damages in human properties and their timely identification could prevent losses.

However in a more general sense it could present every single "brain-explosion" that takes place, every time I stuck on something new that I cannot understand. Everything seems to be peaceful away from the research (like the blue sky), but inside the research things are so complicated as the structure of a storm cloud.



**VICTORIA KINSLEY**

victoria.bridge@postgrad.manchester.ac.uk

**Faculty of Life Sciences**

**The gut mini-brain**

The image shows silver stained nerves in the large intestine of a mouse.

The gut nervous system can function independently of the central nervous system and is often referred to as a 'mini-brain'.

These nerves are vital in maintaining normal digestive function, however research suggests that gut nerves are also involved in the immune response.

Changes in gut function have been associated with all manner of conditions from obesity and diabetes to inflammatory bowel disease and depression. Appreciating how individual variation in nerve function can influence susceptibility to disease is an important step forward in understanding the human response to inflammation.



### AARTI KRISHNAN

aarti.krishnan-2@manchester.ac.uk

Faculty of Humanities

School of Environment,  
Education and Development

### Reconstructing lives: Capturing value through developing human capability

Over 18% of the Indian rural population is unemployed or underemployed and 26% live below the poverty line, the main reason for this is the dearth of skills possessed to diversify livelihoods. Keshav Rajan, grows cotton on less than an acre of land; with the income earned he cannot even afford three meals a day for his family.

The lack of technical know-how left him helpless for years. With a burden of debt, Keshav was on the verge of suicide.

He enrolled in the National Rural Livelihood Mission (NRLM) in 2013, here he was taught to craft household kitchen items, which he sold in the local village centre.

Within months, he was able to build a new house and send his children to school. He captured more value both in terms of income and improvement in social status within the community. The government through the NRLM has provided alternate livelihood opportunities through capacity building to promote sustainable income flows.



**MARTIN LARSSON**

[martin.jesper@gmail.com](mailto:martin.jesper@gmail.com)

**Faculty of Humanities**

**School of Social Sciences**

**The Last Wild Fish**

A black night at the Girjalva River in southern Mexico. The dam that controlled it was closed. The water was therefore calm and shallow, making it easier to fish. I was in charge of paddling above the heads of the fishermen with their harpoons, and to document the amount of fish they caught.

The cooperative of the fishermen wanted my photos for the negotiations with the company in charge of the construction of a new dam in the river, to show the impacts that the new dam would have.

The fishermen were rather successful. Beside a monthly payment during the construction, they were promised to get support to produce fish in cages once the dam would be in place. But that fish would not taste like the wild ones, they complained, and they would have to spend time and money feeding it, taking care of it, and preventing thefts.



## SARAH STEEG

sarah.steeg@manchester.ac.uk

Faculty of Medical and Human Sciences

Institute of Brain, Behaviour  
and Mental Health

### Just a number? Possibilities for big data to illuminate our understanding of patient care

Human conditions, behaviours and experiences are at the heart of health care research. When these human elements are compressed down to data points, pooled and used for research, the poignancy of the content may be lost. My research project looks into how people's care is related to their future health. This photo illustrates the human side of healthcare data.

The numbers shown in this image are a 'snapshot' of a cohort study of more than 70,000 people.

These people have all been treated in hospital for self-harm and have experienced different types of care. Each row of numbers in this image represents a person. Each number in their row represents an aspect of their experience.

By shining a spotlight on the people in the image, I was able to capture their reflection in the screen showing the data. The image aims to show that statistics can acquire greater depth if we pay attention to what is contained within them.



**CRAIG THOMAS**

craig.thomas@manchester.ac.uk  
Faculty of Humanities

School of Environment,  
Education and Development

**Don't frack my future! Understanding responses to shale gas development in Great Manchester**

I find this image difficult to look at because it expresses in visual form some of the deep concerns I have encountered in my research into conflict around proposed 'fracking' developments at Barton Moss in the city-region of Greater Manchester.

The image is of a protestor, 8 months pregnant, on a city centre march against fracking. She told me that she was there was to protect her unborn child's future. The march itself was one of a series of ways in which local people sought to engage with the issue of

fracking and a potential future shale gas industry in the North West of England.

As there hasn't been any fracking in the area to date, a driving force behind opposition to fracking was a perceived conflict of geographical futures, and the potential impacts that new energy infrastructure developments in the present will have on future generations.



**JAMES WEST**

ejwestuk@gmail.com

**Faculty of Humanities**

**School of Arts, Languages  
and Cultures**

**The mind of a postgraduate student**

This picture was taken at the National Building Museum in Washington D.C during a research trip last year. Part of my doctoral project examines how race history and civil rights commemoration in the United States has been imagined architecturally through Museums and commemorative spaces.

The person in the image is my friend's son, who is standing in the middle of a temporary installation in the Museum's atrium created by international architectural firm Bjarke Ingels Group. The image is connected to this year's theme of 'Research in Action' on multiple levels.

In a literal sense taking pictures at Museums and commemorative sites is an important way for me to gain new perspectives on my research.

On another level this image plays on the deeply contested ways in which race history and civil rights commemoration are experienced on an individual and collective level, and how that experience changes depending on both viewpoint and position. On a third level, my friend and I found this image a humorous reminder of the emotional and intellectual struggles we both face in our doctoral research, which can often seem like a maze without end!

As always, the problem – and solution – is a matter of perspective.



**TAHMINA ZEBIN**

tahmina.zebin@manchester.ac.uk

**Faculty of Engineering  
and Physical Sciences**

**School of Electrical  
and Electronic Engineering**

**Multidisciplinary Research:  
Eyes of an outsider-Infinite  
curiosity to the Unknown**

Being trained as an Electrical and Electronic Engineer, working on a PhD to build an instrument for Clinicians has been quite difficult for me.

It was because what I can measure as an engineer has to be meaningful to a clinician. I started working for the construction of the device with the perspective of an outsider to understand the clinical needs, and then translated it in engineering terms to apply the skills I already have.

I believe it has widened my horizon and I have learnt to look at things in a new manner. The picture of a bird looking at the woods from its own burrow somewhat resembles my first look to multidisciplinary research. Eyes of an outsider- Infinite Curiosity to the Unknown!

**Manchester Doctoral College**  
University of Manchester  
Oxford Road  
Manchester M13 9PL  
United Kingdom

Tel: +44 (0)161 275 8792  
Email: [mdc@manchester.ac.uk](mailto:mdc@manchester.ac.uk)  
[www.manchester.ac.uk](http://www.manchester.ac.uk)