



Developing and maintaining a website for teaching and learning about intelligence ☆



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ABSTRACT

This article describes the development of the website *Human Intelligence: Historical Influences, Current Controversies, Teaching Resources* (<http://www.intelltheory.com/>). Organized historically, the site is a “living text” that can be used flexibly as a pedagogical resource in stand-alone courses focusing on intelligence, or as a supplemental resource in undergraduate and graduate-level psychology, education, and philosophy courses covering intelligence. Site resources include: an interactive map demonstrating the chains of influence among theorists and researchers, biographical profiles of prominent individuals who have contributed to the development of intelligence theory and testing, in-depth articles exploring important controversies related to intelligence, and sample course syllabi. Site usage data suggest that intelligence is being taught in U.S. high schools and universities in several countries around the world.

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1. Introduction

The history of intelligence research, theory, and application mirrors the growth of psychology as a discipline and, not coincidentally, includes many colorful individuals and anecdotes. Yet in our experience teaching intelligence, beginning in the mid-1990s, most students believed the topic to be dry and boring. In an effort to capitalize on the rich and fascinating history of intelligence, we created *Human Intelligence:*

Historical Influences, Current Controversies, Teaching Resources (<http://www.intelltheory.org/>), a website to guide the study of intelligence.

Organized based on learning and cognitive science research about how people interact with information (in both traditional print-based and technological forms), the site is meant to be a “living text” that can be used flexibly as a pedagogical resource in stand-alone courses focusing on intelligence, or as a supplemental resource in undergraduate and graduate-level psychology, education, and philosophy courses covering intelligence. The purpose of this article is to describe the development of the site and suggest how it may be used to facilitate teaching and learning about intelligence.

2. Components of the website

2.1. Interactive Map

This thematic figure was created to help students understand the numerous, complex themes that run through the history of intelligence theory, testing, and research. It was created by the first author as a course project during his

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master's degree studies to provide a figural depiction of the complex interactions and influences among major thinkers in the field. The initial selection of individuals for the Map was accomplished through a survey of the major reference works on the history of intelligence (e.g., Benjamin, 1988; Carroll, 1982; Fancher, 1985; Gould, 1981; Weinberg, 1989). This initial pool of scholars was further developed through close examinations of biographies (Hearnshaw, 1979; Karier, 1986; O'Connell & Russo, 1990; Ross, 1991; Seagoe, 1976; Woodworth, 1973; Zusne, 1975), autobiographies (Anastasi, 1972; Boring, Langfeld, Werner, & Yerkes, 1952; Eysenck, 1977; Guilford, 1967; Inhelder, 1989; Krawiec, 1974; Lindzey, 1980; Murchison, 1930, 1932, 1936), obituaries (Comrey, Michael, & Fruchter, 1988; Elkind, 1981; Gough, 1980; Haywood, 1992; Jensen, 1989; Lubinski, 2013; Matarazzo, 1981), historical analyses of psychology and the behavioral sciences (Joynson, 1989; Puccio, 1991; Taylor, 1980; Von Mayrhauser, 1989), and original sources (e.g., Burt, 1949; Goddard, 1912; Horn & Cattell, 1966; Intelligence, 1921; Spearman, 1904; Thurstone, 1938; Wissler, 1901). After the Map began to approach its current form, prominent living scholars who had been selected for inclusion were contacted for their feedback and constructive criticism.

In most cases, reliance on a variety of sources provided a check and balance for the Map structure. As a result, questionable connections could be verified or rejected. For example, G. Stanley Hall was never shy about being a former student of Wundt, but most third party accounts describe their interactions at Wundt's Leipzig laboratory as being minimal and insignificant. Likewise, one eminent researcher questioned our assertion that one scholar influenced another, noting that "The two of them never agreed on anything." Yet when we returned to the research, we noted that the younger scholar cited the older over a dozen times in his seminal work, primarily to contrast their approaches to the topic – no one said influence is purely positive! Over time, we essentially became historians of the psychology of intelligence. We see this as a positive development, because a strength of teaching the topic are the wonderful stories that can be told and shared with students, and taking a primarily historical approach to our work with intelligence has made us better teachers of the topic to our own students.

The current map is not meant to be definitive. Any subjective listing of important historical figures is bound to generate some controversy, and this map is not an exception. One member of the "intelligence family tree" (who has since passed away) once told us – in strong terms – that only eight or nine of the included individuals made any contribution to intelligence theory or research, and the rest simply were not important. Another researcher suggested that individuals who made significant contributions to statistical methodology should be placed in the Map. Given the importance of statistical advances to the study of intelligence (and to social science more generally), several individuals who made primarily statistical contributions are listed on the Map (e.g., LaPlace, Gauss, and Pearson), but due to space considerations, several dozens of their counterparts are not included. Similarly, the influence of Piaget on succeeding generations of developmental psychologists is widely acknowledged, but the inclusion of these individuals would have been logistically impossible. When we have used the Map to teach graduate level courses,

these controversies have been used to initiate productive discussions as to why some individuals, and not others, were included. A Spanish version of the Map was created by colleagues in Spain and is also available on the site (http://www.intelltheory.com/images/figura_2.6.jpg), and a Portuguese version is in development by colleagues in Portugal.

2.1.1. Time periods

In order to provide an overarching structure to the relationships and help students gain an appreciation for the dominant paradigms, the Map was overlaid with six distinct time periods: Historical Foundations, a period of several thousand years in which philosophy laid the foundation for the modern social sciences; Modern Foundations, marked by the emergence of psychology from philosophy; the Great Schools period, when the first European and later American psychology laboratories trained the first significant waves of professional psychologists; the subsequent period of the Great Schools' influence on the study of intelligence; Contemporary Explorations, the period including the second world war and the following three decades; and Current Efforts, when criticisms of psychometrics and the growing availability of relatively inexpensive computer analyses influenced (and are still influencing) the study of intelligence, albeit in very different ways. These rough categories are meant solely to be guides, not rigid barriers. Although these time periods have met their stated objectives (i.e., they facilitated students' understanding of dominant themes in the study of intelligence), we anticipate making changes to align with new directions in the field. For example, the Current Efforts period will eventually be relabeled Tensions and Reconceptualizations, with a new, seventh era referred to as Current Efforts.

2.2. Biographical Profiles

Another feature of the site is a set of approximately 80 biographical profiles of prominent intelligence researchers and other eminent individuals who have contributed to the development of intelligence theory and testing. Source material and criteria for inclusion in these profiles are the same as with the *Interactive Map*. They can be accessed through a time-period index, an alphabetical index, or through links on the Map. Providing multiple pathways for interacting with the information was done deliberately and was influenced by research suggesting that people prefer to interact with information in different ways (e.g., Duit & Treagust, 1998; Hoque & Lohse, 1999; Jones, Ravid, & Rafaeli, 2004; Reeves & Reeves, 1997; Xiang & Gretzel, 2010). Rather than provide, for example, only the Map as the entry point to the site content, someone may prefer the alphabetical index. And the predominance of search engines such as Google for finding information often means that people will enter the site on a specific page (e.g., after searching for Piaget or the Flynn Effect and being directed to the site's page on that person or topic) then explore other aspects of the site when they realize the targeted page is part of a much larger, richer resource.

An important undertaking over the last decade has been to expand the profiles so that prominent living researchers are represented in greater numbers. An early criticism of the site was that it was too historical and lacked profiles of some major, contemporary scholars; many profiles have been added

to address this concern, but several additional profiles are in development, with others in the initial planning stages. These new profiles are enhanced by video clips and transcribed excerpts from semi-structured oral history interviews (see Doel, 2003). The procedures for creating these oral history components involved contacting prominent living scholars and arranging to interview them at professional conferences or in their homes.¹ We sent the semi-structured interview protocol in advance of these meetings. Questions focused on their personal definition of intelligence; how they became interested in the topic of intelligence; professional influences; what they believe to be their most important contributions to the field; how their thinking has evolved during their career; and a brief summary of their work. In two cases where we were unable to connect with the scholar in person, we sent the interview protocol and a digital videotape, and the scholar conducted a “self-interview.” These videotapes were edited into short clips, with transcriptions sent to each theorist for review and approval before posting on the site.²

2.3. Hot Topics

An ongoing area of development for the site is posting of concise exploratory essays focusing on controversial, timely, or otherwise intriguing topics related to intelligence theory and testing. Each Hot Topic contains a brief introduction to the subject of interest, discussion of relevant issues related to that subject, and references for further information. For example, site visitors can find information about the Flynn effect, *The Bell Curve* (1994), or the *Wissler controversy* (1901).

The Hot Topics have proven to be problematic for a number of reasons. On the one hand, they drove a lot of traffic to the site and provided richer content than could be found in any one individual biography. On the other hand, we found that the topics could not be too detailed, as they could become “plagiarism magnets,” and the summaries of the topics can be polarizing to some visitors. Others have questioned whether the overviews are better labeled as “Historical Controversies.” Regardless, this section of the site is probably most in need of further development.

2.4. Related course syllabi

One of the initiatives undertaken on the site in the early 2000s was collecting course syllabi from faculty who teach about intelligence. We began by contacting prominent living researchers who met criteria for inclusion on the *Interactive Map and Biographical Profiles*. We also scanned the Web for links and references to other intelligence course syllabi. Unfortunately, we discovered that very few faculty members were teaching stand-alone courses about intelligence, and

we tabled this initiative. However, we were successful in obtaining syllabi from Douglas K. Detterman, Robert J. Sternberg, and Dean Keith Simonton, and these are available on the site. Faculty who are interested in teaching about intelligence may find these useful as foundations for building their own syllabi, and we remain open to posting similar syllabi.

3. Teaching with the site

The *Interactive Map* has been used, in various forms, with several educational psychology, learning, and cognitive science courses at the undergraduate and graduate levels. In general, undergraduates find the Map to be very imposing. Considering the superficial coverage of intelligence in many undergraduate texts, surprise at the realization that the topic is rather complex is not unexpected. However, after limited exposure to the figure and the extraction of one or more themes, many advanced undergraduates are able to use the Map to guide independent study of the topic.

Of course, a basic understanding of chronological themes does not do justice to the complexities of intelligence. Many different themes and “teachable moments” can be extracted from the Map. For example, when discussing Galton’s seminal work, *Hereditary Genius* (1869/1952), students can be encouraged to consider the social context of his work through book reviews and other commentaries written within the historical time period.

Mr. Galton hastens to admit that his views ... are “in contradiction to general opinion.” We believe, on the other hand, that the crudely formed opinions of the general public are quite as often to be found on Mr. Galton’s side as on the opposite.... In this case ... popular prejudice is unequivocally supported by scientific investigation.... A man like Newton must have had parents of rare mental capacity, even though they have done nothing by which to be remembered in history: the son of ordinary parents could no more have discovered the law of gravitation than the offspring of a pair of cart-horses could win the Derby.

[*Atlantic Monthly* (1870, p. 753)]

In addition to being quite controversial by today’s standards, this review can initiate a class discussion about the emergence of hereditary views of intelligence: Did early psychometricians and psychologists lay the foundation for hereditary views, or was the belief that intelligence was largely determined by “nature” a scientific justification of people’s implicit definitions of intelligence?

Other themes that have been extracted from the Map include the philosophies of nature and nurture as they passed from teacher to student/assistant; the increasing complexity of intelligence theories; the importance of foreign involvement in the formation of American psychology (i.e., the influence of Ebbinghaus, Binet, Wundt, and Galton); the societal and professional barriers female psychologists encountered (e.g., Thelma Thurstone and anti-nepotism rules, Psyche Cattell and the miscrediting of her work); the survival of mental measurement after the failure of the anthropometric testing movement; largely unknown relationships, such as

¹ J.P. Das referred to this undertaking as “corralling the prominent” (personal communication, July 13, 2004).

² We were very fortunate to connect with John Horn near the end of his life. His interview, conducted in his home office in California (which he lovingly referred to as “The Institute”) can be found here. The interview posted on the site is actually a second attempt. The first attempt one year earlier failed because one of the present authors (A. Esping) and Dr. Horn collectively could not figure out how to turn on the video camera during the first visit. In an email exchange afterwards, Dr. Horn attributed this to Amber’s deficit in a specific ability.

Binet and Freud studying under Charcot, L. L. Thurstone's temporary employment as an assistant to Edison, and James McKeen Cattell's distinction of having studied under Galton, Wundt, and Hall; the resurgence of the hereditarian argument with the work of Burt and his philosophical successors; the causal ordering of theory, research, and application, which in intelligence work has not always been so clear cut; and the question of ethics during the possible manipulation of data by Goddard and Burt. The Map can serve as a guide for the discussion of these themes and countless others.

The *Hot Topics and Biographical Profiles* can be used as additional resources for these kinds of discussions, or function flexibly as modules in an online textbook in undergraduate and graduate-level psychology, cognitive science, and philosophy courses covering intelligence. One way to introduce students to the available resources on the site is to engage them in a version of the “intelligence treasure hunt” designed by Jonna Kwiatkowski at Mars Hill College, and described in [Esping and Plucker \(2011\)](#):

Your mission today is to complete the following tasks with your team. The team that has the most correct tasks completed in time will be the winner. This website will be most useful to you in your quest: <http://www.intelltheory.org>

1. Burt was influenced by the cousin of the first person you need to identify.
2. What is the definition of intelligence offered by the person identified for question #1?
3. The above definition of intelligence is a “Hot Topic” for debate even today. In particular, a book based on the name of everyone's favorite statistical distribution has received a lot of attention. What is the title and authors for this book? Why is the book controversial?
4. You know you've found the right book for question #3 if Stephen Jay Gould criticized it. What is the example SJ Gould uses to argue against genetics and IQ?
5. Question #1 includes the name of a very controversial researcher of intelligence. He influenced a lot of scientists, but why might they have been led astray in listening to him?
6. Another great controversial hot topic describes a graduate student who debunked the theories of his mentor and a character from question #1. Who was the graduate student, and what did he find?
7. Most of your scavenging has been related to two members of the Modern Foundations group. Who is the last member of this group and why is he important to psychology?
8. A famous 18th century composer is the focus of another hot issue. List the fallacies from this topic.

4. Ongoing development and evaluation

The content on the website continues to evolve and expand as the field does, and in order to stay current we rely on technical and research support provided by graduate students who work closely with us. Content development is guided in part by data provided by website visitors, who are invited to complete a short survey that provides quantitative

and qualitative data. Respondents are asked about their reasons for visiting the site, whether or not they found the information they were looking for, ease of site navigation, and overall suggestions for improvement. This survey also includes a general comments field. Respondents who do not wish to take the survey can click on a link that takes them directly to this open-ended query.

During the site's first decade, we also encouraged site visitors to e-mail us if they wished to contribute to the site. The form provided on the site literally attracted no useful contacts (but plenty of spam). Due to the lack of meaningful contacts via the “make a contribution” form, it was not retained during the last overhaul of the site in 2012.

That said, site visitors routinely provide a great deal of feedback about the site. These contributions are usually received in the form of short e-mails and range from the need for potential copyedits to questions about content accuracy. All such messages are addressed quickly, both in responses to the user and corrections to the material (if necessary). On rare occasions, these interactions can get tense: Recently, a daughter of a recently deceased scholar demanded that pictures of her father be removed from the site, as permission was not given to post them. Fortunately, we had retained the permission paperwork (we occasionally obtain permission to post pictures of scholars when we cannot find public domain photos or obtain pictures from descendants). The daughter of another, controversial scholar sent an e-mail demanding that we remove her father's profile, as she believed our summary of his career and ideas was full of inaccuracies. We gently pointed out that her brother had worked with us to present a fair and balanced overview of their father's work, and that perhaps the best place for this debate was over Thanksgiving dinner. At the same time, we should note that interactions with families of profiled scholars are often quite positive, with them providing insights, confirming details, and sharing photographs and information to which we otherwise would not have access. We are grateful for their contributions.

4.1. Site usage data

Site usage statistics reveal approximately 3598 page views per day in 2013, a 750% increase from the monthly usage in 2000, the site's first year. Use of the site has steadily grown, with the occasional spike in usage after it is mentioned in a magazine, blog, or other media or social networking source. Although users access the site from dozens of countries each year, most site visitors reside in English-speaking countries, with the United States, Great Britain, Canada, and Australia being the most popular countries of origin. We have also had a few requests from international faculty who wish to translate the site (or portions of it) into other languages so that their students can more easily use it as a resource. One current initiative is being undertaken in Brazil, where psychology graduate students are translating the site into Portuguese. We also receive regular requests from high school students and Advanced Placement (AP) Psychology teachers seeking additional information. This evidence suggests that people are teaching and learning about intelligence, perhaps in greater numbers than generally assumed.

We have often reflected on the site's progress, both to ensure its long-term viability and reflect on areas in need of improvement. From our perspective, the site has been successful for a number of reasons, many of which we discuss above: A solid empirical foundation and emphasis on posting high quality information, the multiple ways in which users can search for and explore the content, and the willingness of scholars and their families to share information with us. The involvement of our graduate students, many with a passion for the topic or advanced technological skills, was critically important to the creation of the site and the periodic overhauls of the interface to keep the site as reflective of recommended online learning practice as possible. Our institutions also deserve credit for understanding that this work is an important contribution to teaching and should be considered as such during merit review, promotion and tenure, and related processes. When we started this project, many institutions would not have been so forward thinking, and we were able to provide substantially more time to the project than would have otherwise been the case.

Where to go next? We recently finished an undergraduate text on human intelligence (Plucker & Esping, 2013), taking a similar approach to the content as the web site, and we uncovered substantial insights in the course of researching and writing the book that need to be reflected on the site, including the possibility of a substantially revised map. We are also not giving up on the initial vision that this site will become a community effort, with a broader range of contributors. We essentially viewed this possibility as a moderated wiki, although that term was not widely used at the time we began this work. And we continue to explore alternative ways to present and organize the data, taking advantage of insights gleaned from new theory and research and advances in technology (e.g., maps based on citation analyses).

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