TRINITY WEEK ACADEMIC SYMPOSIUM

OPEN ACCESS REVOLUTION: THE LOCAL AND NATIONAL CONTEXT

(read before the Society, 16 May 2007)
_____

Niamh Brennan

Trinity College Dublin

The title of this Academic Symposium comes from a paper read before Statistical and Social Inquiry Society of Ireland on Thursday, 14th January 1897, which refers to "the grievances of prejudiced patriots or the dreams of statisticians" (Synnott, 1897). The organisers of this Symposium felt that the phrase sums up the varied nature of the Journal of the Statistical and Social Society of Ireland which we celebrate today and the aspirations of the distinguished authors who have contributed to the Journal over the past 160 years.

The Society's new webpages are just about to go live. From these you may link directly into the Current Journal and to the Archive on the web – the complete collection of all papers published from 1848 to date. That includes over 1,300 papers. They are not particularly clean copies – with there being annotations, signatures, marks of all kinds, evidence of the attention of many readers over the years. The papers digitised for this project came from bound volumes held in the Economic and Social Research Institute and in the Central Statistics Office which were guillotined and fed through high-speed scanners by Eneclann, a TCD campus company specialising in high-quality digitisation. Trinity's Library, with the careful supervision of its Conservation Department, allowed any gaps in the collection to be filled in. So we now have a complete set – preserved and made available through an open access repository. The papers were individually catalogued to TCD Library standards by Michelle Garvey and a team of trained metadata inputters with quality control provided by Geraldine Ryan, professional cataloguer and subject specialist in social sciences, economics and political sciences in TCD Library's Collection Management Department.

The papers may be accessed through the Society's webpages (at http://www.ssisi.ie), or through TARA (Trinity's Access to Research Archive: http://www.tara.tcd.ie). The full list of journal volumes is listed and linked. You may examine the complete archive, which can be browsed by date, by author and by title. Alternatively you may go directly to an individual volume and paper, if you know the specific document you require.

A 'Quick Search' is available which will search for keywords in both the bibliographic data associated with the documents in the Archive (i.e. the 'metadata') and in the full text of all of the documents within the Archive. An 'advanced search' is also available, which allows greater search functionality to be used. For example, if we use the 'Quick Search' to search for the word "Titanic" we retrieve a number of documents including "The History of Belfast Ship-Building" (Oldham, 1911). The bibliographic details for this paper contain no mention of the term "Titanic". However, when you open the paper itself and search within it the following text can be found:

> For the building of these enormous steamers "Olympic" and "Titanic," very large
> additions to the equipment of the Queen's Island shipyard were made, as well as to
> the engine shops and the other works, which to-day are all fitted with the best and

most powerful tools, and the most approved mechanical appliances for manipulating the heavy weights involved. (Oldham, 1911: 425)

Elsewhere, the document describes in detail the "cradles" (scaffolding and cranes) used for the construction of these "leviathans", and provides statistical details of the Titanic amongst its series of tables on the history of ship-building in Ireland, information of undoubted value to historians of Irish industry and economics, of engineering and of the commercial life of the city of Belfast. The indexing of the words within the full text of the document enables the retrieval of this valuable paper. The example illustrates that full text indexing can afford a finer level of granularity to searching which can often be the deciding factor as to whether the information within a document is discovered or remains hidden.

This digital archive and its functionality must be seen within the broader context of the development of TARA (Trinity's Access to Research Archive). TARA was built with initial funding from TCD's Research Committee to archive and provide open and free access to the scholarly outputs of Trinity College Dublin, including peer-reviewed papers, electronic theses, grey literature and to investigate the archiving of images as primary research materials.

It is to the credit of Professor Patrick Paul Walsh that he had the vision to realise that this kind of repository would be a suitable place for the Journal of the Statistical and Social Inquiry Society of Ireland. TCD Library is honoured that Professor Walsh and the Society had the confidence in this relatively new addition to the scholarly communications environment to allow us the enormous privilege of managing and curating this material.

Open access repositories are being constructed against the backdrop of the current atmosphere of heightened competition within the international research community and increased investment in research by governments, funding councils and the European Commission. Over €50 billion is associated with the EU Framework 7 Programme. The Irish Government through the Programme for Research in Third-Level Institutions (PRTLI), the Strategy for Science, Technology and Innovation (SSTI) 2006-2013 and other forward-thrusting initiatives are providing an enormous boost to funding across various disciplines, including (finally) in arts, humanities and social sciences.

Increased investment and increased competition has led to growing pressure for accountability and evaluation of publicly-funded research. Some of the ways in which this is currently manifested may not be ideal. The failure of any Irish university to feature in the 'Top 100' of the 2005 Shanghai Jiao Tong University's Academic Ranking of World Universities caused an *Irish Times* opinion feature to note that "this raises concerns about the quality of our universities and how we might deliver on our aspirations". (Browne, 2005).

The results of external evaluations of universities such as that conducted annually by the aforementioned Shanghai Jiao Tong University Institute of Higher Education, are widely reported in the national press and are apparently taken seriously by government ministers and university managers in spite of concerns surrounding the methodologies employed by some of these rankings. Indeed, the term 'prejudiced statisticians' may well be applicable!

The next time you see newspaper headlines on the 'Shanghai Ranking' please bear its methodology in mind: 'Highly-cited researchers' account for 20% of the score. The source is a database called *HiCi* from Thomson Scientific (ISI), a limited resource which aggregates the total number of citations to a researcher's publications regardless of that researcher's institutional affiliation at the time of authorship. *HiCi* then lists the authors with a high number of citations for their field (out of 21 subject areas) by the institutional name of their current affiliation. Thus the Shanghai Rankings credits a university with citations to publications which were written when an author was employed and supported by a rival university.

A further 20% of the 'Shanghai Ranking' marks are assigned to the number of journal articles published in just two journals (*Science* and *Nature*). This time the number of journal articles ascribed to a university is derived from the author's institutional affiliation at the time of publication. Leaving aside the inconsistency inherent in this scoring system, 40% of the marks for the 'Shanghai Ranking' are based on citation-related metrics.

The Times Higher Education Supplement (THES) Ranking is considered to be rather more balanced in terms of its methodology, particularly as the THES ranking affords a significant score to international peer review. However, bibliometrics also feature strongly in this evaluation of universities: 20% of the THES overall score is based on 'citations per faculty'. That information comes from a single source - *Essential Science Indicators* - again from Thomson Scientific (ISI). This resource shows numbers of papers, numbers of citations and numbers of citations per paper (known as the 'impact factor'), all based on institutional affiliation at the time of authorship. Within *Essential Science Indicators,* Trinity College Dublin is shown as ranking within in the top 1% in the world in the fields listed. In the Times Higher Education Supplement Rankings for 2006 TCD is ranked within the top 100 research institutions in the world.

Six Australian institutions are listed within the top 50 institutions worldwide, prompting a comment from the THES that: "even the Australians may be surprised to find six of their universities in the top 50 – more than any country except the US and the UK". I suggest that the Australians may have been pleased, but not particularly surprised at these results. Australia has built an entire research infrastructure that allows them to disseminate their research outputs, and has been systematically developing this infrastructure since at least 2000. Recently, Australia launched a "Collaborative Research Roadmap" which links their various initiatives in this area in a very logical way. The Australians are very aware that, since Steven Lawrence's article in *Nature* in 2001, an increasing number of studies shows that by making your research freely available on the web that you are likely to attract an increased number of citations. If your field is Computer Science, for example, this increase may be in the order of 336%. On average, across the disciplines, the increase in citations may be between 50% and 250%. So now you can see why we are so interested in promoting our work and why we're so keen to make sure that it is available on the web through an open access repository such as TARA.

The benefits are obvious. To the institution, it supports research and is a 'shop window' for publications. To individual authors, it can provide increased impact. Indeed, members of academic and research staff are often measured on their personal research impact, which again is based on citations. This has led Irish libraries to spearhead a project to develop a network of federated institutional repositories for Ireland. At the moment, there are institutional repositories up and running in NUI Maynooth (the first such repository in Ireland), in DCU and TCD. UCD's repository is currently under development. The Irish University's Association Librarians' Group has come together under an IUA sectoral project to construct this national system. The project was granted Structural Innovation Funding from the Higher Education Authority starting in April 2006 for a three-year project to make all Irish research outputs available freely and openly on the web. The project will build an open access repository of research papers in each Irish university and will develop a national research portal to harvest data from these repositories with the objective of providing a single view of Irish research outputs. Robin Adams, Librarian of Trinity College Dublin, has described this as an "innovative opportunity for the university libraries to work together to promote the research output of their institutions, so that the international research community can be aware of the important work undertaken by Irish scholars and scientists. It will also ensure that this work is preserved in digital format to international standards."

'Esse est percipi' said Bishop George Berkeley: 'to be, is to be perceived'. There is absolutely no doubt today that in the case scientific and scholarly communication, 'to be, is to be found in Google'. This is an example of a JSSISI paper that has been deposited in TARA (Trinity's Access to Research Archive):
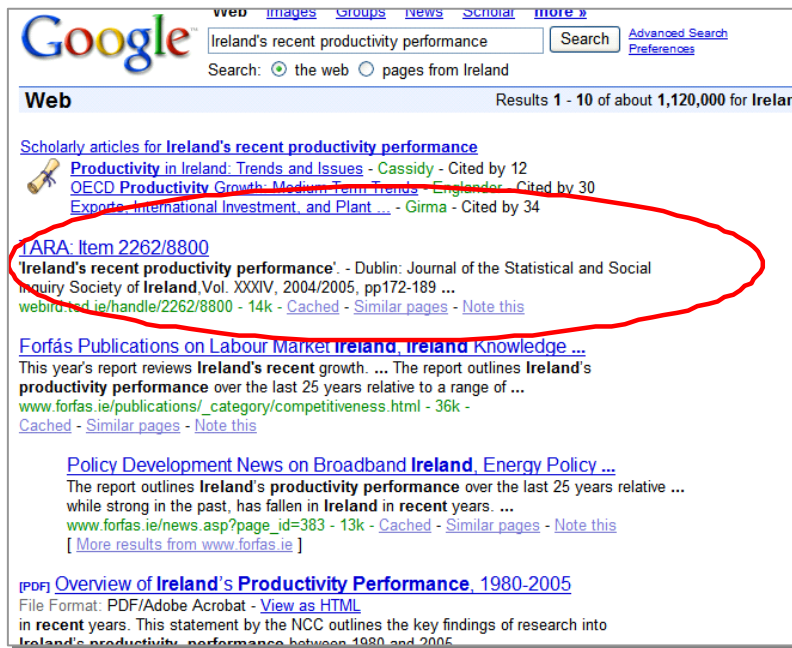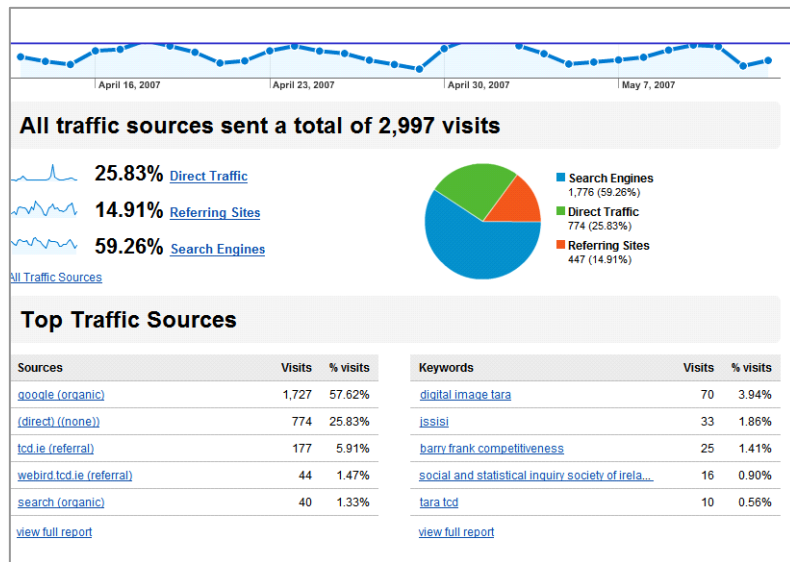
Source: Google, accessed: 14th May 2007

It appears right at the top of the Google page – and that's no accident. Open access repositories are constructed in a way specifically designed to enable this effect. They are designed to maximise impact by using the OAI-PMH standard: the Open Access Initiative Protocol for Metadata Harvesting. This protocol allows the repository to expose its metadata in such a way that it is picked up by web crawlers and harvesters, maximising its impact on the web. You can do no more to make your material available.

This is an example from Google Scholar – again a JSSISI paper is at the top of the page. So TARA is indexed by Google and by Google Scholar.
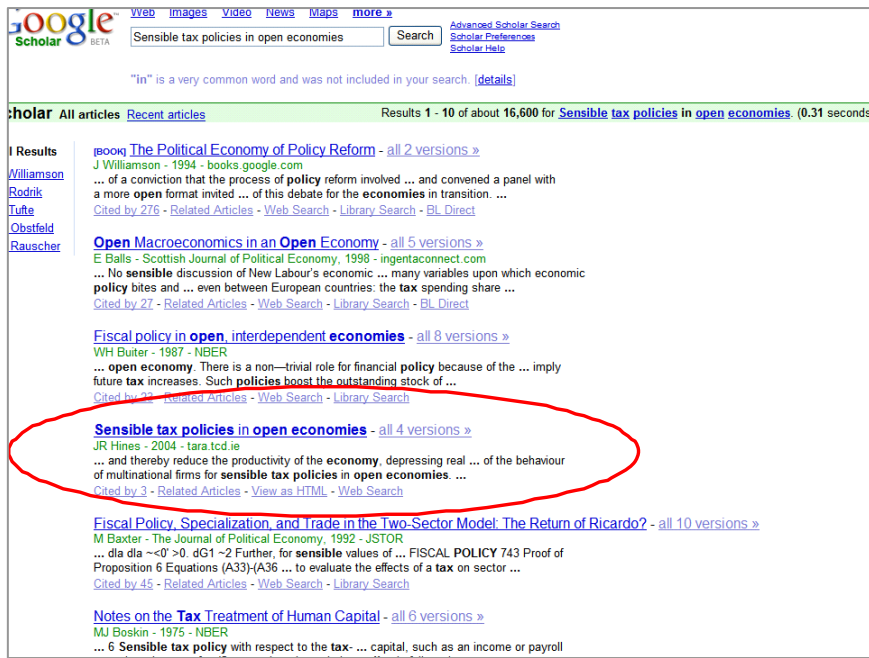
Source: Google Scholar, accessed: 14th May 2007

Within TARA, the JSSISI papers are already starting to show their exposure: our current 'top' paper in terms of hits, Brendan Walsh's 'The transformation of the Irish labour market' (Walsh, 2004) (a JSSISI paper) is attracting a large number of hits which we know are coming in from the web (and not from searchers querying TARA directly). We know this because tools such as Google Analytics help us to monitor the usage and traffic associated with our website. In the following screenshot from Google Analytics you'll see that the greatest proportion of our traffic (almost 60%) is coming in directly from Google. This type of information provides continuing evidence that people expect to find our research on the web, so that's where we'd better have it!

Source: Google Analytics, accessed: 14th May 2007

When we use Google Analytics to discover the keywords being searched for we can see, 'JSSISI', Statistical and Social Inquiry Society, Barry, Frank etc. are commonly used search terms on the web. We can also see the number of visits and the countries and domains from which they come. What is of interest is the global spread of those accessing our research papers, particularly those from less-developed countries. Europe is our biggest area of hits, after that comes the United States, then Asia (India and China), Australia and Africa.

Source: Google Analytics, accessed: 14th May 2007

235

Both of the rankings mentioned earlier use the number of citations attracted by peer-reviewed research papers as one of the metrics used to show the quality of a university's research, and in this context the potential 'impact advantage' afforded by open access repositories such as TARA (demonstrated by the level of access to the JSSISI on Google) is becoming increasingly important.

However, there are other ways of determining how good our research is, particularly when considering a journal such as the JSSISI. The Journal of the Statistical and Social Inquiry Society of Ireland has undoubted value beyond the strange citations game that we are required to play. Back in 1877, it reported on the activities of the politically incorrectly named Committee on Imbeciles, Idiots and Harmless Lunatics. Another example of where the Society played an important role in drawing together a document which revealed a serious flow in statistical information being gathered at that time by the Registration of Births, Marriages and Deaths. A group of academics came together in the 1850s as the Registration Committee and highlighted the Statute as an "imperfect measure of general registration, since the marriages of Roman Catholics, who form the majority of the population, are excluded from its provisions." (Dublin Statistical Society, 1859). The resulting paper in the Journal stated the views of the Committee thus:

> Marriages, births and deaths are now registered not only in England and Scotland, but (with the single exception of Ireland) in all the civilized states of Europe, whether Roman Catholic or Protestant; and we beg to report that we consider the subject to be one of extreme importance, and that a uniform Registration of Marriages, Births and Deaths is required as an essential condition for many sanitary reforms affecting the welfare of the population, and as an additional protection to the moral and material interests of society.

The Resolutions of the Council in 16th November, 1858 record that "the Report of the Registration Committee be received and printed for circulation amongst the members of the Society, and that copies be sent to the Representatives for Ireland, and the Irish newspapers". Thus the Society ensured that the Committee's recommendation was fully disseminated in the contemporary media and brought to the attention of policy-makers thereby ensuring its successful adoption.

Taking us right up to the present day, Gerry Donnelly's paper on "The Impact of the Restrictive Practices (Grocery Order) on Competition in the Irish Grocery Trade" (Donnelly, 2006) demonstrates again how research in the policy-making and the academic world can come together very effectively in the pages of the Journal. Thus the Journal communicates the various aspects of the Society's role, through the discussion forum and impact of its research.

However, I suggest that this is just the beginning. The Statistical and Social Inquiry Society is unique in many ways: it is unique in its longevity, membership, and constituency of academic researchers and policy-makers. As a learned society, the Society is also unique on this island and possibly internationally, in turning away from an old business model and embracing the digital age in this particular way. Nevertheless, the move to the digital realm is not such a surprising one for this Society, which throughout its history has been swift to embrace the best means to communicate its work. As it made its transition from the 'Transactions' to the 'Journal', the Society stated in 1855 that:

> During the first seven years of the existence of the Dublin Statistical Society, such of the papers read at its meetings as the Council judged deserving of publication were printed each in a separate form, and so circulated among the members and Corresponding Societies. This mode of publication, though possessing some advantages, has been found very unfavourable to the preservation of the papers; and the Council have therefore determined to publish for the future a series of selections from the Proceedings of the Society periodically in the form of a Journal, of which the present is the first number. (Dublin Statistical Society, 1855: 5)

Nor was the Society slow in adopting multimedia - in the early twentieth century, many of the Journal's papers were presented with lantern slides. See, for example, "The Census of Ireland, 1911 (illustrated by lantern slides)": "The next slide is interesting, and at the same time gives cause for reflection. It shows the ages at which our people emigrate…" (Thompson, 1913). Sadly, the lantern slides were not included in the printed versions of the journal papers and they may not have survived (a reminder of the obsolescence of technology). If any of these slides can be found, we are most interested in digitising these tantalising missing pieces which the papers refer to as containing illustrative tables and maps, material which is all the more fascinating because it is no longer available to us.

New forms of communication were also used from by the Society at the first opportunity. An example from 1911 is "The Population Problem: a Radio Discussion" (Brennan *et al.,* 1938), the very first broadcast that the Society made as part of a series of radio broadcasts on Radio Éireann. Taking part were Mr Joseph Brennan, Dr Geary, Professor Duncan, Professor O'Brien, and Mr Stanley Lyons (Director of Statistics Branch, Department of Industry and Commerce).

Thus the Society has always moved with the times. The Society, by its nature, also continues to work together across institutional and administrative boundaries. As already shown, Irish libraries and universities are collaborating to develop a coherent policy and research infrastructure for the island so that we can make this type of material available immediately and also for future generations. When we increase the impact of a university such as TCD we also succeed in increasing the impact of Irish research generally. Who is Trinity's biggest collaborator in terms of co-authorship of publications? It is University College Dublin. Thus everything we do in Trinity to increase the impact of our research will do the same for UCD. In co-authorship of papers with TCD you'll also see listed RCSI, QUB, DIT, UCC, NUI Galway and Maynooth so we are all in this together.

To finish I'd like to look at the area of public policy-making and research. A stimulating paper was presented in the Royal Irish Academy in 2005 by Dr Jonathan Lomas from the Canadian Health Research Services Funding Council. (Lomas, 2005) Dr Lomas' role focuses on evidence-based medicine and on evidence-based decision-making within the government agency for which he is responsible. Lomas used the example of scurvy to illustrate his case, pointing out that it took 190 years after the discovery that citrus juice could cure scurvy to the implementation of this knowledge as policy. It was 253 years after that discovery before the British Board of Trade started to use citrus juice to prevent and cure scurvy amongst its sailors. Lomas asks why this took so long – the cure was discovered in Britain, after all. The reasons may be obvious to you: one was political: the Spanish had a monopoly on oranges, of course, and Britain was at war with Spain. In addition, the solution was contrary to the medical world view at the time which centred on the belief that diseases were caused by humours in the body. But perhaps most importantly, Lomas suggests, there was no place for the people with the knowledge of the cure for scurvy to communicate with those in a position to act upon it. As he puts it, the doctors and the admiralty did not go to the same cocktail parties! There was no forum for the dissemination of the information. Lomas suggests that this is not a phenomenon particular to the eighteenth century, it is something which could occur today. Even with the enormous amount of public funding being expended on research, it is still possible that policy-makers may not be fully abreast of the conclusions arising from that research.

Lomas outlines the problem thus: policy-makers have incompatible timelines, have a high turnover amongst managers and policy-makers and are in an environment which has a corporate need for specific answers. Academic researchers live in a different world where they have a need for 'generalisable' answers, there are unfriendly incentive structures and it has to be said that evidence-based decision-making within universities (at least until recently) could be considered to be unusual. Lomas recommends that "More attention needs to be given to establishing and maintaining ongoing links between the two worlds".

This is why the type of forum provided by the Statistical and Social Inquiry Society of Ireland is so important. The Society's work focuses not just on final publications, but also (as Professor Mary Daly pointed out) on the discussions around the papers, revealing the processes of discovery and not just the final products. The Society continues to provide an ongoing channel of communication between academic researchers and policy-makers in an unbroken line from Famine times using the best means researchers have ever had to disseminate the results.

I have mentioned that this is just the start - we are currently witnessing a revolution in scholarly communication arising from a dawning realisation of the power of the internet for collaboration and social networking. I am confident that the venerable Statistical and Social Inquiry Society of Ireland and its distinguished Journal are particularly well-suited to thriving within this new environment. We have made a lot of progress in this country in this area, but there are a number of developments which are necessary to consolidate and reinforce the work. So to conclude I will share with you the dream of this particularly prejudiced patriot. I would like to see:

- a collaborative virtual research environment for Ireland for all researchers and policy-makers to be able to get a view easily (we have the technology!) it can be done – the Australians are doing it, not just for university researchers under PRTLI and Structural Innovation Funds, but across the government agencies so that all can work together
- government policy adopted to mandate public access to publicly-funded research so that access to the datasets and digital contents of our cultural institutions and government will allow these resources to be made freely available to all (and where these resources must be restricted for copyright reasons that they are at least made available for teaching purposes in the National Digital Learning Repository)
- a National Centre for Digital Preservation established and supported to support continued access for future generations of researchers and policymakers.

If we can achieve some of this, it will make this particular patriot very happy.

References

Brennan, Joseph *et al.* **(1938)** 'The population problem : a radio discussion'. - Dublin: Journal of the Statistical and Social Inquiry Society of Ireland,Vol. XVI No. 1, 1937/1938, pp112-121 http://www.tara.tcd.ie/handle/2262/4984

Browne, Jim (2005) '*No Irish college listed among the top 100 in latest league table',* Irish Times, August 29th 2005

Donnelly, Gerry (2006) 'The impact of the Restrictive Practices (Groceries) Order on competition in the Irish grocery trade'. - Dublin: Journal of the Statistical and Social Inquiry Society of Ireland,Vol. XXXV, 2005/2006, pp151-178 http://www.tara.tcd.ie/handle/2262/8967

Dublin Statistical Society (1855) 'Journal of the Dublin Statistical Society, Vol.1: preliminary pages, preface & contents'. - Dublin: Dublin Statistical Society,Vol.1, 1855, p5 http://www.tara.tcd.ie/bitstream/2262/9318/1/jssVolI1_0108.pdf

Dublin Statistical Society (1859) 'Special Committee on Registration of Marriages, Births and Deaths, 'Report of a Committee of the Dublin Statistical Society on the registration of marriages, births, and deaths in Ireland, presented to the Society by the Council'. - Dublin: Dublin Statistical Society, Vol.II, Part XIII, 1859, pp283-285 http://www.tara.tcd.ie/handle/2262/9240

Lomas, Jonathan (2005) 'It takes two to tango' [invited talk, Royal Irish Academy, 9 February 2005], Dublin: Health Research Board, 2005.
http://www.hrb.ie/news/upload/1684Professor%20Jonathan%20Lomas%20presentation.pdf

Oldham, C.H. (1911) 'The history of Belfast shipbuilding'. - Dublin: Journal of the Statistical and Social Inquiry Society of Ireland, Vol. XI Part XCI, 1910/1911, pp417-434
http://www.tara.tcd.ie/handle/2262/5928

Synnott, Nicholas J. **(1897)** 'Some features of the over-taxation of Ireland'. - Dublin: Journal of the Statistical and Social Inquiry Society of Ireland, Vol. X Part LXXVII, 1896/1897, p251 [p1]
http://www.tara.tcd.ie/handle/2262/5928

Thompson, William J. (1913) 'The Census of Ireland, 1911 (illustrated by lantern slides)'. - Dublin: Journal of the Statistical and Social Inquiry Society of Ireland, Vol. XIII Part XCIII, 1912/1913, pp46-59 http://www.tara.tcd.ie/handle/2262/7933

Walsh, Brendan M. **(2004)** 'The transformation of the Irish labour market: 1980-2003'. - Dublin: Journal of the Statistical and Social Inquiry Society of Ireland, Vol. XXXIII, 2003/2004, pp83-115
http://webird.tcd.ie/handle/2262/2578