



Interdisciplinarity for Impact

Workshop Report



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Executive Summary

This report arises from a one day intensive workshop co-hosted by Trinity College Dublin and Dublin City University on the 1st of June 2016 supported by funding from the Irish Research Council. The aim of this workshop was to explore the topic of how Interdisciplinary Research (IDR) can enable researchers to achieve deeper impact for their work than would be otherwise possible and to draw recommendations from key stakeholders within the academic community on the island of Ireland as to how IDR might be better supported.

Why the focus on Interdisciplinary Research?

The emphasis on IDR as a means to address the grand challenges that global society is faced with is a widely acknowledged development throughout the research and the higher education community worldwide. This emphasis does not purport to promote IDR over and above single discipline scholarly endeavour. It does however acknowledge that the challenges that society faces are **so multifaceted in nature that they demand a variety of disciplinary approaches and perspectives in order for comprehensive and effective solutions to be proposed.**

Many research leaders and funders are turning their attention to adapting their funding structures and supports to better foster and embed IDR. In 2014 the European Commission launched Horizon 2020 with its societal challenge based framework approach. In 2015 the UK's Global Challenges Research Fund was launched with £1.5 billion being made available for research that cuts across disciplines to address complex global problems. Most recently in 2016 a statement of principles on Interdisciplinarity was endorsed by participants at the annual meeting of the Global Research Council in Delhi to support the enabling environment necessary for IDR.

What does this focus mean for the Irish research environment?

As articulated by the Irish Research Council in its call for the Creative Connections initiative, under which this workshop was funded, Ireland's research and higher education ecosystem because of its relatively small-moderate size by International standards has naturally stimulated inter-disciplinary activity within discrete institutions for some time. Notwithstanding this existing activity base care needs to be taken to ensure that the wider Irish system can respond to the opportunities arising from new and adapted funding instruments (at both national and international level) oriented towards supporting IDR.

We should not assume that the structures and conditions that support and incentivise researchers to come together to address complex problems are in place or can be put in place easily in the context of the Irish system.

What recommendations are made in this report?

This report summarises a set of recommendations arising out of this workshop for a number of different stakeholders in the Irish Higher Education ecosystem to help better foster and support IDR at a national level. As applicable, we have broken those recommendations down according to the thematic breakout sessions at the workshop as they pertain to a number of different stakeholder groups.

- Ethics
- Funding
- Sex and Gender
- Human and Socio-Cultural issues
- Open Access
- Linguistic issues

The appendices in this report summarise the presentations and discussions that took place during the workshop. A number of common recommendations surfaced during the presentations and subsequent discussions. Most notably many reinforced the point that IDR projects often need longer timeframes to realise their potential because of the complexities of working across disciplines something that was echoed in the djs survey report for the Global Research Council 2016 Annual meeting¹.

It was also clear that if IDR is to be embedded in Institutional cultures then opportunities for interdisciplinary collaboration need to be built into existing training programmes for Irish doctoral students. Interdisciplinary provision as part of teaching curricula is something that is gaining more attention in the UK with the publication of a report on the subject in 2015 by the UK Higher Education Academy².

Finally it was agreed that in identifying ways to support IDR we should be sensitive to the risk of stifling the creativity inherent in many interdisciplinary collaborations by over-institutionalising it. We should respect, as Professor Catherine Lyall termed in her presentation, ‘the mission of insurgency’ that has come to be a hallmark of many of the most successful IDR collaborations.

Background

In October 2015 the Irish Research Council (IRC) launched a call for applications entitled ‘Creative Connections’ with the purpose of encouraging higher education and research institutions in Ireland to come together and formulate joint proposals for funded workshops examining IDR. The impetus for this call arose in an environment where interdisciplinarity in research is an issue which is gaining increasing attention among today’s research funders and leaders in order to position themselves for a societal challenge based research framework which requires that researchers across the Science, Technology, Engineering and Maths (STEM) and Arts, Humanities and Social Science (AHSS) disciplines collaborate.



¹See here: <http://www.globalresearchcouncil.org/summary-2016-annual-meeting>

²<https://www.heacademy.ac.uk/resource/interdisciplinary-provision-higher-education-current-and-future-challenges>

Recommendations

This report presents a summary of the recommendations that arose from the workshop. General recommendations have been drawn from the discussions in the morning sessions, and more specific theme-related recommendations come from the afternoon breakout sessions. For a wider understanding of the discussions around these recommendations, please see the appendices.

General recommendations¹

For Researchers

- In order to ensure that IDR projects succeed it's essential that **all parties have something to gain from the collaboration**. This kind of deep reciprocity is key and extends to recognising mutual and individual research goals.
- **All parties should be involved from day one of the project** to ensure that there is parity of esteem and that all parties are fully signed up to the project's stated aims.
- If we are to build a system that better supports IDR then **all actors in the HE system need to share experiences to avoid reinventing the wheel**. Events such as IDR workshops can aid the HE community to share intelligence and foster organisational learning.
- If researchers want better evaluation processes and systems for their IDR proposals then **there is an onus on the research community to participate in evaluation/review panels when approached by research councils**.
- **AHSS researchers should be brought in to collaborative projects with STEM researchers at the problem framing stage** in order that they can fully participate and have their opinion included.

For Institutions

- **There is a need for Irish HEIs to build in structured opportunities for IDR engagement** into the research training of early career researchers. This will help to strengthen a culture of IDR.
- **Institutions running IDR training programmes should introduce a policy of inviting external examiners who are sympathetic to an IDR approach to take part on PhD external examiner boards**.
- **Irish institutions should provide greater support at the post award/project management level**. Some of the areas that researchers require post award support in are the areas of ethics, data management and open access as a lot of ignorance persists.
- **It is important that all research outputs have some kind of digital identifier so that they can be tracked**. That should also include government policy papers. At the moment many Irish government policy documents are not tagged and this is an issue that needs to be raised.
- **Institutions should be aware that IDR is often of an 'insurgent' character**, challenging traditional approaches and perspectives.

For Funding Agencies

- **Additional training might be required for funding agency staff** to enable them to tailor their assessment systems to evaluate IDR proposals something, which is generally acknowledged among funders to be very challenging.
- In **addition enhanced guidance/ training is required for the evaluators** themselves in order to help them reach consensus on what quality looks like across disciplines and how it is measured.
- **Research funders may need to adjust their existing indicators of success or to identify more appropriate indicators**. Interim and end-of-grant evaluations conducted by funders may need to acknowledge that some of the outcomes emerging from IDR projects may be less tangible and also may take longer to be realised.

For a more thorough discussion of the issues highlighted in these recommendations, please see Appendix 2 – Morning session talks

- **Future funding calls could take account of barriers highlighted in the IRC survey and build in longer lead-in times in calls from announcement to deadline.** Respondents to the IRC survey indicated that a lack of connections across disciplines was one of the most pressing barriers to the integration of AHSS. A longer lead-in time during calls would allow researchers to identify and approach appropriate partners with whom they can build sustainable relationships.
- **Proper account should be taken of the true amount of IDR in the Irish Higher Education sector** in order to determine what has been done ‘organically’ and what requires additional funding to move forward, as there is significantly more IDR in the system than is often perceived.
- **Funders should continue with funding calls that attempt to encourage IDR** and should not abandon call structures after a first attempt. It may take a number of call iterations for the research system to fully adapt to the cultural shift that engaging in IDR often requires.

Funding Recommendations²

For Institutions

- **Institutions need to adapt to better host such funded projects in order to give all researchers equal say.** The practical implications of IDR on the financial side can also be a hurdle for researchers, as in most institutions only one school can hold a funding grant, yet two schools in the same institution might have equal rights to access the money.

For Funding Agencies

- **There should be stronger engagement between research officers and research funders.** Workshop participants recommended that research funders should engage with the research offices before calls launch, especially in relation to operational elements. This can help reduce everyone’s workloads especially around queries and to enhance the quality of applications submitted. Engagement should also continue in the post call phase in order to improve processes for future calls.
- **Funders should also ensure sufficient lead time, especially for calls that foster IDR,** as it can take time for people to find the ‘right’ partners. Research officers can help drive advance promotion for calls as well as use their contacts across disciplinary networks to help facilitate introductions and ‘match’ researchers.
- **Irish research funding agencies should engage more with each other to ensure consistency.** Examples of inconsistency are the two national Research and Development awareness campaigns currently running in parallel; the IRC’s *#LoveIrishResearch* campaign and the SFI ‘Science Rising’ campaign. While both were agreed to be worthwhile, significant overlap was noted across the two campaigns.
- **Leveraging money should not be the main goal of a National Funding agency.** There is a tendency to focus on targeting H2020 and industry funding as opposed to focusing on the quality of actual research being carried out. Increasing funding is not a bad objective in itself but shouldn’t be the main goal for a National Funding Agency. There was a positive impression of InterTradeIreland and Enterprise Ireland H2020 funding supports.
- **Funding calls need to become more sensitive to what is required of funding for IDR rather than trying to direct it.** It was commented that some larger funding agencies i.e. some H2020 Research and Innovation actions and SFI Research Centres are often designed to require IDR to achieve their goals, making them challenge-led rather than bottom-up. These types of calls are often poorly framed demonstrating little understanding of what is actually required.

²For a more thorough discussion of the issues highlighted in these recommendations, please see Appendix 4 - Reports from the Guided Networking Sessions (Funding)

Open Access Recommendations⁴

For Researchers

- **Researchers should ensure that they tag their research as being IDR in nature** in research profiles so that this is clearly visible to potential collaborators.
- **Researchers should ensure they have an ORCID ID.** This is especially important if researchers want their contribution captured in a publication where the majority of the other authors are from different disciplines.
- **Researchers should carefully consider what journals to publish in** when examining where the citations are for their particular area. It sometimes makes more sense to publish in less obvious journals.
- **Researchers should ensure their work is made available through Open Access.** This is particularly vital in the IDR world where access should be enabled not just for other academics but also for citizen scientists, the media and schoolchildren.
- **Researchers should use citation-tracking tools** in bibliometric databases.
- **Researchers should engage with alternative impact tools** such as Altmetric.com and promote their work via social media.
- **Researchers should not underestimate going to the right conferences** and meetings in order to network.

For Institutions

- **Institutions should support standardised metrics, altmetrics, access to tools and resources** and encourage a culture of best practice around case studies.
- **Institutions should liaise on the development and use of standardised identifiers** (eg. national research classification, ORCID, systemised & supported).
- **Institutions should work together to develop standardised reporting and evaluation methodologies,** particularly in support of IDR and societal & cultural impacts.
- **Institutions should monitor compliance and help develop capacity** in support of Open Access policies to Irish research publications and data.
- **Institutions should work together to lobby for proper coverage of Irish research in bibliometric databases.**
- **Institutions should recognise that managing the impact of IDR is as much about measuring the inputs as it is about measuring the outputs.** IDR in itself is a form of impact and is therefore right at the vanguard of new scholarly practices and communication.
- **In building a system that best supports IDR it is important that we consider the value and unique aspects of the Irish system** and work to preserve these rather than blindly following what others have done.
- **More ‘intelligent’ forms of digital capture are needed to ensure outputs from arts and performance based research are accessible.** Open access does not capture the outputs of some arts and performance based research.

For Funding Agencies

- **Irish funding agencies should engage with experts outside Ireland, such as The UK based Digital Curation Centre (DCC)** to create data management templates. The DCC provides expert advice and practical assistance to research organisations wanting to store, manage, protect and share digital research data and has indicated that they would be open to working with Irish funders.
- **The Irish Social Sciences Data Archive (ISSDA) was cited as a good example of a platform, which manages data on a national level and should be supported.**

⁴For a more thorough discussion of the issues highlighted in these recommendations, please see Appendix 4 - Reports from the Guided Networking Sessions (Open Access/Open Data)

Sex and Gender Aspects recommendations⁵

For Researchers

- **IDR projects need to engage in outreach activities that specifically target potential female students at as early a stage as possible.** While the impact of gender in the research of natural sciences such as Physics and Inorganic Chemistry is variable there is still a responsibility to address them where appropriate. In addition effort should be made to address gender balance in teams and management structures, other areas where researchers can address gender are through public outreach activities and in attracting girls to study these subjects.
- **It is important to engage broadly with gender identities in research projects** and to have gender balance in focus/user groups when used.
- **Researchers should not assume social structures in Ireland and the EU are replicated** in other countries when designing research projects and transferring methodologies internationally.

For Institutions

- **Examples should be provided to researchers to demonstrate how incorporating sex & gender enhances research.** For example the importance of gender during drug trials, sex/gender in the design and use of spaces (and research around this was discussed), and the roles of gender in different communities. Irish examples in particular would be useful.
- **The absence of gender analysis in league tables/rankings needs to be highlighted by Institutions.**
- **Training is important in relation to ensuring gender balance in research teams at all levels** and can help prevent unconscious bias and encourage and promote women (e.g. through leadership development under the Aurora programme).

For Funding Agencies

- **Irish funding agencies should look at adopting a model that incorporates sex/gender issues into research projects,** as Horizon 2020, the Irish Research Council and Irish Aid have already begun to do. The recent Higher Education Authority National Review of Gender Equality in Irish Higher Education Institutions is a useful reference point in this regard.⁶
- **Funding agencies should recognise the need for parental leave (for both men and women) as it might arise during the course of a project.** As in a single-disciplinary project, the effect on an IDR project will require recruitment and possibly training in the case of long-term parental leave. This may be reflected in the final project budget.

Ethics Recommendations⁷

For Researchers

- **Researchers need to set reasonable expectations of research participants** in 'exchange' for their time/ data/ contribution and should minimise the risk of over research of 'captive' groups, for example those in custody or prison
- **Ethics should be considered in the preliminary stages of any project development and monitored throughout** to ensure that obligations are met appropriately and effectively.

⁵For a more thorough discussion of the issues highlighted in these recommendations, please see Appendix 4 - Reports from the Guided Networking Sessions ('Sex and Gender aspects')

⁶http://www.hea.ie/sites/default/files/hea_review_of_gender_equality_in_irish_higher_education.pdf

⁷For a more thorough discussion of the issues highlights in these recommendations, please see Appendix 4 - Reports from the Guided Networking Sessions (Ethics)

For Institutions

- **Ethics should be given more consideration as a professional essential for all researchers and researchers** should be provided with training as to how best deal with these issues in their research projects.
- **Institutions should ensure their researchers are safe from physical, psychological or emotional harms when conducting research.**
- **HEIs need to consider the efficiency and effectiveness of their institutional ethics committees** and whether more standardisation is needed in relation to membership, training, quorums, conflict of interest and monitoring.

Linguistic Aspects recommendations⁸

For Researchers

- **Researchers need to learn to speak outside their vernacular.** Researchers themselves can mediate this through a common language or by a disciplinary ‘interpreter’. The language of both the research and the project needs to be carefully examined as part of the collaboration.
- **Project partners should be aware that non-English speaking partners will be at a disadvantage** when publishing as English is the most commonly used language of academic publishing.

For Institutions

- **Institutions need to adopt a more neutral common tongue, and interpreters need to be facilitated and supported.**

For Funding Agencies

- **The language of engagement within research teams needs to be open and needs to avoid a sense of hierarchy or privilege.** Funding agencies use a model of labels of roles within research teams, such as ‘principle investigator’, which can instil a sense of hierarchy. In IDR, where both disciplines are represented through experts in their respective fields, this hierarchy is less appropriate.
- **As for Institutions, funding agencies need to adopt a more neutral common language** when dealing with IDR as different disciplines use different terminology for common phenomena.

Human and Socio-Cultural Factors Recommendations⁹

For Researchers

- Researchers need to be aware of a longer timeframe required to ensure the successful establishment of multidisciplinary teams in cross-cultural contexts.
- Researchers need to understand and be sensitive to local conditions and contexts, which can affect project implementation.

⁸For a more thorough discussion of the issues highlights in these recommendations, please see Appendix 4 - Reports from the Guided Networking Sessions (Linguistic Aspects)

⁹For a more thorough discussion of the issues highlights in these recommendations, please see Appendix 4 - Reports from the Guided Networking Sessions (Human and Socio-Cultural factors)

Resources

Over the course of discussion a number of useful resources were highlighted by speakers and participants. Details are provided below.

Theme	Title	URL
Open Access / Open Data	Open Aire Fact Sheets for researchers and research administrators in EC funded projects	https://www.openaire.eu/services-factsheets
	Guidelines on Data Management in Horizon 2020	http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf
Ethics	Horizon 2020 Ethics issues self-assessment	http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/ethics/h2020_hi_ethics-self-assess_en.pdf
Sex/Gender Issues	The Gender Toolkit by Yellow Window	http://www.yellowwindow.be/genderinresearch/

Acknowledgements and Organising Committee

The organising committee would like to thank the following:

Peter Brown and Maria O'Brien from the Irish Research Council for their support in implementing this programme of investigative workshops and supporting them accordingly. It should also be noted that many in attendance during the day praised the 'Creative Connections' initiative.

The staff in the Trinity Long Room Hub for hosting the Interdisciplinary Workshop on 1st June 2016 on which this report is based.

The speakers at the workshop: Niamh Brennan, Peter Brown, Martina Hennessy, Catherine Lyall, Barry Lyons, Declan McKibben, Jane Ohlmeyer, and John Thompson.

The Breakout session moderators: Niamh Brennan, Barry Lyons, Alex O'Connor, Oonagh Kinsman and Martina Hennessy and Eileen Drew.

Breakout session rapporteurs: Helen Burke, Rachel Barrett, Raquel Harper, Claire McKenna, Emma Siddall and Fiona Smyth.

Report editor Vicky Garnett for her input into the preparation of this report.

The organising committee for the workshop included the following representatives from TCD and DCU.

Professor Jane Ohlmeyer, *Director, Trinity Long Room Hub, Arts and Humanities Research Institute, TCD*

Professor Andy Way, *Deputy Director, ADAPT*

Ms Doris Alexander, *Research Manager, Research Development Office, TCD*

Dr. Alexander O'Connor, *Lecturer in Computer Science, Dublin City University*

Ms Maureen Burgess, *Research Programme Officer, Trinity Long Room Hub*



Appendix 1

Workshop Programme



Morning Session

The aim of the morning session (plenary) is to articulate the current trends in the area of interdisciplinary research (IDR) broadly and to demonstrate to participants, using a number of exemplars, how interdisciplinary networks can be harnessed to affect deeper and lasting impact for their research results.

9:30 **Registration and Coffee**

10:00 - 10:10 **Introduction**

Professor John Boland, Dean and Vice President for Research, Trinity College Dublin Mr. Peter Brown, Assistant Director, Irish Research Council

10:00 - 10:40 **Setting the Scene**

Speaker: Professor Catherine Lyall, University of Edinburgh, an expert in the promotion and management of interdisciplinary research, will provide an external perspective outside of the Irish system about the challenges faced trying to support interdisciplinary research and the importance of integrating different levels in any Higher Education System– researcher, institute, funding agencies, policy maker.

10:40 - 11.40 **Presentations from translational humanities exemplars**

This session will include presentations from 3 speakers representing exemplars who have successfully collaborated across the AHSS/STEM divide in both TCD and in DCU. These speakers have been selected in order to address different maturity levels from early to more established in an interdisciplinary collaboration and the depth of impact achieved at each level. During the presentations these speakers will address questions like what prompted them to initially seek each other out, what are the benefits of the collaboration to their research careers that would not have been possible on an individual level, how do they sustain their collaboration, what structures in their institutions (or elsewhere) aided or hampered their engagement and what funding have they been able to leverage collectively that they would not have been able to access on an individual basis

Maturity Level 1 This level represents a small and relatively recently established cluster of researchers from different disciplines who have initiated contact across the AHSS/STEM divide. The group may not necessarily have external funding but they have looked at forging a shared mission and have addressed mechanisms to embed their collaboration in some kind of institutional structure

Proposed Speakers Dr. Barry Lyons, School of Medicine, TCD will speak representing his involvement in the TCD medical humanities initiative. This initiative involves a cluster of researchers from a variety of backgrounds who are concerned with the history and culture of human health, disease and medicine, and with how research into these areas can influence policy and practice.

Maturity Level 2 This level represents a more established group of researchers working across the AHSS/STEM divide where there is a high degree of trust and cooperation between individuals. The group's interactions have resulted in the securing of external funding and a proven record of research output. They are involved in initiatives in their institution that recognise their activity at an institutional level i.e. involvement in an institution wide centre, institute or research theme.

Proposed Speaker Dr. Jennifer Edmond, representative from the TCD 'Digital Humanities' research theme and coordinator of the FP7 funded CENDARI project, a €6.5M FP7 Research Infrastructure project for medieval and modern history

Maturity level 3 This level represents a nationally recognised large scale, externally funded centre that undertakes interdisciplinary research across the AHSS/STEM divide as part of its activities.

Proposed Speaker Mr Declan McKibben, Head of Design and Innovation, SFI ADAPT centre. ADAPT is a research centre that combines the expertise of researchers across TCD, DCU, UCD and DIT and its industry partners to produce digital content innovations.

11:40 - 11:55 Questions and Answers

11:55 - 12:05 Tea and Coffee

12:05 - 12:30 The Impact of interdisciplinary research

Many believe that interdisciplinary research hampers career progression. This presentation will examine the realm of interdisciplinary research and publication and provide advice as to how to maximise benefit from such involvement.

Proposed Speaker Ms Niamh Brennan, Research Manager in the Research Informatics Unit in Trinity College Dublin.

12:30 - 12:55 Structures for fostering IDR research

This session will include a presentation from an institutional representative who has gone through the UK's Research Excellence Framework (REF) process and has used examples of interdisciplinary research across the STEM/AHSS divide as a means of demonstrating impact as well as a representative from an Irish HEI who can talk about their experience in translating impact from interdisciplinary research projects.

Speaker Professor John Thompson, Queens University Belfast (emeritus) Professor Thompson will also talk about his current role as a reviewer for the UK's Arts and Humanities Research Council (AHRC) 'super panel' and the role of impact in evaluation processes there.

12:55 - 13:20 'Translating transdisciplinary impact: a journey'

Speaker Professor Martina Hennessy, Associate Dean of Research, Trinity College Dublin.

12:05 - 12:30 Question and Answers

12:05 - 12:30 Lunch, Poster Session & Information stands

12:05 - 12:30 Poster Session The purpose of the poster session will be to give early stage researchers engaging in IDR across the AHSS/STEM divide an opportunity to showcase their research to the wider workshop audience.

Stand on funding opportunities for interdisciplinary research

A stand, manned by a combination of representatives from the DCU and TCD research support offices will be present to answer any questions participants have in relation to available funding for interdisciplinary research.

Afternoon Session

The aim of the afternoon session is to provide participants from different disciplines the opportunity, via a set of ‘hands on’ sessions, to network and discuss areas of mutual interest with the help of experienced moderators. It will comprise of a semi- structured networking activity and feedback on this to the plenary.

14:30 - 16:30 Semi- Structured Networking Activity

This guided networking session will be structured around 6 discussion topics reflecting areas of common relevance for Arts, Humanities and Social Science (AHSS) researchers as well as those from Science, Technology, Engineering and Maths (STEM) backgrounds when getting their research projects off the ground. The discussion topics and the moderators assigned to facilitate them are listed below:

Sex and Gender aspects – to be moderated by Professor Eileen Drew, Trinity College Dublin.

Designing research projects to account for Human and Socio-Cultural factors-moderated by Dr. Martina Hennessy, Trinity College Dublin

Taking Language and Linguistic variation into account –moderated by Dr. Alex O’Connor, Dublin City University

Open Access and Open Data-moderated by Ms Niamh Brennan, Trinity College Dublin

Ethics-moderated by Dr. Barry Lyons, Trinity College Dublin

Research Funding-moderated by Dr. Jennifer Edmond, Trinity College Dublin

All participants will be allocated to participate in discussion sessions around 4 of the topics over the course of 4 ‘25’ minute discussion sessions between 14.30 and 16.10. All participants will be provided with a list of their allocated sessions when they register in the morning. Each discussion session will last 25 minutes after which participants will move to the next discussion session that they have been allocated to. There will be a coffee break for at 16.10 to give the moderators and rapporteurs an opportunity to prepare feedback on discussions for the plenary during the final hour of the event.

16:30 - 17:20 Feedback to Plenary from Semi- Structured Networking Activity

17:20 - 17:30 Closing remarks

Appendix 2

Morning Session Talks



State of Play in Ireland

Mr Peter Brown, Assistant Director, Irish Research Council

Mr. Brown shared a number of findings that emerged from a recent survey on IDR (and some of the challenges involved) that the IRC conducted amongst representatives of the Irish research community. The survey was instigated following concern expressed that despite the strong track record of Ireland in Arts, Humanities and Social Science (AHSS) disciplines we are not seeing Irish AHSS partners involved in funded European consortia across the H2020 societal challenges and the LEIT programme. There were 190 responses to the survey. Over half of the respondents indicated that they were not engaged in IDR which demonstrates that there is still a significant way to go to cultivate IDR in the Irish research system.

Of the perceived barriers to integrating AHSS partners in H2020 proposals, according to survey respondents, the primary barrier identified was a lack of time due to existing commitments. The second perceived barrier is a lack of connections across disciplines while the third barrier was insufficient funding at national level for projects that embed AHSS across other disciplines. There are, however, national funding programmes that aim to integrate AHSS and STEM disciplines in challenge focused areas but both SFI and IRC have experienced under subscription to these programmes in the past.

When asked to identify the top three measures that could best improve Ireland's performance on embedding AHSS in H2020 proposals, the most popular response was support programmes within institutions. Second-most was a stronger emphasis to be placed on IDR and the integration of AHSS by leaders in HEIs while the third measure was the provision of structured opportunities for IDR engagement at the level of postgraduate research education.

Setting the scene – an external view

Professor Lyall, University of Edinburgh

Professor Lyall has worked on a number of evaluations and studies tasked with reviewing the integration of IDR in both funding programmes and policy. Most recently she completed a study for the UK Higher Education academy looking at interdisciplinary learning and teaching provision. Professor Lyall drew on this wide ranging experience for her presentation when outlining the challenges faced trying to support IDR and the importance of integrating different levels in any Higher Education System: researcher, institute, funding agencies, policy maker.

Researcher Level

At the level of the researcher engaging in IDR presents different implications for early stage researchers (ESR) and experienced researchers. At ESR level it is acknowledged that are significant challenges in developing an IDR thesis in order to integrate knowledge across domains and develop a cohesive argument. Also there are well-documented concerns about poorer career structures and the difficulty of having IDR papers published in well regarded journals. There are also implications for more experienced researchers with many research intensive universities still regarding research that is 'purer' and more theoretical in nature being of a higher value than research which is more pragmatic or applied. AHSS researchers may also have to navigate tricky roles when engaging in IDR as they can often assume more subordinate 'service roles' for instance being designated the role of mediator or public engagement liaison point. There can be a tendency in IDR projects to involve AHSS collaborators at a later stage whereas they need to be 'built in' to projects at the research agenda setting/ problem framing stage.

Institutional Level

There is an acknowledgement that research intensive institutions, whose reward and recognition structures are set up along disciplinary lines are in the main poorly set up to support IDR. As such it can therefore be harder to achieve success and recognition for people who follow the IDR track.

Funder Level

The decisions that research funders make are hugely important in shaping the research agenda. Additional training might be required in order to support research funders in tailoring their evaluation systems to evaluate IDR proposals, which is hugely challenging. Moreover training is required for the evaluators themselves if they are to reach a consensus on what quality looks across disciplines and how it is measured.

Interim and end of award evaluations need to acknowledge that some of the outcomes that emerge from funded IDR projects may be less tangible and also may take longer to realise so research funders may need to adjust their existing indicators of success or to identify more appropriate indicators. The question of sustainability also needs to be addressed. In the UK there are a number of initiatives that are set up but which face serious issues once the initial pump prime funding phase finishes.

Policy Makers Level

Professor Lyall supported the conclusion of the IRC survey that further emphasis needs to be put on integrating structured opportunities for IDR into researcher's earlier education. She commented that the issue of IDR education is becoming a 'live' topic of debate in UK Higher Education circles. There have been a number of studies in the UK looking at how IDR fared in the Research Excellence Framework (REF) addressing concerns that the REF creates a barrier to IDR. The 'Review of the UK's IDR using a citation based approach'¹⁰ found that a lower than expected volume of IDR articles were submitted to the REF assessment. However another study 'The nature, scale and beneficiaries of research impact'¹¹ conducted by King's College London and commissioned by Higher Education Funding Council for England (HEFCE) showed that nearly two thirds of the impact case studies drew on research from multiple disciplines. The Stern review of REF, due to report in Summer 2016, is attempting to answer a number of questions including whether the REF could be further refined in order to incentivise constructive and creative behaviours such as promoting IDR.

Professor Lyall also spoke about stakeholder engagement as an important factor when conducting IDR. She commented that there are debates in some circles about why we should expect the public to give of their time and engage as stakeholders in research projects as well as a growing recognition of 'engagement fatigue' in some quarters with the risk that the impact agenda could fail those it was set up initially to benefit. Professor Lyall concluded with a message that IDR has often in the past been driven by what Klein has termed "a mission of insurgency" to find different ways of working across disciplines that breaks with traditional conventions. All stakeholders in this debate must be conscious of the risk of stifling the creativity inherent in many IDR collaborations by over-institutionalising it.

¹⁰Elsevier,. (2015). *A Review of the UK's Interdisciplinary Research using a Citation-based Approach*. Elsevier Report To The UK HE Funding Bodies And MRC. Elsevier. Retrieved from <http://www.hefce.ac.uk/pubs/rereports/Year/2015/interdisc/Title,104883,en.html>. (accessed 17th July 2016)

¹¹King's College London and Digital Science (2015). *The nature, scale and beneficiaries of research impact: An initial analysis of Research Excellence Framework (REF) 2014 impact case studies*. Bristol, United Kingdom: HEFCE. Available from <http://www.kcl.ac.uk/sspp/policy-institute/publications/Analysis-of-REF-impact.pdf> (accessed 17th July 2016)

The Impact of Interdisciplinary Research

Niamh Brennan is the Programme Manager for Research informatics at Trinity College Dublin. Her presentation examined the realm of Interdisciplinary research and publication and provided advice as to how to maximise benefit from such research.

Within the Irish Higher Education sector, we are told that IDR is on the rise that it takes time to have an impact and that some fields are more interdisciplinary than others. Currently, we measure the impact of research through bibliometrics. However this can pose problems when trying to measure the impact of IDR as the research has to be cited as being in one field, something that can skew the actual story of IDR. This is perhaps more succinctly described by Dr. Ismeal Rafols (University of Sussex) in his blog post entitled “To capture interdisciplinary research we need more than unidimensional measures”. This is true for capturing all kinds of research impact but perhaps especially so for IDR.

Trinity institutional data indicates that there are currently high levels of IDR taking place reflected in high levels of co-authorship across TCD schools. Statistics show that all schools in Trinity have been involved in co-authoring a paper with at least one other TCD school. Analysis shows that the School of Medicine has produced the highest number of co-authored publications.

In terms of evaluating impact, the UK has the Research Evaluation Framework (REF) which uses case studies as a way of determining the impact of IDR, but currently there is no REF equivalent in Ireland notwithstanding the individual efforts of some Irish HEIs (UCD and their work on approximately 100 case studies was cited a case in point).

There is a need for alternative metrics that measure outputs other than citations. Altmetrics.com and ImpactStory were suggested as offering an alternative measurement for research impact, looking at publication outlets other than the more traditional journals (i.e. government policy documents) and also looking at social media engagement. Ms Brennan mentioned an exercise where she uploaded papers from the last 3 years from all of the Irish Universities into the Altmetrics.com database. It emerged that the top papers in Ireland could be considered to be interdisciplinary, a finding which she feels merits further analysis.

Open Access can help researchers engaging in IDR to attract other researchers and get more impact for their work. The EC have now announced that the research outputs (data and publications) from all European funded projects must be openly available by 2020. Ireland is well positioned to comply with this and has invested in building a national infrastructure. However work is needed to join up some of the national policies in order to comply with the mandates that Irish funders have initiated

¹²Rafols, I. (2015). To capture interdisciplinary research we need more than unidimensional measures. HEFCE. Retrieved from <http://blog.hefce.ac.uk/2015/08/11/to-capture-interdisciplinary-research-we-need-more-than-unidimensional-measures/> (Accessed June 11, 2016)

Structures for fostering Interdisciplinary research support

Professor John Thompson is emeritus Professor of English Textual Cultures at Queen's University Belfast (QUB) and previous Director of the Institute for Collaborative Research in the Humanities (ICRH) at Queen's. His presentation drew on his experience of having gone through the UK's Research Excellence Framework (REF) process using examples of IDR across the STEM/AHSS divide as a means of demonstrating impact.

There are currently two models of institutional engagement with IDR. The first model mirrors that of the Trinity Long Room Hub (TLRH) and that of the Institute for Collaborative Research (ICRH) in Queen's University Belfast (QUB), where the concept of collaborative IDR enterprise is recognised as something rare requiring support in order to flourish. This is an outward facing model encouraging the academic community to engage in knowledge exchange opportunities with the outside community. It is a voluntary model working through incentivisation to encourage colleagues of all career stages to network with stakeholders outside the academy and to communicate their research findings in an accessible manner to funders, other stakeholders and to the general public. It requires researchers to engage with both the publication and also the highly competitive grant-capture processes. Success on these terms is rewarded very highly through permanent contracts and early promotion for the lucky few who attain excellence in this environment.

The second model is a competing institutional model that can be characterised as an Institutional 'size and shape model'. It appears more democratic but it places the onus to develop IDR indiscriminately and its supporters would argue democratically as a corporate responsibility borne by every scholar operating within schools to act in their own best interests to meet corporate KPIs. These KPIs are linked to grand research themes or global challenges which are inherently interdisciplinary and recognised as important by funders on themes such as food security and the sustainability of natural resources. The researchers who identify with these core grand challenges are grouped into clusters across faculties thereby creating a kind of interdisciplinary structure.

These two models don't appear to be compatible and in the latter model it is often the law of the corporate jungle that reigns with the weakest of these interdisciplinary configurations struggling. The strongest prosper because they appropriate the grand challenges and they set the pace for the remaining disciplines. Arguably in a time of economic recession, and falling student numbers in arts and humanities courses, there is simply little or no room in the HEI 'size and shape model' for the kinds of fledgling and blue-sky IDR collaborations that are features of the first model. A SWOT analysis enables us to better consider the position of the Arts and Humanities today.

Strengths

- There is some kind of AHSS dynamic in every kind of study. The question is how to incorporate that at the ground level in projects. Arts and Humanities can, when integrated from the beginning of research projects, deal 'safely' with hugely risky issues that affect the very identity and political stability of the communities we work with.
- In common with all STEM disciplines, modern AHSS research needs to articulate a strong argument for its relevance and importance in an increasingly mobile global environment. Funders commonly acknowledge that core Arts and Humanities subjects like English and History do this naturally very well; something that AHSS researchers do not always credit themselves with. This can be done better together as a group of disciplines rather than in disciplinary silos.

Weaknesses

- There is a general tendency among Arts and Humanities scholars to favour and reward lone scholarship. This model however is often regarded as antithetical to the direction in which many funders and HEIs are now moving. Responding to this threat means that AHSS researchers carefully consider how to best convince stakeholders of the validity and merits of this kind of research training.
- Arts and Humanities methods and training are often perceived as non-vocational and can fail to meet the KPIs that are set. This works against AHSS researchers who regularly face questions like 'why should we continue to use public money to fund hobbyists working on research that appears distant from real societal concern'.

Opportunities

- As part of the input into the British Academy's review of the UK's REF it has been suggested that all academic staff (teaching and research) should be returned in the future exercises and done so at a whole institutional level rather than in silos. This offers a huge opportunity for the AHSS researchers to re-assert their visibility and relevance alongside STEM. A significant part of this task resides in tackling the issue of citation.
- A radical model is beginning to hold sway in Research Council UK circles, which asserts that in a proper knowledge economy science and policy are fused. This disrupts the entire research agenda and means that research practices and science will go far beyond providing information and knowledge and become involved in the process of governance itself. The Arts and Humanities must get involved in the processes of driving policy and governance.

Threats

- The introduction of the impact agenda by Higher Education Funding Council of England via REF continues to be perceived in increasingly narrow and instrumentalist terms by many in the research community. Many researchers don't know what evidence to use to best demonstrate impact in case studies and impact measures are often rooted in the past as opposed to being forward looking. Not engaging with this debate is a real threat to AHSS researchers as it will be left to STEM researchers to determine impact and what constitutes evidence.
- There is the perception of IDR being 'career suicide', particularly for early stage researchers. The Arts and Humanities have to exploit their ability to endure by reaffirming that their training provides a skills set of enquiry that is based on evidence, the ability to assimilate radically changing information in a focused way and an intellectual curiosity that marks the university as a whole as a proper place for intellectual enquiry and human creativity that society badly needs.

Translating transdisciplinary impact: a journey

Professor Martina Hennessy is Associate Dean of Research, Trinity College Dublin and Professor Consultant in Medical Education. Professor Hennessy is also the lead investigator in the interdisciplinary NOURISH project, which examines the intersection of nutrition, food security and HIV treatment outcome in Uganda and is funded by Irish Aid.

Caution is needed when engaging in IDR. While it is rarely the case, it has the possibility of becoming broad and shallow, and can quickly become exposed if the project is only really working in the shallow end without any depth to it. Scientists can benefit from adopting a more qualitative mode of the research, and humanities and social science researchers can take advantage of an alternative more quantitative approach.

In 2015, Ireland signed up to the Sustainable Development Goals (SDG) for use as a framework. The aim of this was to ‘tackle the societal challenges’ as well as the scientific ones and has bearing on how funding agencies now focus their evaluation of proposals. Irish Aid, for example, clearly uses more interdisciplinary approaches within its funding calls, but it doesn’t necessarily promote them as such.

The University also has a role to play in supporting and promoting the aims of IDR, whether it’s within the University structure, or in collaboration with other higher education institutions. These in turn may be within Ireland, or in other countries. The developing world, for example, has much to offer in terms of interdisciplinary opportunities, as was highlighted with the recent TCD collaboration with Ugandan universities through the Nourish project which was tasked at looking into food security HIV/AIDS and socio economic factors to impact intervention programmes at national level and benefit the poor in Uganda.

For the Ugandan universities, the problem of HIV is pressing, but the infrastructure, funding and institutional support might not be as strong. In turn, working with social scientists and psychologists across the consortium enabled new approaches to measuring the various factors that can impact the recovery or effectiveness of medication. One such example might come in how one might measure the robustness of an individual. How a scientist defines ‘robustness’ might differ from the definition provided by a psychologist or a sociologist, but all definitions are valid when conducting drug trials.

The challenges for IDR are both cultural and practical. For example, it can be all too easy to retract into the silo when up against time constraints of a project, thus nullifying the point of the interdisciplinary element in the project. Training for up and coming researchers in interdisciplinary projects is not forthcoming, as they undertake research within their more traditional subjects. The practical implications of the financial side can also be a hurdle, as in most institutions only one school can hold a funding grant, yet two schools in the same institution might have equal rights to access the money. How might institutions adapt to better host such funding while giving each partner equal say?



Appendix 3

Case Studies at Different Levels of Maturity



Case Studies at Different Levels of Maturity

The morning session included presentations from 3 speakers representing exemplars who have successfully collaborated across the AHSS/STEM divide in both TCD and in DCU. The speakers addressed different maturity levels in an interdisciplinary collaboration from early to more established and spoke about the depth of impact achieved at each level.

Level 1 – Early maturity level

Dr. Barry Lyons, Assistant Professor, School of Medicine lectures in bioethics in the School of Medicine in Trinity College Dublin. He spoke representing an example of an Interdisciplinary collaboration with Dr. Luna Dolezal, a research fellow in Philosophy based in the Trinity Long Room Hub that is at an early stage of development. This collaboration links in the Trinity College Medical Humanities initiative which the Trinity Long Room Hub supports.

Initiating Collaboration

Dr. Lyons and Dr. Dolezal initially met at a conference where they discovered that they had a number of shared interests which led them to applying for a grant from the Brocher foundation in Switzerland to run a conference looking at issues such as disability, enhancement and emerging biotechnologies. This grant application was successful and provided a solid basis on which a network of collaboration was built with a number of other representatives from Universities such as Edinburgh, Manchester, Bristol, Exeter and Worcester.

Sustaining a collaboration

Two of the things that were very important in sustaining a collaboration was the existence of a shared vocabulary between the two whereby they could actually exchange ideas and understand what the other meant and the other was a shared vision of what could be done together. In terms of the latter, the topic that they want to move forward is the role that shame and stigma play in medicine and the clinical encounter. They have a pragmatic rationale and are interested in educating doctors and medical students in helping them conceptualise the patient as a person in a different way than has been done heretofore. One of the first things they decided to do in establishing a presence was to organise a seminar series, which enhanced the visibility of their collaboration at the University level.

There have been two seminar series to date and they are about to embark on their third. They also received funding from the Wellcome Trust to run a workshop on the topic of shame, stigma and medicine.

Funding the collaboration

There is a relatively limited pool of funders and funding for IDR and medical humanities activities but they have been successful in getting funding from the Brocher Foundation and Wellcome Trust (most recently in the form of a seed funding award). He commented that their engagement has not been very costly to sustain and has had a relatively large amount of impact for a small amount of money. They have been invited by Medical Humanities (British Medical Journal) to edit a special issue on shame, stigma and medicine which will appear next year. They also, on foot of the Wellcome Trust funded workshop, are progressing a book proposal with Manchester University Press. Dr. Lyons concluded by commenting that over 2 million science papers are published every year many of them funded. He questioned how many of them have actually made a difference to the lives of real people and commented that it behoves funders to consider the broader base of humanity when looking at ways to improve the lives of people when considering their funding agendas.

Level 2 – Intermediate level maturity

Professor Jane Ohlmeyer, Director of the Trinity Long Room Hub and Chair of the Irish Research Council (IRC) spoke about the 1641 depositions project which represents a mature collaboration involving an established group of researchers working across AHSS/STEM on a significant externally funded IDR project.

The 1641 Depositions project aimed to conserve publish and digitise over eight thousand eyewitness testimonies concerning experiences of the 1641 rebellion one of the darkest moments in Irish history dealing with real physical and cultural trauma. The project is important as it represents how history is incorporated into the memory of a nation. What happened in 1641 has especially become a lynchpin in the identity for the loyalist protestant community in Northern Ireland. Because it dealt with this identity myth the project could really only have been undertaken at a time when Ireland was at peace.

Initiating Collaboration

Key to the collaboration were TCD historians, computer scientists, Eneclann (an Irish based SME) and IBM. One of the initial challenges to collaboration was a lack of a shared or common language between the computer scientists and the historians necessitating at some stages intermediaries between the groups. One of the major obstacles technically was that the depositions contained reams of historical data that was totally unpredictable with no consistency. Capturing this 'dirty' or 'noisy' data presented huge challenges for the team but also presented opportunities in terms of providing a fertile testing ground where IBM with some very powerful technologies along with the computer scientists could experiment for the purposes of their own research. In order to ensure that these types of collaborative projects achieve their aims there needs to be reciprocal gains for all parties.

Sustaining the collaboration

The project's legacy continues in the form of an active community of 23,000 registered users on the website from across the world. The project also generated a set of modules to teach about 1641 in a classroom setting and approximately 4-5 thousand children across Ireland have accessed this material. The project and its collaborators went on to spawn a number of related projects including the FP7 funded CULTURA project. Digital Humanities continues to be a core research theme in TCD something that is reflected in the recent launch of dedicated centre for Digital Humanities. At a national level the project raised awareness of the importance of aligning Irish Digital Humanities projects (DH) with activities at the European level including DARIAH (the federated European infrastructure promoting DH) and ESFRI. From a researcher perspective Professor Ohlmeyer commented that it is regrettable that in the past national infrastructures like the Digital Humanities Observatory and the Digital Repository of Ireland have gone unfunded because of a lack of funding and/or decision making at the higher level.

Funding the Collaboration

Sourcing project funding was a major challenge for the project team who estimated from the outset that €1m of funding was needed in order to deliver a quality project. The then Irish Research Council for Humanities and Social Sciences (IRCHSS) provided an initial investment of €250,000. The team was able to leverage this funding to get the remaining investment required from a combination of funds including the UK's Arts and Humanities Research Council (AHRC) and from internal Trinity sources. Since its commencement the project has received total funding of approximately €5 million.

Level 3 – advanced maturity

Mr. Declan McKibben is Head of Design & Innovation at the SFI-funded ADAPT Centre a nationally recognised large scale industry-academic collaboration. Researchers in ADAPT have engaged in Digital Humanities, in Medical Visualisations, in Neuroscience, and across other disciplinary boundaries.

Initiating Collaboration

At the scale of the ADAPT centre, digital content can be a very broad domain, including technologists and as far as ethicists and philosophers. ADAPT is funded by SFI through the strategic target areas, with a focus on economically beneficial research with industry for the Irish Knowledge Economy.

Interdisciplinarity at the Centre level is not limited to industry, but the cultural boundaries are similar to interdisciplinary barriers. A major part of these engagements is in the ability of individual researchers to effectively ‘pitch’ and to engage others. This includes attracting the attention of industry as well as of other parties in Europe. ADAPT is composed of a two track research programme of core ‘platform’ research, where PhD and academically-led research is undertaken under five themes.

The second track is the industry-centric research, which is undertaken through the five Spokes, which have dedicated translational research teams, and input from Platform researchers. ADAPT also includes an Ethics and Privacy Working Group, and interest groups in functional areas such as standards. Interaction at this scale is never a simple one-to-one engagement: there is typically a desire to combine a spectrum of tasks, projects, disciplines and areas.

Sustaining and Funding Collaboration

The ability to assemble teams from across traditional boundaries is a key industry need, as well as an opportunity for novelty. ADAPT’s Spokes programme and their D-Lab is focused on relieving researchers from the administrative overheads of industry engagement, while providing the response and pace which industry requires. In addition to the relationships, there are structural, financial, and institutional supports that create enduring relationships. These include matched funding for industry projects, resources for dedicated commercialisation, IP and project management.

Obtaining active projects is a high-loss process in which a large number of potential projects or ideas do not ultimately result in actual engagements. This early ‘lead generation’ can be time consuming and draining on researchers, which means dedicated staff are needed.

University structures are also key sources, for example the Innovation / Technology Transfer Offices. Fundamentally it is the quality of the researcher that determines the depth of trust that can be established between the parties, and in line with each side’s processes and norms. Lower-risk projects can be used to improve and build this in order to lead to enduring connections. However, research centres need to ensure that their partners realise that ‘sometimes the answer is to get a report that it didn’t work’. With effectively pitched research, an understanding of the preferences and norms of both industry and academia, and a willingness to build trust iteratively, the structures in place can cultivate those enduring, cross-disciplinary relationships.

Appendix 4

Reports from the Guided Networking Sessions



Reports from the Guided Networking Sessions

A guided networking session was organised during the afternoon of the workshop. This was structured around six discussion topics reflecting areas of common relevance for AHSS researchers as well as those from STEM backgrounds when getting their research projects off the ground. Each topic was moderated by a researcher with expertise in the given area. All participants were allocated to participate in discussion sessions around 4 of the topics over the course of the afternoon. Brief summaries of the discussion for each of the 6 topics are captured below.

Funding

General

It was commented that there is significantly more IDR in the system than is often perceived and that stock should be taken of this in order to determine what has been done ‘organically’ and what requires additional funding to move forward. Many agreed that funding opportunities are needed to catalyse IDR activities. Without the funding to concentrate goals it is difficult to maintain IDR collaboration over the longer term. Funders should stick with funding calls that attempt to encourage IDR and should not abandon call structures after a first attempt. It may take a number of call iterations for the research system to fully adapt to the cultural shift that engaging in IDR often requires.

Many commented that for IDR partnerships to lead to meaningful proposals it’s best that the parties involved have existing relationships. One way that funders can help foster this is to, in the interim periods between larger IDR funding calls, operate smaller seed funding schemes to help facilitate and build the interactions for future collaborative IDR applications.

Future rounds of PRTL funding could be a useful instrument to drive creative IDR collaborations (the concept of performance laboratories was suggested) as well as cross border activities.

Developments at HEI level

It emerged during discussions that a number of institutions are exploring Altmetrics for instance UCD are piloting their inclusion as a metric while DCU are also looking at them and the use of case studies in the context of renewing their strategy in 2017.

HEIs also engage in various practices to increase collaboration and IDR activity. For instance the DCU cross-cutting Societal Impact Platform reviews and feeds into all institutional proposals and enables increased collaboration across Faculties. In TCD, the Innovation Academy supports collaboration while in UCD the President’s weekly communication lists all schools involved in awarded grants.

The Funding discussion topic was moderated by Dr. Oonagh Kinsman, Research Officer, Trinity Research Development Office.

Open Access/Open Data

Open Access

Different funders have different policies regarding open access. The UK based Wellcome Trust for instance provides funding in its calls to facilitate gold open access (OA) whereas currently no Irish research funder provides such funding. Institutional repositories such as TARA in TCD and DORAS in DCU and RIAN (the national repository) are a good way to help researchers comply with OA requirements even if they already have provided for Gold Open Access. Researchers who don’t have access to an institutional repository can use e-deposit Ireland which is open to all researchers in Ireland regardless of institutional affiliation.

In relation to Open Access and IDR it was commented that some disciplines are eager to publish sooner over others. In the Arts and Humanities many relevant publishers are slow to publish monographs that have been made openly accessible as PhD theses as this could affect the sales of the book. One way to help researchers deal with this might be to allow placement of a publication on an institutional repository for the embargo period (usually 12 months) in

order to ensure a level of accessibility. It was commented that open access does not capture the outputs of some Arts and performance based research. More ‘intelligent’ forms of digital capture are needed to make these kinds of output accessible.

Open Access will be compulsory for all H2020 research funding proposals by 2020. Some commented that they have observed increased OA compliance monitoring on the part of EC project officers especially for ERC grants. In some examples cited, funding was withheld until proof of compliance was provided. It was commented that Irish funders will more than likely adjust their policies to mirror these EC developments.

Open Data

The H2020 Open Data pilot which researchers up until now could choose to opt in or out of will become mandatory from autumn 2016. Therefore all research proposals will need to include a data management plan and a budget for data management activities. There was agreement that Open Data should lead to greater research integrity and to enable future projects to build on previous findings. The example of the Irish Social Sciences Data Archive was cited as a good example of a platform which manages data and which should be supported. It requires users to report on why they want the data and what they are using it for. This evidence can then be used by the researchers responsible for generating the data to demonstrate impact for instance at the policy level.

Open Data does raise the following issues:

- Concerns around ethical issues mean the data may need to be anonymised in advance of publication to protect the privacy of research participants. Information about potential open data will also need to be provided in Informed Consent forms.
- Data sharing can be hampered by the requirements of different disciplines to have data in varying formats and by different language barriers especially for EU funded projects. This is especially relevant for qualitative research.
- Industry concerns around sharing potentially commercial data- even though the Open Data requirement will have an ‘opt out’ clause for industry
- Concerns around timelines with researchers motivated to ensure they get the most of their data and funders demands to ensure open accessibility as soon as possible.
- Researchers need support and education around data management.

The Open Access/Open Data topic was moderated by Ms Niamh Brennan, Research Manager in the Research Informatics Unit in TCD.

Sex and Gender aspects

Gender studies are interdisciplinary by their nature. There are certain disciplines where the incorporation of sex/gender works well e.g. particularly English Literature, History, and the intersection of these topics with Computer Science. It was noted that in English Literature in particular the role of sex and gender (and race and class) are incorporated into the research methodology. Also in History, Women’s Studies used to be a separate area of study but this has now been mainstreamed in some university’s curricula. It is more difficult in some of the harder science subjects such as Physics & Inorganic Chemistry to incorporate gender aspects.

Different genders bring different approaches to projects. It was noted that equality and inclusion are important for generating effective teams. Teams should be gender balanced at all levels where possible, and it is important that women do not fall into ‘housekeeping’ roles. Training is important in this regard.

Having good female leadership role models is important, at all levels from promoting successful female ERC winners in universities, right down to primary school level to encourage girls with their educational and career choices. It was noted that according to the Growing Up in Ireland study by age 9 children already exhibit gender bias in their choices and expectations.

Gender fluidity was noted and that the social sciences have experience in dealing with these issues. IDR is needed to study gender fluidity as it creates issues with data analysis, medical ethics, architecture and confidentiality.

Problem areas discussed include:

- Maternity leave for postgrads and postdocs
- Role of men in childbirth & paternity leave
- The importance of mobility for researchers – Are there potential alternatives, which would be more family friendly? Some type of ‘virtual’ mobility?
- Childcare (costs, perception that women on the whole are responsible for childcare means it is not a level playing field) and part time working
- Absence of gender analysis in league tables/rankings.

The Sex and Gender aspects topic was moderated by Professor Eileen Drew, Director of WISER, the Centre for Women in Science & Engineering Research, Trinity College Dublin.

Ethics

An interesting feature of IDR is how ethical issues are perceived differently by different disciplines. For instance in the life sciences animal ethics are highly regulated, and developed however research in social sciences often has less developed awareness of the ethical issues around questioning participants. Different disciplines also have different norms and traditions for naming contributing authors in publications.

There was discussion about whether recent moves in some circles to attribute the relative contribution of each author to a publication would help to bring increased responsibility or accountability for authors. Different disciplines have different sensitivities and it was suggested that ethics could be useful in helping inter-disciplinary groups tease out the mechanics of their collaboration.

Many questioned the proliferation of ethics committees in Irish HEI's and whether they are efficient. Concerns were also raised in relation to a lack of standardisation around membership, training, quorums, conflict of interest within these committees and their perceived lack of monitoring function after the initial ethics review meaning reduced disincentives for ethics transgression.

Many commented that the current ethics issues tables and checklists provided by many funders are perceived as a ‘necessary evil’ for researchers to complete and that what is really required is to strengthen researcher’s foundational understanding of the ethical construction of research. This gave rise to the question of how early, in an age of rapid technological advance, should discussion of ethics issues arise and whether ethics should be included as a component in school curricula? Some suggested that notwithstanding current pressures on their workloads ethics should be considered as a professional essential for all researchers and that researchers should be provided with training as to how best deal with these issues.

An industry representative at one of the groups commented that business really needs graduates who understand the ethical issues in data use. Often the primary concern of private business is to avoid being sued which is not really an ethical concern.

There were comments about the need for more support from some of the government agencies with responsibility for data protection i.e. Office of the Irish Data Protection Commissioner. They are perceived by some as being overly restrictive, placing an over-emphasis on privacy, of conflating privacy with ethics and of having a lack of understanding around the features of research.

Some factors which could be considered include:

- Having reasonable expectations of research participants

- Considering ethics at the dissemination stage when communicating findings back to communities/interested parties/participants who may be outside the ‘knowledge economy’
- Potential harm to the researcher (physical or psychological) also needs to be considered. Do institutions/funders have an ethical responsibility for protection/training of researchers?
- ‘Incidental Findings’ policies/statements which some funders are now requesting copies of
- Including ‘ethicists’ as collaborators on research projects

The Ethics discussion topic was moderated by Dr. Barry Lyons, School of Medicine, Trinity College Dublin.

Linguistic Aspects

There were some strong themes that emerged across the different discussion sessions, with the theme of language in research being the focus. One area of discussion was the nature of English as the language of academic research. For example, this creates a challenge for non-English-speaking scholarship by severely attenuating its impact. Secondly, non-English-speaking scholars are placed at a disadvantage. In one example, a large number of paper abstracts are being compiled and translated into Chinese, however without the body of the paper also being available, does this create a risk of the literature being limited to those abstracts? The need for global access to science is not as straightforward as publishing online.

The language of academia is also the language of disciplines and labels. Many discussion groups reflected this point in different ways. For example, taking the theme from the morning sessions, there was a sense that disciplinary boundaries are often circumscribed by linguistic features, from the label of the discipline itself to the terms for particular key features or topics. Biochemistry has moved from an interdisciplinary activity to a discipline of its own right, and it might simply be a question of sufficient consensus in a large enough group. Part of the task of interdisciplinary engagement is to find consensus on a common frame of reference in which questions can be articulated and investigated.

Indeed it was the view of some that Interdisciplinarity engagement was substantively achieved once ‘the questions had been agreed’. This sociolinguistic component is manifest also in the language of the disciplinary conversation, for example in the way funding bodies label ‘teams’, ‘principal investigators’, or other terms which may be read to pre-suppose some particular model. It also manifests in notions such as ‘hard’ or ‘soft’ disciplines/methodologies. The language of engagement also needs to be open and to avoid a sense of hierarchy or privilege. This led to the final, and perhaps most important finding, which related to the question of the mechanisms of consensus. Given a common natural language (e.g. English), what are the mechanisms that permit enough mutual understanding to work together productively?

Three possibilities were outlined:

- Investigators learn to speak each other’s language directly: this requires significant skill and willingness from the researchers, and is not necessarily scalable, general, or enduring.
- A ‘Lingua Franca’ of interdisciplinary language is created: no such language exists yet, but perhaps it could be found.
- Ambassadors/Interpreters: some individuals have the ability to facilitate conversations between technical / scientific / humanities domains and to act as a bridge. It could be argued that such facilitators might be encouraged or supported somehow.

In conclusion, it can be said that the linguistic aspect is intertwined with the challenges of engagement, collaboration and mutual understanding. For interdisciplinarity to flourish, researchers need to learn to speak outside their vernacular, institutions and funding agencies need to adopt a more neutral, common tongue and interpreters need to be facilitated and supported.

The ‘Linguistic Aspect’ topic was moderated by Dr. Alex O’Connor, Lecturer in Computer Science, ADAPT centre, Dublin City University.

Human and Socio-Cultural factors

There was a discussion around intercultural research, which raised the question of the need for researchers to be aware of a longer timeframe required to ensure the successful establishment of multidisciplinary teams in cross-cultural contexts. Researchers also need to understand and be sensitive to local conditions and contexts which can affect project implementation i.e. different approaches for individualistic versus collectivist cultures. Issues can also arise due to language differences. Miscommunication can occur even in instances where all researchers speak English.

The group also grappled with the question of when IDR should be introduced in a researcher's career. Earlier exposure can help researchers be more comfortable with the idea of engaging with other disciplines however it was acknowledged that mastering expertise in one particular discipline is essential in order to give the researcher a strong identity within a multidisciplinary team.

The groups also discussed different cultures within disciplines which emerge when IDR takes place. There needs to be parity of esteem between disciplines and AHSS researchers need to be just as confident as STEM researchers when persuading others of their discipline's worth. AHSS researchers should not be included in projects as 'service providers'.

Different cultures also extend to publication norms. The monograph tends to be regarded as the most important publication type in AHSS disciplines however concern was raised as to whether this is conducive to collaboration. Mixed messages from institutions can also add to confusion here with senior institutional figures promoting IDR but still insisting on the monograph or single authored publication when jobs and promotion opportunities arise.

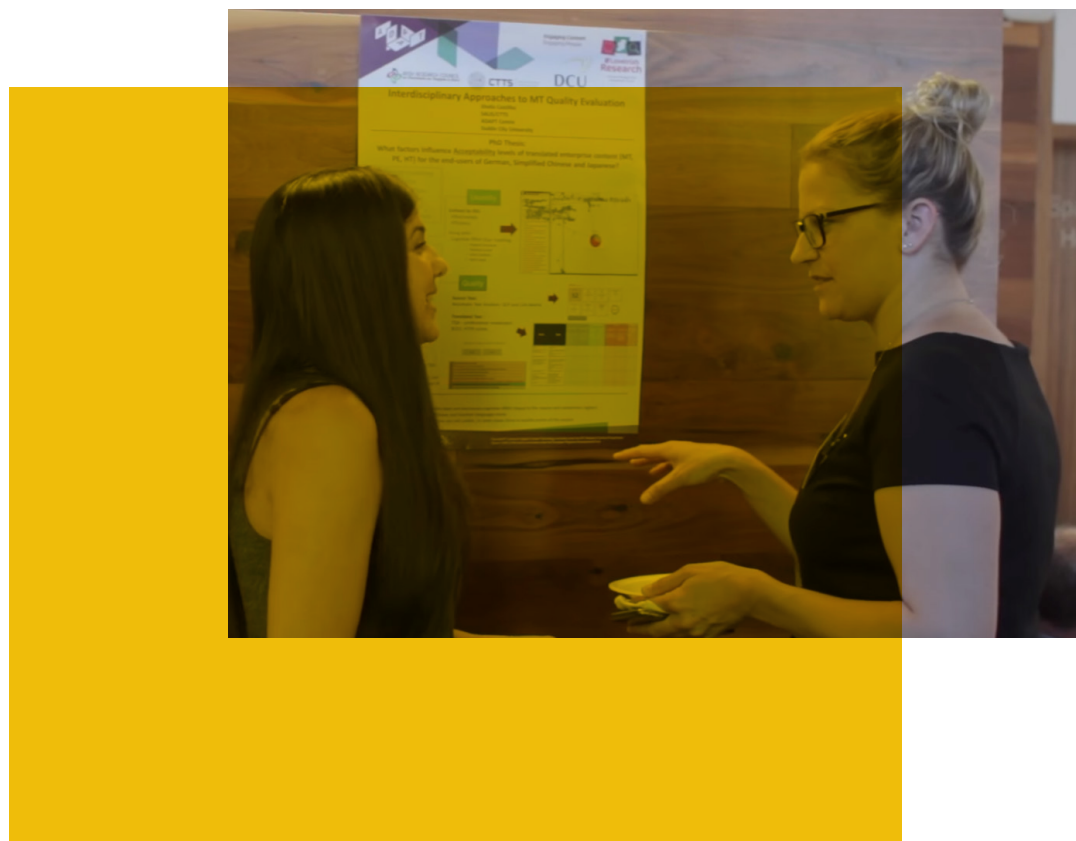
If IDR is desired, the outputs, as well as the research activity, should be interdisciplinary. If an IDR project results in uni-disciplinary publications the question could be asked of whether real interdisciplinarity has been achieved?

There was consensus around the need for more interdisciplinary journals and conferences to encourage and help validate IDR outputs.

The Designing research projects to account for Human and Socio-Cultural factor topic was moderated by Professor Martina Hennessy, School of Medicine, Trinity College Dublin.

Appendix 5

Poster Session



Poster Session

A poster session was organised during the event in order to provide early stage researchers engaging in IDR across the AHSS/STEM divide an opportunity to showcase their research to the wider workshop audience. The details of each of the participants at the poster display are outlined below.

Ms Sheila Castilho

Poster Title **Interdisciplinary Approaches to Machine Translation Quality Evaluation**

Biography Sheila Castilho holds a degree in Linguistics and Teaching from Unioeste, Brazil; and a Master in Natural Language Processing from the University of Wolverhampton, UK and Universidade do Algarve, Portugal. Currently she is a PhD candidate with CNGL/ADAPT Centre at the Dublin City University. Her research focuses on Acceptability of Translated Enterprise Content.

Ms Emma Clarke

Poster Title **Detecting tricolons (the rule of three) in leaders' speeches from the 31st sitting of Dáil Éireann**

Biography Emma is a PhD candidate in the ADAPT Centre, Trinity College Dublin. Her research interests include digital humanities, linguistics and political discourse analysis. Her current research focuses on text analysis of Dáil Éireann speeches. She has worked on a number of DH projects including Letters of 1916 and Drawn to the Page.

Ms Fiona Dermody

Poster Title **A Multimodal System For Public Speaking Anxiety: A Positive Computing Perspective**

Biography Fiona Dermody is a third year PhD scholar in Dublin City University. She is developing an interdisciplinary, digital system for public speaking anxiety from a positive computing perspective. Fiona holds a BSc in Computer Applications and a B.A in Humanities from DCU. She has presented her research in Ireland, Europe and the United States.

Ms Siobhan Grayson

Poster Title **Discovering Structure in Social Networks of 19th Century Fiction**

Biography Siobhan Grayson is a doctoral researcher in computer science at the Insight Centre for Data Analytics, UCD. Her research interests include machine learning, social network analysis, digital humanities and anomaly detection. Currently she is collaborating with the Humanities Institute in UCD to analysis social networks from literature.

Dr. Leonie Hannon

Poster Title **Connecting History, Heritage and Health**

Biography Dr. Hannon works on the social and cultural history of seventeenth - and eighteenth-century England, Ireland and North America with a focus on gender, material culture, intellectual life and the early modern household. She completed her doctoral research at the Department of History at Royal Holloway, University of London in 2009. Her current research focuses on the practice of scientific enquiry as it took place in the eighteenth-century home. She is currently based in Queen's University Belfast.

Dr. Carlos Teixeira

Poster Title **The cognitive ergonomics of translation tools: Translator-computer interaction in perspective**

Biography Dr. Teixeira holds degrees in Linguistics and Electrical Engineering and a Masters and a PhD in Translation and Intercultural Studies. He worked for 14 years as a freelance translator and is currently a post-doctoral researcher at Dublin City University, funded by the Irish Research Council and Adapt research centre.

Mr. Corin Sweeney Deinhart, Ms Alice Bedford & Ms Erin May, TCD

Poster Title **St. Andrews Records Project**

Biography Corin, Alice and Erin are all students on the MPhil in Public History and Cultural Heritage in TCD which is coordinated by Dr. Ciaran O'Neill. They worked with students on the TCD Computer Science undergraduate programme to digitise the roll books from St. Andrews National School. This project has resulted in the creation of a database, which serves as a genealogical resource and the basis for further academic research.





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