

## WEBS6203 Interdisciplinary studies

### WEBS6203 Module Guide

#### Introduction

These notes provide a guide to the structure of WEBS6203. They contain references to foundational literature in context. Whilst you may well wish to read all the referenced literature, and make use of the associated resources, you are not expected to do all of this during the week's in which they are listed. You will need to make personal decisions about what are most likely to be the most useful readings for you personally.

There is also a growing set of slides which are used to provide summary views of key topics to help you orientate your individual work.

- **Module theme**

The overarching theme of WEBS6203 Interdisciplinary studies is for each of you to explore a contemporary question in Web Science from two unique disciplinary perspectives.

The disciplines<sup>1</sup> should be chosen from topic areas in which you do not already have an academic background.

Having identified the methods and approaches typically favoured by the contributory disciplines you will then go on to identify common ground between those disciplines and propose a research approach which integrates the two perspectives into a realistic interdisciplinary method.

This means that each of you will be following a highly individual programme focussing on your chosen focus, but you will share with other students the task of developing and understanding of interdisciplinarity and building your skills to research and manage the processes of scholarly communication.

However there will be many ways in which you can learn from and with your fellow students, and we encourage you to develop a collaborative approach throughout the module.

- **Coursework assignments for WEBS6203**

There are three coursework assignments and each is designed to help you understand interdisciplinarity and build the necessary skills, knowledge and understanding to pass the module with a good mark.

The deadlines for the courseworks are in Weeks 4,7 and 12.

The coursework are explained in a more detail further down this document. A complete detailed specification of each coursework will be released at least three week's prior to the deadline.

- **Finding information about WEBS6203**

The [ECS WEBS6203 module website](#) contains all information and links to relevant support materials and you are advised to review its contents and check it regularly.

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<sup>1</sup> The Oxford dictionary online defines a discipline as "A branch of knowledge, typically one studied in higher education".

<https://en.oxforddictionaries.com/definition/discipline>

See Appendix A for information about the classification of disciplines and fields of study in UK Higher Education.

For a longer discussion see also Krishnan's 2009 ESRC NCRM report "What are Academic Disciplines?"

## The Structure of WEB6203

The structure falls into three distinct parts

Early weeks

- One lecture style session each week
- One tutorial slot ( group tutorials)
- One reading group session

Middle Weeks

- Focus lectures when needed, otherwise:
  - private study
  - or
  - scheduled individual tutorial meeting
- Weekly reading group sessions/peer review sessions
- Individual supervisions

Final Weeks

- Surgery lectures (Q&A)
- Peer review sessions
- Private study

Further details of the session are on the [WEBS6203 website](#) and in the timetable below

You will be advised of opportunities to attend seminars in the WAIS research group

- **Expectations - attendance and handins**

You are expected to:

- Attend all the scheduled sessions - note they are not every week
- Hand in a weekly summary of your reading group and/or your progress - from week 2
- Hand in each of the three coursework assignments.
  - Note - the university imposes severe penalties for late hand in of coursework
  - If you encounter difficulties which require an extension please document those circumstances carefully and inform your tutor, the module leader and the ECS student office at the earliest opportunity

Please:

- Refer to the [WEBS6203 module page](#) web site to check what is scheduled
- Look out for module emails
- Take responsibility for attending the weekly reading groups, and participating in the peer review.

- Timetable

|     | <b>Monday<br/>14:00</b>                              | <b>Wednesday<br/>9:00</b>   | <b>Thursday<br/>14:00</b>              | <b>Coursework</b>   |
|-----|--|---|--|---|
|     | <b>Lecture/<br/>seminar or<br/>private<br/>study</b> | <b>Group<br/>tutorials,<br/>Supervisions or<br/>process class</b> | <b>Reading or<br/>review</b>           |   |
| 1   | Introductions  | Interdisciplinarity   | Reading group                          | <b>Publish</b> coursework 1<br>annotated bibliography               |
| 2   | Courseworks<br>ECS handins                           | Tools of the trade<br>Interdisciplinarity                         | Reading group                          |   |
| 3   | Writing  | GT: explaining<br>your proposal                                   | Reading group                          | <b>Publish</b> coursework 2<br>extended abstract<br>slideshow       |
| 4*  | Private study  | Peer review of<br>your annotated<br>bibliography                  | Reading group                          | <b>Deadline</b> coursework<br>1 annotated<br>bibliography           |
| 5   | Ideas share  | GT: Ideas share   | Reading group                          | <b>Publish</b> coursework 3<br>interdisciplinary studies<br>report  |
| 6   | Finding<br>Common<br>Ground                          | GT: Common<br>ground in your<br>study                             | Peer review of<br>extended<br>abstract | <b>Feedback</b><br>coursework 1<br>annotated bibliography           |
| 7*  | Private study  | Private study   | Reading group                          | <b>Deadline</b> coursework<br>2 annotated<br>bibliography           |
| 8   | Private Study  | Private Study   | Reading group                          |   |
| 9   | Private Study  | Private Study   |  | <b>Feedback</b><br>coursework 2<br>annotated bibliography           |
| 10  | Supervisions   | Supervisions  | Peer review                            |   |
| 11  | Supervisions   | Supervisions  | Supervisions                           |   |
| 12  | Vacation   |   |  |   |
| 13  | Vacation   |   |  |   |
| 14  | Vacation   |   |  |   |
| 15* | Surgery<br>Lecture                                   |   |  | <b>Deadline</b> coursework<br>3 interdisciplinary<br>studies report |

**How teaching and learning is structured in WEBS6203**

The module is a mix of short presentations, taught discursive classes, tutorial type slots, group exercises and private study. In each taught week we will provide you with one or more suggested tasks and some associated readings. The readings are designed to progressively develop your understanding of interdisciplinarity and web science. In the early stages of the module, material covered in Foundations of Web Science is also likely to be particularly relevant.

The taught discursive classes are designed to guide you through the weekly programme and it is important that you cover the reading in your own time.

The approach we take to interdisciplinarity is based on ideas presented in the recommended book by Repko, "Interdisciplinary Research: Process and Theory".

If you are interested in interdisciplinarity as a subject in its own right, then the web pages of the Association of Interdisciplinary Studies<sup>1</sup> at Oakland University in the US, is a useful source of information.

Each one of you is likely to start the module with a specific disciplinary background - and a few of you will have expertise in a range of different fields of study. One aim of the module is to help you broaden your understanding in a way which relates to Web Science.

As well as covering some of the set readings each week, you will need to:

- spend time on independent study identifying and reading publications which are relevant to your own chosen area of investigation;
- meet with fellow students in a reading group to discuss publications you have agreed to read and explore and explain in what ways they are relevant to your proposed field of study.

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<sup>1</sup> Association of Interdisciplinary Studies <http://oakland.edu/ais>

## Example Questions in Web Science

In order you help you understand the sorts of topics which you might study, below is a list of possible questions in web science based loosely on studies by previous students:

- What factors influence credibility on the Web?
- Does information want to be free
- What is misinformation and how and why does it spread on the Web?
- Does the Web have gatekeepers?
- Should we demand Identity authenticity or accommodate identity anonymity?
- Should the web's infrastructure directly protect any of the following: payments, privacy or piracy?
- The rights of individuals in the media spotlight to privacy in the digital environment appears confused and lacking direction. Is there a balance to be struck here and if so on what principles should it be based?
- What effect is the Web having on University operation?
- How can we create/utilise and spread Web memes e.g. viral videos for government to improve public health/public understanding of an issue?
- Should there be an international law of the web as there is an international law of the sea?
- Who is shaping the education web - students or faculty?
- What are the barriers to total adoption of the semantic web across different industries?
- Will true media convergence require a more open, and less 'walled' publishing web?
- What are the threats to business and society resulting from the sale of online pharmaceuticals?
- What are the problems associated with the development of a coherent policy for the regulation of Internet content in the EU.
- Can the Web reduce poverty?
- What factors contribute to the widespread phenomena of trolling on social media?
- What is the value of the cybercrime sector of the economy?
- How has the technological revolution overturned business models in rural deprived communities?
- Why and to what extent has crowdfunding replaced some traditional sources of business financing?
- Is democracy threatened or strengthened by the impact of social media?

## Coursework: formative and summative assignments

We have created three summative coursework assignments which are designed to help you progress with this task, and demonstrate that you have achieved the learning objectives of the module. The formative tasks in specific weeks are designed to help you achieve the tasks set in the summative assignments. The tasks are carefully designed to:

- Build your knowledge, skills and understanding as the module progresses;
- Provide you with a structure to create a deep understanding of interdisciplinary;
- Develop and practice sound approaches to literature-led research which can be further applied in subsequent modules (especially the masters dissertation);
- Extend your understanding of academic writing processes and establish good practice in your approach to academic communications in general - especially in an interdisciplinary context;
- Encourage you to incorporate knowledge skills and understandings from other modules into your final interdisciplinary report;
- Support your understanding of the ways in which Web Science is a fundamentally interdisciplinary subject;

### - **Coursework 1: Annotated bibliography - deadline week 4 (tbc)**

By the end of this module you will have produced an academic report which investigates a question in web science from two independent academic perspectives, identified common ground between those disciplines and proposes a research approach to investigate the topic in greater depth.

This initial coursework is designed to guide a review of relevant literature

- identify ten publications relevant to your proposed final study
- review six of those publications (selecting two each from the two chosen disciplines, plus two papers discussing interdisciplinary studies and or Web Science):

Enables you to research, identify, read and review a small part of the literature on which you propose to build structure your final report.

### - **Coursework 2: Extended abstract as a ten minute slideshow: deadline week 7 (tbc)**

Produce a set of slides on the chosen topic following the structure of a specified template

- For each slide provide a written narrative note which explains the content in an academic style
- Add an audio narrative and upload the slideshow to SlideShare
- Submit a PDF of the slides along with a URL of your SlideShare slideshow

This provides you with an opportunity to present your arguments in a format and in a manner which is different from that used in the final report

The constraints of a slideshow presentation can be helpful in forcing you to clarify your arguments

It provides an opportunity to rehearse conclusions and identify ways of visually summarising complex ideas - demonstrating visual literacy

### - **Coursework 3: An interdisciplinary report: deadline week 12**

Produce an academic report exploring a contemporary question in Web Science from two unique disciplinary perspectives. The disciplines should be chosen from topic areas in which you do not already have an academic background.

- Having identified the methods and approaches typically favoured by the contributory disciplines you will then go on to:
  - identify common ground between those disciplines
  - propose a research approach integrating the two perspectives into a realistic interdisciplinary method.

## Week 1 - introducing Web Science and Interdisciplinarity

**Focus:** Introduction and overview

As well as getting to know your fellow students you will be examining your own disciplinary roots and thinking about what is meant by interdisciplinarity

### Group tutorial: More discussions of interdisciplinarity

1. I will present a quick overview of disciplines and how we think about them in Web Science
2. Continue your discussion of disciplinary backgrounds of your fellow group members (10 minutes)
3. Look through the list of example topics
  - Individually, and then in pairs, identify a set of possible questions in Web Science
  - and the disciplinary perspectives from which they might be examined
  - Feed back to the whole group

### Out of class activities:

Take a look at the library web pages which support ECS

Do a little thinking and investigating to try to identify your topic of interest.

Suggestions for finding ideas include:

- Browsing through the overview of previous seminars in the Web and Internet Science (WAIS) research group
- Looking through back issues of the proceedings of the Web Science Conference (since 2012 in the ACM digital library)
- Talking with your fellow students about what interests you

**Reading group:** establish ground rules, draft your reading list, agree on reading for week 2

### Suggested Readings:

The readings listed below are relevant to the whole of the first four week's of the module. They are included here as a full set, so you have a sense of the scope of the readings which you could tackle as you begin to understand what lies ahead in WEBS6203. In addition, each of you is likely to have different starting points, depending on your prior experience and your particular areas of interest.

The publications cover disciplinary differences, perspectives on specialist versus interdisciplinary approaches and some examples of relevant academic writing. There are also a set of more process oriented publications which focus on the skills of academic reading and writing and can be used to model good practice.

Biglan (1973a, 1973b) makes a good starting point for looking at disciplinary differences. Although published some time ago, the study is interesting in its own right (not least because of the precise way in which it is reported in these two linked papers). His work continues to be the basis for academic discussion and debate (see for example Simpson, 2017). It particularly relevant to our understandings of interdisciplinarity in web science because of the way in which he categorises disciplines not only by their knowledge content, but also their methods of collecting evidence, and pursuing enquiry and discourse.

There are a couple of papers which look at academic disciplines - you will probably find Krishnan's practical account (2009) and interesting comparison to the 1930 polemic by Ortega y Gasset on how specialisation leads to a narrow kind of knowledge but an elevated sense of superiority - a toxic combination

Becher and Trowler's 'Academic tribes and territories' (2001) is useful, and since it is derived to a large extent from UK academic practice, it is very accessible to those working in the UK academic context. If you want a shorter introduction, you will probably find Becher's 1994 paper helpful.

Chynoweth's paper is useful and accessible, putting disciplinary analysis into a practice frame. If you are

looking for a more nuanced approach to understanding disciplines you may find Trowler's 2013 analysis if how disciplines might be conceptualised useful.

When it comes to conducting some analysis of your chosen disciplines, Repko, in the recommended book, provides a clear and contextualise framework for the process of integrating approaches, creating common ground between disciplines, and achieving ultimately an interdisciplinary perspective.

Becher, T. & Trowler, P., 2001. *Academic tribes and territories: intellectual enquiry and the cultures of disciplines* 2nd ed., Buckingham: Open University Press in association with The Society for Research into Higher Education. Available at: <http://www.mheducation.co.uk/openup/chapters/0335206271.pdf>.

Becher, T., 1994. The Significance of Disciplinary Differences. *Studies In Higher Education*, 19(2), p.151.

Biglan, A., 1973. The characteristics of subject matter in different academic areas. *Journal of Applied Psychology*, 57(3), pp.195–203.

Biglan, A., 1973. Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology*, 57(3), pp.204–213.

Chynoweth, P., 2009. The built environment interdiscipline: A theoretical model for decision makers in research and teaching. *Structural Survey*, 27(4), pp.301–310. Available at: <http://dx.doi.org/10.1108/02630800910985090>.

Hughes M., 2013. Book review essay: The territorial nature of organization studies, *Culture and Organization*, 19(3), 261-274, DOI:10.1080/14759551.2013.802168

Krishnan, 2009, What are academic disciplines? [http://eprints.ncrm.ac.uk/783/1/what\\_are\\_academic\\_disciplines.pdf](http://eprints.ncrm.ac.uk/783/1/what_are_academic_disciplines.pdf)

Ortega y Gasset, J., 1930. The barbarism of "specialisation. In *The Revolt of the Masses*. W. W. Norton & Company, pp. 76–81. Available at: <http://pinkmonkey.com/dl/library1/revolt.pdf>.

Repko, A.F., 2007. Integrating Interdisciplinarity: How the Theories of Common Ground and Cognitive Interdisciplinarity Are Informing the Debate on Interdisciplinary Integration. *Issues in integrative studies*, 25, pp.1–31.

Repko A. F. (2008) *Interdisciplinary Research: Process and Theory*. Sage Publications

Simpson, A., 2015. The surprising persistence of Biglan's classification scheme. *Studies in Higher Education*. 42(8) pp.1520-1531.

Trowler, P., 2013. Depicting and researching disciplines: strong and moderate essentialist approaches. *Studies in Higher Education*, (39)10 pp.1–12. Available at: <http://dx.doi.org/10.1080/03075079.2013.801431>.

#### Further reading:

Practicalities of research - reading and writing academic papers

Many people find the transition to an even more independent approach to study which is expected of masters student quite difficult. We have structured the course to help you through the process.

The publications in this section have been selected to provide some insight into what is expected of you, and how you might turn those expectations into an enjoyable and constructive experience. For the most part the titles are self explanatory.



Ashby, M., 2005. *How to write a Paper*, Cambridge. Available at: <http://www-mech.eng.cam.ac.uk/mmd/ashby-paper-V6.pdf>.

Keshav, S., 2007. How to read a paper. *ACM SIGCOMM Computer Communication Review*, 37(3), p.83.

Van Evera, S., 2009. How to write a paper. In *Guide to Methods for Students of Political Science*. Ithaca, NY: Cornell U. Press, p. 123:128. Available at: [https://ocw.mit.edu/courses/political-science/17-42-causes-and-prevention-of-war-spring-2009/related-resources/MIT17\\_42S09\\_writepaper.pdf](https://ocw.mit.edu/courses/political-science/17-42-causes-and-prevention-of-war-spring-2009/related-resources/MIT17_42S09_writepaper.pdf).

Another difficulty which students on this module sometimes face is imagining what topics they might investigate and then write about. The list of example topics provided in the intro section might be helpful to you here, or you might want to take a look at the focus of some of the posters which were produced by previous students <https://www.scribd.com/lists/4451709/Web-Science-Posters-2014>

#### **Disciplinary or interdisciplinary approaches?**

The paper by Tiropanis et al provides an example of looking at a problem from two distinct disciplinary perspectives. The use of diagrams to clarify the argument is useful.

Tiropanis, T. et al., 2015. Network Science, Web Science, and Internet Science. *Communications of the ACM*, 58(8), pp.76–82. Available at: <https://eprints.soton.ac.uk/376676/>

## Week 2 - planning for assessment

Coursework, ECS Handins

Focus: Interdisciplinarity, assessment requirements and tools for working

In order to succeed and make good use of your time, it's important that you spend time familiarising yourself with the assessment criteria of each of your coursework assignments. Similarly building up a personal toolbox of methods can be helpful.

So, this week we will be

Talking further about disciplinary differences, web science and its contributory disciplines.

Thinking about tools to help the writer

As well as exploring interdisciplinarity in greater detail, we will review the assessment map for the whole module, and discuss and try to clarify what we expect you to achieve throughout WEBS6203.

### Group tutorial:

Your tutorial group will continue exploring disciplinary perspectives. this will be a small group class exercise building on your outline set of possible Web Science Questions

You will need to bring along the draft of your list of possible questions in Web Science and the disciplinary perspectives from which they might be examined.

Out of class activities:

1. Read the handout on automated note taking
2. Practice Automated note taking
3. Reading Task: What is an annotated bibliography?

Task: After the reading group meeting practice using the online handin system - submit some of the notes you have made so far to the first assignment on the handin system. You will of course replace it at a later date.

Note: Always make a note of the formats required for handin. Make sure you hand in using the required format.

### Readings:

This week's list of suggested readings are more focussed on practical examples and analysis of experiences, and issues.

There are a number of publications which you can use as a guide to aspects of academic writing. Krause (2007) specifically addresses the question of how to write an annotated bibliography.

Hartley (2008) is useful in terms of explaining each of the components of an academic paper, while the downloadable "Academic phrase bank" produced by university of Manchester academic John Morley, not only provides contextual examples of useful academic phrases, but in the latter section of the publication includes an overview of good practice in writing which you may well find useful. Morley's phrase bank can be viewed online, but a more extensive version is available from the library.

### Practical guides

Hartley, J., 2008. *Academic writing and publishing: A practical handbook*, Routledge. Available at: <http://edshare.soton.ac.uk/16360/>.

Krause, S., 2007. The Annotated Bibliography Exercise. In *The process of research writing*. Available at: <http://www.stevendkrause.com/tprw>.

Morley, J., 2016. *Academic Phrasebank<sup>1</sup> Enhanced Personal 2016* 2016th ed., Manchester: University of Manchester. Available at: <http://www.phrasebank.manchester.ac.uk/about-academic-phrasebank/>.

### Annotated bibliographies

A few examples of annotated bibliographies are provided to give you an idea of the ways in which you might describe the papers you include in your bibliography. Check the assignment

specification, and do a little bit of independent research to find more.

Mah, A. and Crow, G., 2011. Researching Community in the 21st Century: An annotated bibliography <http://www.community-methods.soton.ac.uk>

A useful example which you might follow when creating your bibliography

Link, A.N. & Strong, D.R., 2016. Gender and Entrepreneurship: An Annotated Bibliography. *Foundations and Trends® in Entrepreneurship*, 12(4–5), pp.287–441. Available at: <http://dx.doi.org/10.1561/0300000068>

Although not in the format which is required for your coursework, but a useful example of how you might initially categorise references if you are trying to systematically categorise a large set of papers

Malina, R.F., 2016. Art-Science: An Annotated Bibliography. *Art Journal*, 75(3), pp.64–69. Available at: <http://dx.doi.org/10.1080/00043249.2016.1234202>.

Another useful example which includes descriptions of a range of papers - in this case, dealing, to some extent, with an areas of interdisciplinarity

Savonick, D., & Davidson, C. N., 2017. Gender bias in academe: An annotated bibliography of important recent studies. Retrieved January 7, 2017, from <http://blogs.lse.ac.uk/impactofsocialsciences/2016/03/08/gender-bias-in-academe-an-annotated-bibliography/>

Published on the LSE impact blog, this annotated bibliography provides useful examples of how you can report on publications

### **Further Reading**

Kolb, D. A., 1981. Learning Styles and Disciplinary Differences. in Chickering, A. (Ed.) *The Modern American College*. San Francisco, CA, Jossey Bass.

Whitmire, E., 2002. Disciplinary differences and undergraduates' information-seeking behavior. *Journal of the American Society for Information Science and Technology*, (53)8, 631-638.

### **Webliography**

How to write an annotated bibliography, WikiHow

<http://www.wikihow.com/Write-an-Annotated-Bibliography/>

Writing Skills Annotated Bibliography, University of Southampton Library

<https://writingatsouthampton.files.wordpress.com/2016/10/annotated-bibliography.pdf>

Video What makes interdisciplinarity work? <https://www.youtube.com/watch?v=DhhNtzjMY4g>

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<sup>1</sup> Go to the Hartley Library WebCat online and search using the term academic phrase bank - you will get a link to the ebook version.

## Appendix A: Web Science and Disciplinary Differences – a flying visit

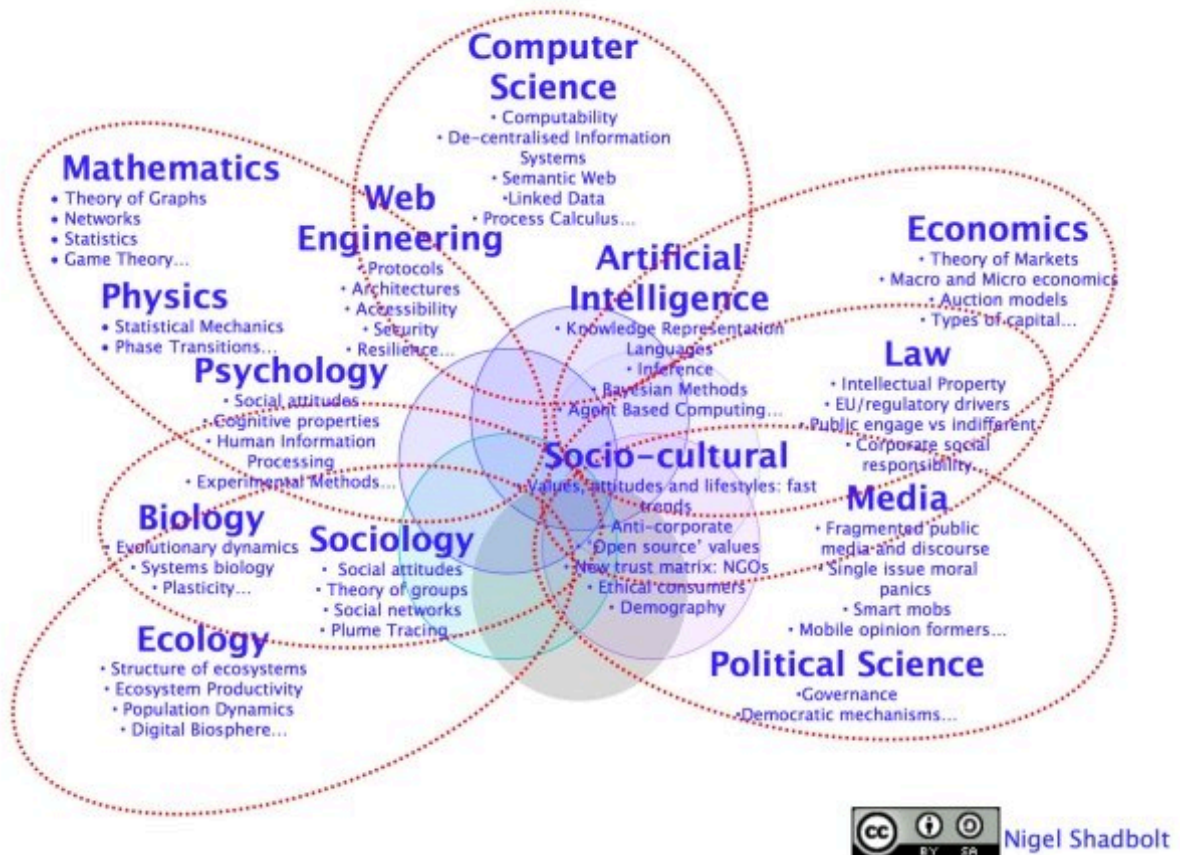


Figure 1 Shadbolt's Butterfly Diagram

### Disciplines in Web Science

Early on in the discussion of Web Science, a butterfly diagram of component disciplines was proposed (figure 1). The visualization has been discussed extensively, and analytical comparisons with the content of web science discourse, has suggested a number of omissions. (see for example Hooper et al 2012). Nonetheless, it can provide a useful starting step in understanding how many different established fields of study can feature in any piece of web science research.

Researchers and students embarking on a study of web science can usefully spend some time looking into the background of disciplinary differences before referring to more formal texts which specifically study interdisciplinarity (for example Repko, 2012 and Szostak, 2013)

### Establishing a discussion of disciplinary behaviours:

Biglan looks at the nature of the subject matter of research (Biglan, 1973a, b). His work is extensively cited and continues to influence academic discussion of the disciplines. Kolb, who may be better known for his definition of a learning cycle, proposed (the hotly contested notion) of Learning Styles and associated disciplines with a range of styles of intellectual enquiry (Kolb, 1981).

Becher provides some valuable insights into academic communities, notably in his Book has been concerned with academic and disciplinary cultures where he drew on the earlier work of Biglan and Kolb (Becher, 1993, 1994, Becher *et al.*, 2001). He later returns to this theme and has worked with colleagues to consider the implications of these observations in an educational context (Neumann *et al.*, 2002). Becher identifies the

relationships between the following broad disciplinary groupings

**Table 1 Comparing Broad Disciplinary Groupings from Biglan and Kolb (Becher, 1994)**

| Biglan       | Kolb                | Disciplinary Areas             |
|--------------|---------------------|--------------------------------|
| Hard Pure    | Abstract reflective | Natural sciences               |
| Soft Pure    | Concrete reflective | Humanities and social sciences |
| Hard Applied | Abstract active     | Science-based professions      |
| Soft Applied | Concrete active     | Social professions             |

Neumann, Parry and Becher undertook further work which sought to draw relationships between the learning and teaching dimension and the research dimension (Neumann et al., 2002).

White and Liccardi built upon the analysis by Neumann, Parry and Becher (shown in appendix) who undertook a survey of student's perspectives seeking evidence to extend the analysis into the context of learning design (White and Liccardi, 2006).

**Table 2 Disciplines and teaching approaches (White and Liccardi, 2006)**

|  | Curriculum/Content  | Assessment  | Cognitive Purpose   |
|--|---|---|---|
| <b>Hard Pure</b><br>e.g.<br>Natural Sciences               | <ul style="list-style-type: none"> <li>• Concepts and principles closely connected.</li> <li>• Content typically fixed and cumulative. Quantitative.</li> <li>• Teaching and learning activities are focused and instructive.</li> </ul>                  | <ul style="list-style-type: none"> <li>• Specific and focused exam questions.</li> <li>• Objective tests relying on quantitative nature of knowledge</li> </ul> | <ul style="list-style-type: none"> <li>• Logical reasoning.</li> <li>• Testing of ideas in linear form of argumentation.</li> <li>• Reliance on facts, principles, and concepts.</li> </ul> |
| <b>Hard Applied</b><br>e.g.<br>Engineering                 | <ul style="list-style-type: none"> <li>• Concerned with the mastery of the physical environment.</li> <li>• Focus is on products and techniques.</li> <li>• Knowledge is atomistic and cumulative.</li> <li>• Emphasises factual understanding</li> </ul> | <ul style="list-style-type: none"> <li>• Preference for exam questions, especially problem-solving</li> </ul>   | <ul style="list-style-type: none"> <li>• Problem-solving and practical skills</li> <li>• Emphasis on integration and application of existing knowledge</li> </ul>                           |
|  | Curriculum/Content  | Assessment  | Cognitive Purpose   |
| <b>Soft Pure</b><br>e.g.<br>Social Sciences and Humanities | <ul style="list-style-type: none"> <li>• Non-linear, open and loose</li> <li>• Content is free-ranging</li> <li>• Qualitative</li> <li>• Teaching and learning activities are constructive and interpretive</li> </ul>                                    | <ul style="list-style-type: none"> <li>• Essay questions, short answer questions, and oral presentations</li> <li>• Ongoing assessment</li> </ul>               | <ul style="list-style-type: none"> <li>• Broad command of intellectual ideas</li> <li>• Emphasis on creativity in thinking and fluency of expression</li> </ul>                             |
| <b>Soft Applied</b><br>e.g.<br>Nursing or Education        | <ul style="list-style-type: none"> <li>• Concerned with the enhancement of professional practice</li> <li>• Knowledge reiterative and holistic</li> </ul>   | <ul style="list-style-type: none"> <li>• Essays, project-based assignments</li> <li>• Use of peer and self-assessment tasks</li> </ul>                          | <ul style="list-style-type: none"> <li>• Emphasis on personal growth and intellectual breadth</li> <li>• Development of reflective practice and lifelong learning skills</li> </ul>         |

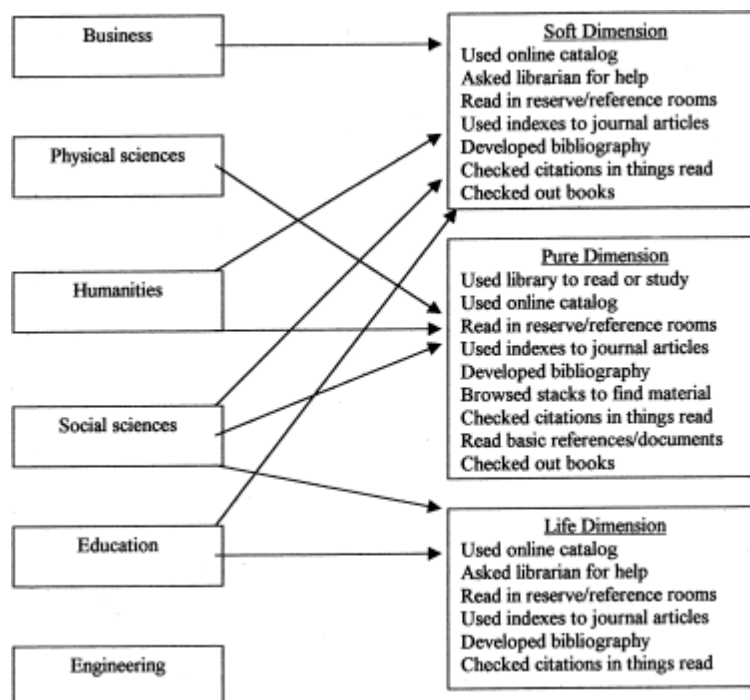
Whitmire found a relationship between Biglan's categorisation of disciplines and the information seeking

behaviours of undergraduates in the context of library and information science. She commented

*“It could be expected that undergraduates’ information-seeking behavior would differ from faculty and graduate students because their information seeking skills are not as well developed. However, similar information-seeking patterns could also be expected because undergraduate majors are socialized and indoctrinated into the research processes of their academic disciplines through course assignments and lectures. Faculty expose undergraduates to the major theories and researchers in the field including identifying which journals, authors, books are important, and perhaps which databases and academic libraries are useful for seeking information to complete course assignments.”*

(Whitmire, 2002)

It might be reasonable to assume that similar factors come into play when we consider the way in which undergraduates might make use of educational learning resources.



**Figure 2 Information seeking behaviours of undergraduates (Whitmire, 2012)**

## References

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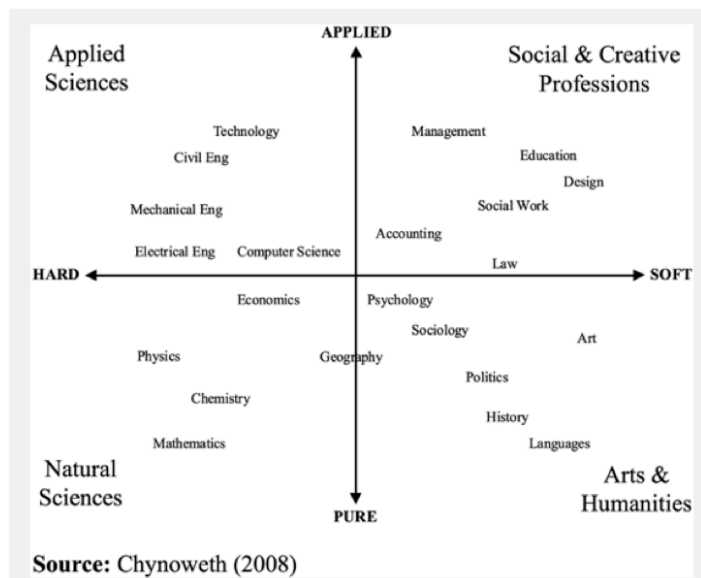
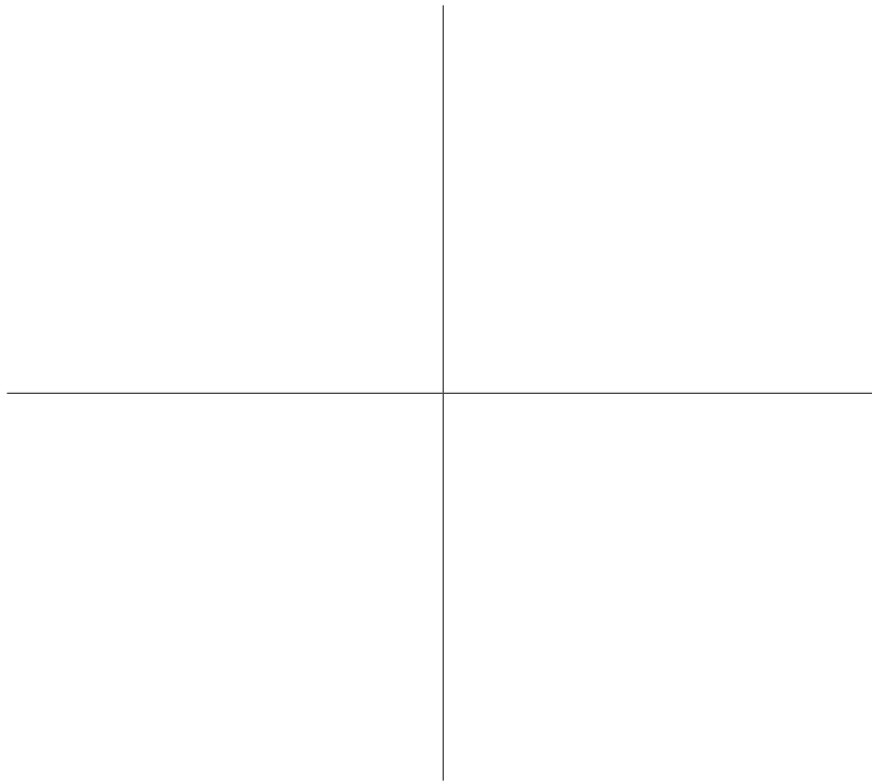
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**Appendix B:** Create an interdisciplinary map of the class/your group – names and interests/expertise use the same style as shown in the paper by Chynoweth



*Cited in Chynoweth, 2008. The built environment: disciplinary knowledge base and implications for educators*