

# **Apprenticechip™**

## **Case Studies in and Techniques for Creating Digital Libraries for Apprentice Learners**

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**Updated at the start of each year, look for the latest version at:**  
**[www.apprenticechip.org](http://www.apprenticechip.org)**

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# Dedication

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- To my parents - who encouraged my interests as a child and took me to the library every week...
- To my wife - who has gone to the library every week with myself and our children...
- To my sons - I hope you take your children to the library every week...
- ...and to Jeffrey R. Galvin M.D. who first taught me learning is an apprenticeship...

# Inspirations

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- **Alan Kay**
- **Theodor Holm Nelson**
- **Steve Jobs**

# User's Manual

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- **Stop! Before reading any further make sure you have the latest version of this course, which can be downloaded at <http://www.apprenticechip.org>**
- **The initial version of this course was published in 2016**
- **An updated version of this course is published each January**
- **If you wish to print this course for viewing on paper, print it as "Handouts" with 6 slides per page to save on paper**

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**"Excellence is never an accident. It is always the result of high intention, sincere effort, and intelligent execution; it represents the wise choice of many alternatives - choice, not chance, determines your destiny."**

**- Aristotle**

# Topic 1

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## Introduction

# Thematic Quote

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**"Without libraries what have we?  
We have no past and no future."**

**- Ray Bradbury, author**

# The Painting

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**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

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- **Name**
  - **Apprenticechip To Learn More**
    - [www.apprenticechip.org/ToLearnMore.html](http://www.apprenticechip.org/ToLearnMore.html)
- **Year**
  - **2016**
- **Story**

# The Question

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## Our four primary questions

- What is the history of digital libraries and learning?
- What is the future of digital libraries and learning?
- How can we create digital libraries that help apprentice learners?
- What role do professional + amateur librarians have to play in the future of digital libraries and learning?

# The Question

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**"Google's mission is to organize the world's information and make it universally accessible and useful."**

**- Google**

**What role do librarians have to play in organizing the world's information? Should they take some of Google's mission back from Google?**

# Our Philosophy

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- **Learning is an apprenticeship**

# Apprenticechip Definition

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- **Apprenticechip is the combination of**
  - **The Apprentice Learner**
  - **The Library**
  - **The Computer**
- **Addresses how the apprentice learner can be helped by the library and the computer**
  - **Digital library functions as an apprentice's assistant**
    - **Apprentice learner is linked to a source of authoritative information (library) by an electronic umbilical (computer)**
    - **Now, instead of you going to the library, the library comes to you with whatever you are learning to wherever you are learning through the Internet**

# What is a Library

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- **Library - "a place in which literary, musical, artistic or reference materials (as books, manuscripts, recordings, or films) are kept for use but not for sale"**
  - Webster's Dictionary

# What is a Librarian

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- Librarian - "a specialist in the care or management of a library"  
- Webster's Dictionary

# **The Mission of Librarians is to Empower**

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- **Librarians empower**
  - **Individuals**
  - **Organizations**
  - **Communities**
  - **Society**
- **Librarians empower by**
  - **Increasing knowledge**
  - **Providing access to tools**
  - **Providing access to networks**
  - **Assisting in skill development**

- Roy Tennant, The Mission of Librarians is to Empower, Digital Shift, Jan. 2014

# Ich Bin Ein Librarian

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- **We all have libraries and therefore are all librarians**
  - From childhood, when we arranged our precious picture books on a shelf by color, or by size;
  - To university when we arranged our textbooks on a shelf from the most to the least disagreeable;
  - To adulthood when we arrange our prized volumes on hobbies and interests on shelves + coffee tables to win friends and influence people
- **But - there are two types of librarians - those with formal training and those without**
  - Professionals vs. amateurs

# Amateurs

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- **Definition - "One who engages in a pursuit, study, science, or sport as a pastime rather than as a profession."**

**- Webster's Dictionary**

- **Derivative of Latin amator (lover)**

**"One of the main implications of the growing global network will be the return of the 'gifted amateur - the person who creates art for the sheer love of it.'  
...They do things because they care. We need them, and the Net gives them a megaphone the likes of which they haven't had had before."**

**- Dan Gillmor, journalist**

# Pro-Am

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**"A Pro-Am pursues an activity as an amateur, mainly for the love of it, but sets a professional standard. Pro-Ams are unlikely to earn more than a small portion of their income from their pastime but they pursue it with the dedication and commitment associated with a professional. For Pro-Ams, leisure is not passive consumerism but active and participatory; it involves the deployment of publicly accredited knowledge and skills, often built up over a long career, which has involved sacrifices and frustrations."**

**- Charles Leadbeater, The Pro-Am Revolution: How Enthusiasts Are Changing Our Society and Economy**

# Pro-Ams

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- **Pro-Ams - people pursuing amateur activities / hobbies / pastimes as all-consuming passions to professional standards - are an increasingly important part of our society and economy**
  - This is "serious leisure" which requires specialist knowledge + major time commitment
- **20<sup>th</sup> century witnessed rise of professionals...In one field after another, amateurs + their ramshackle organizations were driven out by people who know what they were doing and had certificates to prove it**
  - This historic shift is reversing with Pro-Am and its bottom-up self-organization
- **- Charles Leadbeater, The Pro-Am Revolution: How Enthusiasts Are Changing Our Society and Economy**

# Amateurs

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**"Cheaper technology offers amateurs increasingly powerful tools; the Internet allows them to collaborate globally and train themselves more rapidly. The upshot is that amateurs are increasingly holding themselves to professional standards and producing significant innovations and discoveries."**

**- Clive Thompson, Professional Amateurs, New York Times, Dec. 12, 2004**

# Amateurs

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- **Amateurs deserve more respect than they get**
  - **Their work is not necessarily lower quality than professionals**

# What is a Digital Library

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**"A collection of information that is both digitized and organized."**

**- Practical Digital Libraries, Michael Lesk, 1997**

# What is a Digital Library

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**"A managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network...The unifying theme (for digital libraries) is that information is organized on computers and available over a network, with procedures to select the material in the collections, to organize it, to make it available to users, and to archive it"**

**- Digital Libraries, William Y. Arms, 2000**

# What is a Digital Library

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- **Organized collection of information that**
  - Can be used to obtain answers to questions
  - Has structured approach to building collections of information
- **Knowledge is information that can be directly used to solve a problem**
  - World Wide Web contains raw information
  - Digital library contains knowledge
- **Digital library is a Web site, but a Web site is not necessarily a digital library**

# Why the Web is Not a Library

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**"The Web is not a library. It is popular to characterize the Web as the world's digital library...But it is not a library - it is not managed."**

**- Clifford Lynch, librarian**

**"A library is defined by three fundamental functions: (1) selection to create a "collection"; (2) organization to enable access; and (3) preservation for ongoing use. Although technologies may evolve to add the second function to the Web, the first and third functions are antithetical to the very nature of today's Web."**

**- Carol Mandel, librarian**

**"The Web is not a library and will likely never become one simply because every library worth its salt is built on the basis of selectivity and is organized around a set of intellectual principles. The research library is a composite of curatorial decisions made over decades, sometimes centuries, combined with evolving practices of systematically organizing and accessing these resources"**

**- Duane Webster, librarian**

# Who is Today's Digital Librarian?

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- **A person who runs, contributes to, or curates:**
  - Digital library of any size
  - Bookmarks on [delicio.us](http://delicio.us)
  - Directory on [dmoz.org](http://dmoz.org)
  - Hashtags on social media sites
  - Pinboards on Pinterest
  - Articles on Wikipedia
  - ...etc.
- ...includes professional and amateur librarians

# Why is This Course Important and Relevant

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- The Internet is chaotic and needs to be organized
- Librarians are sacred people due to a combination of their helpful personalities (helper-sharer gene) and their unique organizational skill set
- Society would benefit from increased application of librarian's personalities + skill set to the chaos of Internet

# Why is This Course Important and Relevant

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- Librarians therefore have a key role to play in organizing the Internet
- Librarians should be building tools to support apprenticeship in the form of digital libraries that function as apprentice's assistants
  - Every librarian is a subject matter expert in some subject they are passionate about, they should curate in some form a digital library on that subject, some part of that curation should involve experimenting with new technologies
- Librarians should democratize access to some of their skill set so that amateur librarians can also play a key role in organizing the Internet in the same way through digital library creation

# Who And What Is A Maker?



"...it's someone who is a builder, a creator, a producer, a developer, someone who has an active sense of taking an idea and developing it into something that's real and tangible and can be shared with other people."

- Dale Dougherty, editor + publisher Make magazine

- Librarians should be Makers!
  - They should be making the future of libraries



# Goals of This Course

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- **Learn a 10 step approach to digital library design, creation, curation, operation and evaluation**
- **Through the lens of this 10 step approach, review case studies of over 20 digital libraries of various sizes, encompassing a variety of disciplines, addressing diverse missions, utilizing a variety of technologies and learn how they succeeded and failed**
  - **Go from digital library theory to practice**
  - **Take what you have learned and go on to create the next generation of digital libraries**
- **Use this 10 step approach to create your own small digital library to help apprentice learners in your area of professional expertise or personal passion**
  - **Have an apprentice learning experience with digital libraries and become a digital librarian**

# Goals of This Course

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- **Equip you with an intellectual toolkit for the multi-disciplinary study of digital libraries that will allow you to**
  - Understand the history of digital libraries from the micro to the macro levels - from the bit to the Internet
  - Undertake meaningful discussion and debate as digital libraries play an ever more crucial role in society and our lives
  - Embark upon a course of lifelong learning regarding digital libraries and their role in society
- **As a survey course, it is designed to encourage broad horizontal thinking across the discipline of digital libraries rather than vertical (silo) thinking**

# Why Do It?

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- **Practice a form of intellectual philanthropy**
- **The Internet serves an amplifier - it allows the efforts of a few to have a global impact**

# Themes

**What we are going to discuss / What we have discussed**  
**Everything is deeply intertwined /**

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- **Introduction**
  - Apprenticeship is the combination of the apprentice learner, the library, and the computer
- **Learning**
  - Learning is an apprenticeship
- **History of Digital Libraries**
  - Digital libraries were always intended to support apprenticeship
- **Digital Libraries + Digital Librarianship**
  - Librarians are experts in organizing information
  - We have to democratize some aspects of librarianship to help amateurs build digital libraries to support apprentices
- **Ten Step Approach**
  - Digital libraries can be designed, created, curated, operated and evaluated using a 10 step approach
  - You can be recognized for your work
- **Case Studies**
  - 23 case studies in digital libraries built to support apprentices + lessons learned from them
- **Reasons For Our Success**
  - Entrepreneurship, key intermediary, customer-centric, maintenance of aim, low-tech
- **Capstone Project**
  - The only way to learn is by doing
- **E-Memory Systems + Personal Learning Environments / Networks**
  - Everyone needs an E-memory system and a Personal Learning Environment / Personal Learning Network

# **Learning Objectives of This Course / Apprenticechip Frequently Asked Questions (FAQs)**

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- **What is the history of digital libraries and learning?**
- **What is the future of digital libraries and learning?**
- **How can we create digital libraries that help apprentice learners?**
- **What role do professional + amateur librarians have to play in the future of digital libraries and learning?**

# Challenge

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- You can be trained to create small digital libraries in a subject area of interest that create order in the chaos of the Internet
- You can make a difference by doing so
- You will feel rewarded by it
- Building a digital library makes you the ultimate apprentice learner and expert in that subject area
- So find your passion, start curating it and help make the future!

# Questions for Further Discussion

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- **Do professional librarians have a role to play in making the future of digital libraries and learning?**
- **Do amateur librarians have a role to play in making the future of digital libraries and learning?**

# Reading Assignments

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- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

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- **Non-fiction**
- **Fiction**
- **Movies**
  - **Fahrenheit 451**

# Conclusion

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**"Ask not what the Internet can do for you, ask what you can do for the Internet"**

**- Dave Winer, software developer and writer**

# Topic 2

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Learning

# Thematic Quote

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**"Historically, in education the presentation has been fixed and the grade has been variable. Now through the use of computers it will be able to fix the grade and make the presentation variable"**

**- Steve Wozniak, founder Apple Computer**

# The Painting

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**Keys to Education and Graduation Memories and Simulation  
- Robert Tinney  
(Byte Magazine)**

# Artifact

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- **Name**
  - **One Laptop Per Child laptop**
- **Year**
  - **2008**
- **Story**

# The Question

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Can learning be made interesting, easy, fun, invisible?...Or does real learning require hard work?

# Children are learning machines

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- They teach themselves to talk, to walk, to survive in the world
- They are infinitely inquisitive about everything - until school beats that interest out of them

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**"Education is not preparation for life;  
education is life itself."**

**- John Dewey, educator**

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**"Everyone is born a genius"**

**- Buckminster Fuller, inventor**

**I Seem To Be a Verb**

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**"The mind is not a vessel to be filled, but a fire to be lighted"**

**- Plutarch, Greek historian**

**"Education is not the filling of a pail but the lighting of a fire"**

**- William Butler Yeats, poet**

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**"It is a miracle that curiosity survives formal education"**

**- Albert Einstein, physicist**

**"Love is a better Teacher than Duty!"**

**- Albert Einstein, physicist**

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**"I think the big mistake in schools is to try to teach children anything, and by using fear as the basic motivation. Fear of getting failing grades, fear of not staying with your class, etc. Interest can produce learning on a scale compared to fear as a nuclear explosion to a firecracker."**

**- Stanley Kubrick, director**

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**"Everything is interesting, until ruined for us. Nothing in the Universe is intrinsically uninteresting. Schooling systemically ruins things for us, wiping out these interests; the last thing to be ruined determines your profession."**

**- Theodor Holm Nelson, hypertext visionary, in No More Teacher's Dirty Looks, Computer Decisions, Sept. 1970**

# Theories of Learning Are Changing

- **Learning is increasingly being regarded as an apprenticeship**
  - Learning should be active, rather than passive, in nature
    - Norman DA, Spohrer JC. Learner Centered Education. Communications of the ACM 1996; 38 (4) : 24-27
  - Learning should be situated in real life experiences, rather than revolving around contrived experiences
    - Seely Brown J, Collins A, Duguid P. Situated Cognition and the Culture of Learning. Educational Researcher 1989; 18(1) 32-42.
  - Learning is being recognized as a process that occurs best when it occurs in a collaborative, rather than individual manner
    - Holt J. Learning All the Time. Addison Wesley. Reading, MA. 1989.. 148-162.
  - Learning occurs more commonly outside, rather than inside, of school
    - Resnick LB. Learning In School and Out. Educational Researcher 1987; 16(8): 13-20.
  - Learning occurs through the transformation, not the transmission, of information.
    - Learner begins with data, with some effort can transform the data into information, with more effort can transform the information into knowledge, and with further effort may be able to transform the knowledge into creativity and wisdom.
- **Learning is a life long continuum, rather than an isolated process**

# Theories of Teaching Are Changing

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- Teaching therefore, must undergo a fundamental transformation
  - Teachers are going from
    - Being a "sage on the stage" to being a "guide on the side"
    - Being a lecturer or transmitter of information to being a navigator of information for their students

# Theories of Learning Are Changing The Apprentice Learner

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- **Apprentice learner's continuum of learning requires continuum of information support via convenient and rapid access to authoritative information**

# Learning is an Apprenticeship

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- Thus the name apprenticechip, whose holy trinity is the apprentice, the library, and the computer

- 
- **Autodidact - from the Greek autodidaktos, meaning self-taught**
  - **An autodidact is a self-taught person**

# Enhancing apprenticeship

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**"A man is the product of his education, his work, his reading, all his experience."**

**- Edward R. Murrow, journalist, 1962**

# Richard Saul Wurman

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- Learning takes place not from answering questions, but from questioning answers
- Saying "I don't know" is frowned upon
- Can learn more from failure than you can from success
- Short term memory is not learning
- Learning is remembering what you are interested in, and in making connections between interests
- When you sell your expertise, you sell from a limited repertoire
  - When you sell your ignorance - your desire to learn - your curiosity - your repertoire is unlimited
    - He gets paid to learn about things he doesn't know about

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**"Anyone who has never made a mistake has never tried anything new"**

**- Albert Einstein, physicist**

# Apprentice Learning Experiences in My Life, and the Analog Libraries Used

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- **Spaceflight**
  - Kerby elementary school library
- **Oceanography**
  - Science Research Associates learning kit + The Undersea World of Jacques Cousteau
- **Military**
  - Grosse Pointe Public Library, specifically Jane's Warships
- **Sherlock Holmes**
  - Intelligent agents at National Library of Medicine
- **Coral reefs**
  - Heron Island Information Centre
- **Leonardo da Vinci**
  - Windsor Castle library

# Apprenticeship Examples

## Heron Island

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Learning Circle



Library

# Apprenticeship Examples

## Taliesen Fellowship

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**Begin by designing tent**



**End by designing house**

# Royal Navy Midshipman

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- Great example of an apprentice learner in the time of Nelson up to today

# Apprenticeship in the History of the United States

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- 3 great industrial revolutions in the 20th century - automobiles in Detroit, planes in Los Angeles, computers in Silicon Valley
- All these revolutions were by the self taught - you learned by doing, from experience
- Henry Ford Museum / Edison Institute is a shrine to apprenticeship

# Edison's Menlo Park Laboratory



# Henry Ford Bagley Avenue Workshop / Garage

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# Wright Cycle Company

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**Store**



**Garage in back**



**Inside garage**

# Great Apprentice Learners

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- Abraham Lincoln
- Henry Ford
- Thomas Edison
- Wright brothers

"We were lucky enough to grow up in a home environment where there was always much encouragement to children to pursue intellectual interest; to investigate whatever aroused curiosity. In a different kind of environment our curiosity might have been nipped long before it could have borne fruit" - Orville Wright, aviator

- Frank Lloyd Wright
  - Taliesin Fellowship is the ultimate example of apprenticeship - you start by making your own dwelling / tent in the desert, and then go from there
- Steve Wozniak + Steve Jobs

# Steve Jobs and Apprenticeship

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"Heathkits were really great. Heathkits were these products that you would buy in kit form. You actually paid more money for them than if you just went and bought the finished product if it was available. These Heathkits would come with these detailed manuals about how to put this thing together and all the parts would be laid out in a certain way and color coded. You'd actually build this thing yourself. I would say that this gave one several things. It gave one a understanding of what was inside a finished product and how it worked because it would include a theory of operation but maybe even more importantly it gave one the sense that one could build the things that one saw around oneself in the universe. These things were not mysteries anymore. I mean you looked at a television set you would think that "I haven't built one of those but I could. There's one of those in the Heathkit catalog and I've built two other Heathkits so I could build that." Things became much more clear that they were the results of human creation not these magical things that just appeared in one's environment that one had no knowledge of their interiors. It gave a tremendous level of self-confidence, that through exploration and learning one could understand seemingly very complex things in one's environment. My childhood was very fortunate in that way."

- Steve Jobs, Smithsonian Institution Oral History Interview, Apr. 20, 1995

## **The Roots of Our Current Education System In the Industrial Revolution in the 19th Century**

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**"As factory jobs overtook agricultural ones, literacy and numeracy became much more important. Employers realised that more educated workers were more productive, but were reluctant to train them themselves because they might defect to another employer. That prompted the introduction of universal state education on a factory model, with schools supplying workers with the right qualifications to work in factories. Industrialisation thus transformed both the need for education and offered a model for providing it."**

**- Re-Educating Rita, The Economist, Jun. 25, 2016**

# History of Organized School

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- ...is a relatively short one beginning in industrial revolution
- Learning through time has been an apprenticeship
- Organized school is a bug that will be corrected
- Learning will return to being an apprenticeship
- Teachers need to move from being a sage on the stage to a guide on the side

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**"Tell me, I'll forget. Show me, I may remember. But involve me and I'll understand."**

**- Chinese proverb**

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**"Docendo Discimus - I teach, therefore I learn"**

**- Seneca the Younger, philosopher**

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**"If we regard truth as something handed down from authority on high, the classroom will look like a dictatorship. If we regard truth as a fiction determined by personal whim, the classroom will look like anarchy. If we regard truth as emerging from a complex process of mutual inquiry, the classroom will look like a resourceful and independent community."**

**- Parker Palmer, educator, in The Courage to Teach**

# The Ultimate Goal?

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"Once we have computer outlets in every home, each of them hooked up to enormous libraries where anyone can ask any question and be given answers, be given reference materials, be something you're interested in knowing, from an early age, however silly it might seem to someone else... that's what YOU are interested in, and you can ask, and you can find out, and you can do it in your own home, at your own speed, in your own direction, in your own time... Then, everyone would enjoy learning. Nowadays, what people call learning is forced on you, and everyone is forced to learn the same thing on the same day at the same speed in class, and everyone is different."

- Isaac Asimov on Bill Moyers World of Ideas, 1988

**Moyers:** But what about the argument that machines, computers, dehumanize learning?

**Asimov:** As a matter of fact, it's just the reverse. It seems to me that, through this machine, for the first time we'll be able to have a one-to-one relationship between information source and information consumer.

# **Jerome Bruner**

## **The Process of Education**

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**"We begin with the hypothesis that any subject can be taught in some intellectually honest form to any child at any stage of development." - Jerome Bruner**

- Features of the spiral curriculum**

- Student revisits topic, theme or subject several times throughout their school career**
- Complexity of topic or theme increases with each revisit**
- New learning has a relationship with old learning and is put in context with the old information**

- Benefits ascribed to the spiral curriculum**

- Information is reinforced + solidified each time student revisits subject matter**
- Spiral curriculum also allows a logical progression from simplistic ideas to complicated ideas**
- Students are encouraged to apply the early knowledge to later course objectives**

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**"True learning is figuring out how to use what you already know in order to go beyond what you already think."**

**- Jerome Bruner, psychologist**

# Person - John Holt

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- **Significance**
  - Founder of home schooling movement
- **Profession**
  - Educator
- **Places worked**
  - Originally in the school system and then outside of it
- **Years of work**
  - 1960's - 1980's
- **Things worked on**
  - **Unschooling / Growing Without Schooling**
    - How Children Learn
    - Teaching Your Own
    - Learning All The Time

# Learning All The Time - John Holt

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- Young children as research scientists
  - Process by which children turn experience into knowledge is exactly the same as the process by which scientists make scientific knowledge
- What parents can do
  - A word to the wise is *infuriating* / Be guide on the side
- The nature of learning
  - Helping children explore and learn in the world is best seen as a branch of natural science, like trying to raise exotic plants or little known animals
- Teaching does not make learning
  - Learners create learning - Children are natural learners

# Learning All The Time - John Holt

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- We can best help children learn
  - By making the world accessible to them
  - Paying serious attention to what they do
  - Answering their questions
  - Helping them explore the things they are most interested in
- ...by encouraging and helping them to learn what they are already busy learning

# MIT Media Lab



# Place - MIT Media Lab

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- **Significance**
  - Try to invent the future of education (amongst other things)
- **Location**
  - Boston, Massachusetts
- **Definition**
  - Interdisciplinary research lab working at the convergence of technology, media, and design
  - Alliance between commercial companies + academia
- **People who worked there**
  - Seymour Papert
- **Things created there**
  - Logo computer language, LEGO Mindstorms, One Laptop Per Child

# Seymour Papert

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From Wikimedia Commons

# Person - Seymour Papert

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- **Significance**

- Popularized constructionist model of learning through use of Logo computer language

"The word constructionism is a mnemonic for two aspects of the theory of science education underlying this project. From constructivist theories of psychology we take a view of learning as a reconstruction rather than as a transmission of knowledge. Then we extend the idea of manipulative materials to the idea that learning is most effective when part of an activity the learner experiences as constructing is a meaningful product."

- Seymour Papert, computer scientist

- **Profession**

- Computer scientist

- **Places worked**

- MIT

- **Years of work**

- 1960's - 2000's

- **Things worked on**

- Constructionism
  - Logo computer language
  - Book - Mindstorms

# Mindstorms - Seymour Papert

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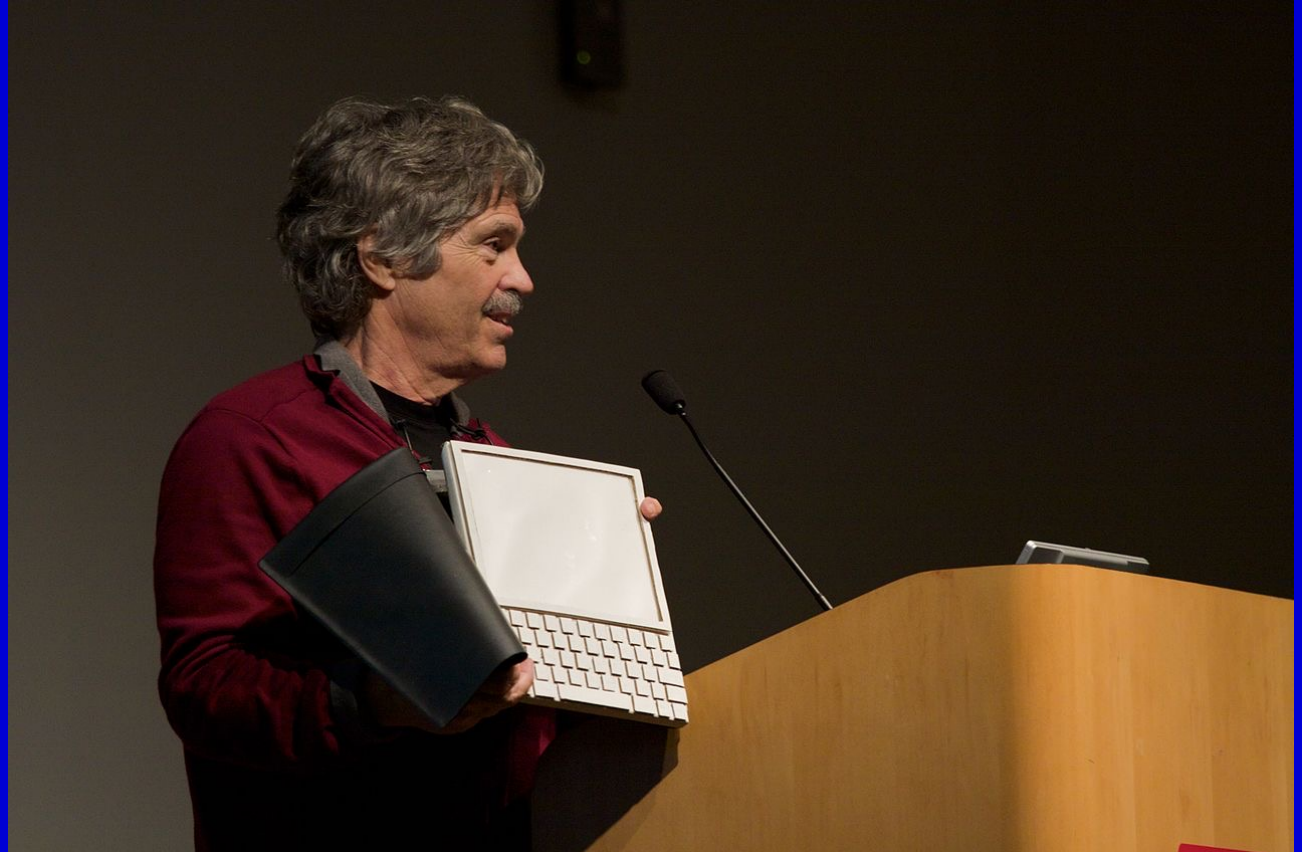
- Is about children learning without being taught
  - Real learning is not rote and not commanded, but the result of exploration and delight
  - Building learning communities / Microworlds
    - Samba school
    - Logo programming - a bug is a feature, learn from mistakes
- "Anyone who has never made a mistake has never tried anything new"
- Albert Einstein

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**"Should the computer program the kid, or  
should the kid program the computer?"**

**- Seymour Papert, computer scientist**

# Alan Kay



From Wikimedia Commons

# Person - Alan Kay

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- **Significance**
  - Personal Dynamic Media, Computer 10(3):31-41. March 1977
    - Sketched out how the computer can be the ultimate learning tool
- **Profession**
  - Computer scientist
- **Places worked**
  - Xerox PARC, Apple, Atari, Disney, HP, Viewpoints Research Institute, SAP
- **Years of work**
  - 1970 - present
- **Things worked on**
  - Dynabook, Smalltalk, Squeak, EToys

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**"Point of view is worth 80 IQ points" = "The power of the context"**

**- Aian Kay, computer scientist, regarding the ARPA / PARC research community of the 1960's + 1970's and what they achieved**

# On Learning Curves

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**"There is the desire of a consumer society to have no learning curves. This tends to result in very dumbed-down products that are easy to get started on, but are generally worthless and/or debilitating. We can contrast this with technologies that do have learning curves, but pay off well and allow users to become experts (for example, musical instruments, writing, bicycles, etc. and to a lesser extent automobiles). [Douglas] Engelbart's interface required some learning but it paid off with speed of giving commands and efficiency in navigation and editing. People objected, and laughed when Doug told them that users of the future would spend many hours a day at their screens and they should have extremely efficient UIs they could learn to be skilled in.**

**There is the general desire of people to be change adverse - "people love change except for the change part" - this includes the QWERTY and no-learning-curve ideas."**

**- Alan Kay, computer scientist**

# Alan Kay Through the Years

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"The computer, viewed as a medium itself, can be all other media...This new "metamedium" is active - it can respond to queries and experiments - so that the messages may involve the learner in a two-way conversation. This property has never been available before except through the medium of an individual teacher. We think the implications are vast and compelling."

"Simulation is the central notion of the Dynabook."

"A great deal of effort has been put into providing both endless possibilities and easy tool-making through the Smalltalk programming language."

- Alan Kay + Adele Goldberg, Personal Dynamic Media, IEEE Computer, Mar. 1977

# Alan Kay Through the Years

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"The evolution of the personal computer has followed a path similar to that of the printed book, but in 40 years rather than 600. Like the handmade books of the Middle Ages, the massive computers built in the two decades before 1960 were scarce, expensive and available to only a few. Just as the invention of printing led to the community use of books chained in a library, the introduction of computer time-sharing in the 1960's partitioned the capacity of expensive computers in order to lower the access cost and allow community use. And just as the Industrial Revolution made possible the personal book by providing inexpensive paper and mechanized printing and binding the microelectronic revolution of the 1970's will bring about the personal computer of the 1980's with sufficient storage and speed to support high-level computer languages and interactive graphic displays."

"Thus the central problem of personal computing is that nonexperts will almost certainly have to do some programming if their personal computer is to be of more than transitory help."

"We should not predict or expect that the personal computer will foster a new revolution in education just because it could. Every new communication medium of this century - the telephone, the motion picture, radio and television - has elicited similar predictions that did not come to pass."

"The social impact of simulation - the central property of computing - must also be considered."

- Alan Kay, Microelectronics and the Personal Computer, Scientific American, Sep. 1977

# Alan Kay Through the Years

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"McLuhan's claim that the printing press was the dominant force that transformed the hermeneutic Middle Ages into our scientific society should not be taken too lightly - especially because the main point is that the press didn't do it just by making books more available, it did it by changing the thought patterns of those who learned to read."

"What McLuhan was saying is that if the personal computer is a truly new medium then the very use of it would actually change the thought patterns of an entire civilization. He had certainly been right about the effects of the electronic stained-glass window that was television - a remedievalizing tribal influence at best. The intensely interactive and involving nature of the personal computer seemed an antiparticle that could annihilate the passive boredom invoked by television. But it also promised to surpass the book to bring about a new kind of renaissance by going beyond static representations to dynamic simulation. What kind of a thinker would you become if you grew up with an active simulator connected, not just to one point of view, but to all the points of view of the ages represented so they could be dynamically tried out and compared? I named the notebook-sized computer idea the Dynabook to capture McLuhan's metaphor in the silicon to come."

"I had believed that end users needed to be able to program before the computer could become truly theirs...The ability to "read" a medium means you can access materials and tools created by others. The ability to "write" in a medium means you can generate materials and tools for others. You must have both to be literate. In print writing, the tools you generate are rhetorical; they demonstrate and convince. In computer writing, the tools you generate are processes; they simulate and decide."

"If the computer is only a vehicle, perhaps you can wait until high school to give "driver's ed" on it - but if it's a medium, then it must be extended all the way into the world of the child. How to do it?"

- Alan Kay, User Interface: A Personal View, published in Multimedia From Wagner to Virtual Reality, 1989

# Alan Kay Through the Years

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**"The heart of computing is building a dynamic model of an idea through simulation. Computers can go beyond static representations that can at best argue; they can deliver sprightly simulations that portray and test conflicting theories. The ability to "see" with these stronger representations of the world will be as important an advance as was the transition to language, mathematics and science from images and common sense."**

**- Alan Kay, Computers, Networks and Education, Scientific American, Sep. 1991**

# Alan Kay Through the Years

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"The other influence I had was the history of books. There was an "institutional" phase. In the year 1400 in the Vatican Library there were only 392 books. They were done by hand and it took ten years to copy one. In today's terms, 10 years at \$15 / hour is \$300,000. Special books might cost the equivalent of several million dollars.

In the mid 1400s, when the printing press came along, Bibles were large, they were almost two feet high and the type was about a half an inch high. They looked just like manuscripts. The reason for this is that they didn't know what books should look like. A Gutenberg Bible of 1455 cost about 3 years of a clerk's wages (about \$60,000 today). So a well off person could own one. I thought of this as the "personal" book. I realized that desktop computers like the FLEX machine looked just like time-sharing terminals. Time sharing is the institutional phase of computing. Desktop computers are the personal phase of computers. (The FLEX machine was called a personal computer in my 1969 thesis.) Then I remembered that in another fifty years a Venetian printer by the name of Aldus made books the size they are today. And that was because he went out and measured saddle bags in Venice and he realized for the first time that books could be carried with people and so they had to be made in portable size. So this idea of a Dynabook came from thinking about this third phase of computing - what I would call intimate computing - where you can own these things like you own books and you can take them with you...So I started thinking about making a power idea toy for children that I called the Dynabook."

- Karen Frenkel, A Conversation With Alan Kay, Interactions, Apr. 1994

# Alan Kay Through the Years

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"Marshall McLuhan makes the distinction between a technology and a medium. The technology is the machinery and the medium is the way you use it. Consider for instance printing press machinery (the technology), and then the essay form (the medium), that was invented about one hundred years later...The technology of a Dynabook was behind schedule because America gave up the work on the flat screen display...What I think of as a medium is not here at all. Just as McLuhan predicted, computers today are almost universally used - except by scientists - for just imitating paper...The exceptions are those computer scientists and some physical scientists who use a computer for what its really good at, which is making and understanding complex models of things..."

"The most powerful programming language can be and should be created for children to learn...Children should be taught to think...People who learn to think well in our society are not doing it just by IQ, they do it by being more facile at representing things...I'm only interested in programming in so far as it is a vehicle for that kind of thing."

- Karen Frenkel, A Conversation With Alan Kay, Interactions, Apr. 1994

# Alan Kay Through the Years

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**"Squeak is a project by some of the original pioneers of personal computing and networking, joined by enthusiastic more recent colleagues, to get wide spectrum authoring for all back into the mainstream of computing."**

**- Alan Kay, Authoring, published in The Unfulfilled Goal of Personal Computing, 1995**

# Alan Kay Through the Years

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"Let me start by describing a parallel between the development of printing and that of computing. Before Gutenberg, the handwritten manuscript books in Europe were, by and large, owned by institutions -- the church, the monarchy, and so forth. In the case of computers, when the Univac-I appeared, sometime around 1950, computing was done on machines that also had to be owned by an institution.

In its day, Gutenberg's printing press was the equivalent, we might say, of computer workstations. In today's money, they might have cost 60 or 70 thousand dollars. Only wealthy people could own them, and only wealthy people and institutions could own the books produced on them. And the number of books printed on the Gutenberg press was still small. Also, a Gutenberg Bible was not something you would travel with; it was not designed to be replaced if it was lost or damaged. It wasn't until 50 years after Gutenberg that printers like Aldus Manutius began producing books that were affordable enough to be widely owned. They were still fairly expensive -- several hundred dollars in today's money. But they were replaceable, and they were something you could carry with you from place to place.

Still, it wasn't for another hundred some-odd years, until the 17th century, that the real potential of the printing press was realized in any full sense. So it took about 150 years for writers and publishers to really get what the technology could do and to put it into practice. And the result was that, in the 18th century, Western society underwent the transformation that produced the modern world, the world we live in today.

My point, of course, is that there may be considerable lag time between the development of a new technology and the realization of the technology's potential. This was true of the printed book, and I think it is true of the Dynabook as well."

# Alan Kay Through the Years

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"The printing press led to a huge change in how ideas were argued. The reliability and accuracy of printing allowed people to present their ideas with fewer claims and more logic, with less allegory but tighter reasoning. So I wondered how computers could change the way ideas are presented and tested. The thing that jumped into my head was that simulation would be the basis for this new argument...More and more, I was thinking of the computer not just as hardware and software but as a medium through which you could communicate important things. Before I got involved with computers I had made a living teaching guitar. I was thinking about the aesthetic relationship people have with their musical instruments and the phrase popped into my mind: "an instrument whose music is ideas." Just as the book was an extension of the oral medium, so is the computer an extension of the print medium. There are many things that books can do, but computers have an extra dimension that seemed to me incredibly important, and this is key to the Dynabook idea. To really use a computer, you've got to be the author as well as the reader."

# Alan Kay Through the Years

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"And in my mind the patron saint of how to teach kids is Maria Montessori. A hundred years ago, Montessori understood that children always are trying to learn about their environment, and so the best way to help them was to give them carefully organized, rich environments, where the toys and the play have 20th-century side effects. In my opinion, this is one of the great ideas in the history of education...Seymour Papert used to talk about the kid who has difficulty in mathematics. Typically, the teacher will say, "Well, this kid is not math-minded. Let's try the kid on something else." But if the kid were having difficulty in French, we couldn't say that that kid is not French-minded, because we know that had the kid been born in France he or she would have no trouble learning French. So Papert's idea was that there's something environmentally wrong about the way math is taught to kids. If the environment were right, they would learn. Well, the computer is a tool with which you can actually make rich environments, in which learning can have the character of play."

"I think that for kids, play is the most important means of learning, and so you want to harness it for as many years as you possibly can. Play is nature's built-in mechanism for the child's deepest learning. And if the environment isn't rich enough, you lose the element of play. But if you can make the environment rich and can keep the play going, then you win in a big way. Because maybe the biggest question about education is, "What is this kid going to do when teachers and parents are not around?" If children love the learning process, they want to spend all their time at it. If they don't love it, it doesn't matter much what you do in a classroom."

# Alan Kay Through the Years

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"The most important thing about powerful inexpensive personal computers is that they form a new kind of reading and writing medium that allows some of the most important powerful ideas to be discussed and played with and learned than any book.

This is what our work and Squeak is all about. We are interested in helping children learn to think better and deeper than most adults can. We have made the Squeak medium to serve as a new kind of electronic paper that can hold new ways to represent powerful ideas."

- Alan Kay, Background on How Children Learn, 2003

# Alan Kay Through the Years

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"Literature is first and foremost about having ideas important enough to discuss and write down in some form. So you have to ask, "What is the literature that is best written down on a computer?" One answer is to make a dynamic simulation of some idea that you think is important, a simulation that you can play with and that you can learn from."

"So by first writing that simulation yourself, you know what the assumptions are. And by letting it run through, you can generate the phenomena and get a visceral sense of it, and then you can capture what happens in a graph. This way, the computer can be a kind of thought amplifier."

"It's like missing the difference between music and instruments. You can put a piano in every classroom, but that won't give you a developed music culture, because the music culture is embodied in people. On the other hand, if you have a musician who is a teacher, then you don't need musical instruments, because the kids can sing and dance. But if you don't have a teacher who is a carrier of music, then all efforts to do music in the classroom will fail - because existing teachers who are not musicians will decide to teach the C Major scale and see what the bell curve is on that. The important thing here is that the music is not in the piano. And knowledge and edification is not in the computer. The computer is simply an instrument whose music is ideas."

- Lars Kongslem, Face to Face: Alan Kay Still Waiting For the Revolution, Scholastic Administrator, Apr/May 2003

# Alan Kay Through the Years

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"The real printing revolution was a qualitative change in thought and argument that lagged the hardware inventions by almost two centuries. The special quality of computers is their ability to rapidly simulate arbitrary descriptions, and the real computer revolution won't happen until children can learn to read, write, argue and think in this powerful new way. We we should all try to make this happen much sooner than 200 or even 20 more years!"

- Alan Kay, The Power of Context, Feb. 24, 2004

# Alan Kay Through the Years

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"The (printing) press in the 15th century was first thought to be a less expensive automation of hand written documents, but by the 17th century its several special properties had gradually changed the way important ideas were thought about to the extent that most of the important ideas that followed and the way they were thought about had not even existed when the press was invented. The two most important ideas were the inventions of science and of new ways to organize politics in society...

These changes in thought also changed what "literacy" meant, because literacy is not just being able to read and write, but to fluently deal with the kinds of ideas important enough to write about and discuss...One way to look at the real printing revolution in the 17th and 18th centuries is in the co-evolution in what was argued about and how the argumentation was done. Increasingly, it was about how the real world was set up, both physically and psychologically, and the argumentation was done more and more by using and extending mathematics, and by trying to shape natural language into more logically connected and less story-like forms.

One of the realizations we had about computers in the 60s was that they give rise to new and more powerful forms of arguments about many important issues via dynamic simulations. That is, instead of making the fairly dry claims that can be stated in prose and mathematical equations, the computer could carry out the implications of the claims to provide a better sense of whether the claims constituted a worthwhile model of reality. And, if the general literacy of the future could include the writing of these new kinds of claims and not just the consumption (reading) of them, then we would have something like the next 500 year invention after the printing press that could very likely change human thought for the better."

- Alan Kay, The Real Computer Revolution Has Not Happened Yet, 2007

# Alan Kay on Mobile Computing - 1

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Mobile computers have turned out to be mind-numbing consumption devices - sophisticated televisions - rather than the wheels for the mind that Steve Jobs envisioned

"The big slogan at Apple, when I went there, I think it was "Wheels for the Mind."

"...we were actually looking at what we needed to interact with this system (Alto / Dynabook). You can't just have a finger; you have to have some sensitive display. You have to have a keyboard, also, because even with a perfect recognizer, you're basically consigning people to typing short things."

"Once you realize kids have to be sensible, literate users of computers, because when are you going to learn how to read? Only a few people learn how to read as adults. You learn how to read as a child. And it was the perfect timing, because this was just like two years before going to PARC. I finished my PhD. I started thinking about this. I said, "If we're gonna do a personal computer"-and that's what I wanted PARC to do and that's what we wound up doing [with the Alto]-"the children have to be completely full-fledged users of this thing. Think about what this means in the context of say, a Mac, an iPhone, an iPad. They aren't full-fledged users. They're just television watchers of different kinds."

- Brian Merchant, The Father of Mobile Computing is Not Impressed, Fast Company, Sept. 15, 2017

# Alan Kay on Mobile Computing - 2

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"So, this is like less than what people got with Mac in 1984. Mac had a really good undo. It allowed you to explore things. Mac had multitasking. The iPhone is basically giving one little keyhole and if you do something wrong, you actually go back out and start the app over again. Think about this. How stupid is this? It's about as stupid as you can get. But how successful is the iPhone? It's about as successful as you can get, so that matches you up with something that is the logical equivalent of television in our time."

"Well, a saying I made up at PARC was, 'Simple things should be simple, complex things should be possible.' They've got simple things being simple and they have complex things being impossible, so that's wrong."

"I once said, 'Television is the last technology we should be allowed to invent and put out without a surgeon general's warning.' That's a very Neil Postman-kind of thing."

- Brian Merchant, The Father of Mobile Computing is Not Impressed, Fast Company, Sept. 15, 2017

# Xerox Dynabook

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# Thing / Hardware - Dynabook

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- **Firsts / Achievements / Uniqueness / Significance**
  - Visionary design for what an educational computer should be
  - A portable suite of hardware, software, programming tools and services which would add up to the ultimate creative environment for kids of all ages - the intent was symmetric authoring and consuming
  - Influenced by learning theories of Jean Piaget + Jerome Bruner + Seymour Papert
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - Xerox ~ 1972 ~ USA
- **People involved (Designer)**
  - Alan Kay
- **Type**
  - Personal computer
- **Price / Cost**
  - \$500
- **Size**
  - Tablet sized - 12" x 9" x  $\frac{3}{4}$ " ~ Weight of 4 pounds

# Thing / Hardware - Dynabook

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- **Computing technology**
  - Integrated circuits ~ 4000 character LCD screen for display
- **Computing speed (in MIPS)**
  - N/A
- **Primary memory type / technology ~ Size ~ Word length**
  - Integrated circuits
- **Secondary memory type / technology ~ Size**
  - Cassette tape or floppy disk ~ 1 megabyte
- **Uses / Applications / Software**
  - Smalltalk to create simulations
- **Predecessors - N/A ~ Successors - Xerox Alto, iPad**

# Xerox Notetaker



# Thing / Hardware - Xerox Notetaker

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- **Firsts / Achievements / Uniqueness / Significance**
  - Realized as much of Alan Kay's Dynabook vision as 1976 technology allowed
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - Xerox PARC ~ 1976 ~ USA
- **People involved (Designer)**
  - Doug Fairbairn
- **Type**
  - Personal computer
- **Price / Cost**
  - \$50,000
- **Size**
  - 48 pounds

# Thing / Hardware - Xerox Notetaker

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- **Computing technology**
  - Integrated circuits
- **Computing speed (in MIPS)**
  - 1 MHz
- **Primary memory type / technology ~ Size ~ Word length**
  - Integrated circuits ~ 128K ~ 8 bits
- **Secondary memory type / technology ~ Size**
  - Floppy disk drive
- **Uses / Applications / Software**
  - Smalltalk
  - Had mouse + touch sensitive screen
- **Predecessors - Dynabook / Alto ~ Successors - iPad**

# Thing / Software - PLATO

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- **Firsts / Achievements / Uniqueness / Significance**
  - First generalized computer aided instruction system / On line educational courseware system
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - University of Illinois + CDC ~ 1971 ~ USA
- **People involved (Programmer)**
  - Donald Bitzer
- **Type**
  - Educational software
- **Price / Cost**
  - Text
- **Computer and operating system it runs on**
  - CDC mainframes
- **Computer language written in**
  - TUTOR
- **Memory required**
  - Text
- **Predecessors - N/A ~ Successors - MOOCs?**

# Thing / Software - EToys

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- **Firsts / Achievements / Uniqueness / Significance**
  - Multimedia authoring system especially aimed at helping children learn powerful ideas by constructing them
  - But how much has it been used? What impact has it had? What effect did it have on One Laptop Per Child?
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - Viewpoints Research Institute
- **People involved (Programmer)**
  - Alan Kay et.al.
- **Type**
  - Like LOGO - scripting that is also mathematics with turtle as vector
  - Like Hypercard - WYSIWYG page oriented user interface + media authoring
  - Like Starlogo - massively parallel objects
  - Like Squeak Smalltalk - everything is dynamic object, multimedia, multiplatform
- **Price / Cost**
  - Open source
- **Computer and operating system it runs on**
  - Linux, Macintosh, One Laptop Per Child, Windows
- **Computer language written in**
  - Squeak
- **Memory required**
  - Text
- **Predecessors - Smalltalk ~ Successors - N/A**

# Universities of the Air

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- In 1920's + 1930's universities experimented with offering their courses via radio
  - Students registered by mail, received syllabus by mail, mailed in assignments, some got credit
- Problems
  - High attrition, learning was passive, did not offer opportunities for social interaction, wasn't clear what finishing a course actually meant
- Striking similarities between massive open on-air courses from the 1920's + 1930's and massive open online courses today
- Susan Matt and Luke Fernandez, Before MOOCs, 'Colleges of the Air,' Chronicle of Higher Education, April 23, 2013

# **A Laboratory For the Future of Librarianship**

## **Distance Learning vs. Apprenticeship**

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- **There was tremendous interest in putting University courses + curricula online in the 2000's which failed**
  - UNext, Fathom
  - Format was online text to read with few images
  - No video, no interactivity, no community
  - They were ahead of the curve
- **There is now tremendous interest in distance learning companies placing university courses / curricula / degrees online**
  - Coursera, edX, FutureLearn, Udacity
  - Format is xMOOCs (lectures + tests)
  - Results are mixed
  - But they have it (at least) partially wrong as they view students as empty vessels to pour knowledge into
  - Is the connectivist MOOC (cMOOC) the real answer?

# **cMOOC as a Learning Environment**

## **Downes Theory of Education**

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**"To teach is to model and demonstrate  
To learn is to practice and reflect"**

**- Stephen Downes, educator**

# cMOOC as a Learning Environment

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- **cMOOC**
    - Massively multi-user environment ~ Open and distributed content ~ Online delivery ~ Course
    - Network-based connectivist MOOC
    - Based on connection rather than content
    - Looks more like online community than course
    - Does not have defined curriculum or formal assignments
  - **Purpose of the learning experience**
    - Not to remember some body of content or accomplish some particular task
    - Navigating the chaos and making learning decisions is the lesson in cMOOC
  - **cMOOC is similar to constructivism**
    - "Learners often select and pursue their own learning. Constructivist principles acknowledge that real-life learning is messy and complex. Classrooms which emulate the 'fuzziness' of this learning will be more effective in preparing learners for lifelong learning." - George Siemens
  - **Literacies appropriate for cMOOC**
    - 21st century literacies of 4C's - collaboration, creativity, communication, critical thinking
    - Digital literacies - Mozilla Foundation's Web Literacy Map on how to engage with digital media (as opposed to merely consuming it) - exploring, building and connecting
- Stephen Downes, From MOOC to Personal Learning, Oct. 15, 2015

# cMOOC as a Learning Environment

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- **cMOOC**

- Not located on a single platform, but is web created by linking multiple sites together
- Architecture of web intended to optimize four design principles
  - Each member of the web operates autonomously
  - Web links diverse services and resources together
  - Web is open and supports open engagement
  - Web encourages cooperative learning

- **Engagement is at core of cMOOC learning**

- Aggregate - listen to many diverse sources
- Remix - bring these different perspectives together
- Repurpose - reform these new ideas in your own way
- Feed forward - share your perspectives

- **Structure of the course**

- Network of individual learners interacting with each other + exchanging + working with diverse resources obtained from variety of Internet sources
  - Stephen Downes, From MOOC to Personal Learning, Oct. 15, 2015

# cMOOC as a Learning Environment

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- **Course creation**
    - Like creating a network
    - Don't centralize - concentrate on creation of links
    - Use social networks to create personal knowledge
  - **Course components for instructors**
    - Wiki to assist in planning, topics
    - Email list for announcements
    - Course blog for daily posts
    - Synchronous communications / video
  - **Course structure**
    - Series of topics - instructors do not teach the topics, instructors investigate / work through topics (model and demonstrate)
  - **Course components for students**
    - Blogs + Social networks
    - Content sites - Google Docs, Flickr
    - Aggregator - RSS reader
  - **Process**
    - Each week has conversation or activity with guest + then discussion / reflection
    - Each day aggregate student content that is shared via Web site + newsletter
  - **How to learn in a cMOOC**
    - Learning is a process of immersion into a knowing community
    - Learning is a process of recognizing and growing into or becoming an instantiation of those values
  - **How to evaluate learning**
    - Learning is not possession of a collection of facts, it's the expression of a capacity
    - Learning is recognized by a community of experts in a network
    - We recognize our understandings by the way we use them in our social network
- Stephen Downes, Personal Learning in the Workplace, talk given at AMEE 2015

# Computer as Simulator

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**"The computer will make people understand that the mark of an educated person is not the ability to spout little-known facts, but to have had a variety of experiences in simulated worlds that prepare one for decision-making in the real world."**

**- Roger Schank, computer scientist**

**- Roger Schank, The Computer Isn't the Medium It's The Message, Communications of the ACM, Mar. 2001**

# Personal Case Study - Alan Kay

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- **Role**
  - Educational visionary
- **Story**
  - Lunched with him at a conference in November 1988
  - Intelligent, articulate, yet frustrating in failing to get his important message out in front of the public in more ways

# Personal Case Study - Mark G

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- **Role**
  - One of the first (first?) PhDs in education and computer science
- **Story**
  - Research revolves around 1) how to attract more males and females into computer science and how to train them in a way that convinces them to stay in and 2) achieving Alan Kay's Dynabook vision

# **Personal Case Study - Boeing Alteon Seattle Training Center**

## **- Boeing 737 Next Generation 3 degrees of freedom flight simulator**

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- **Role**

- **Where Boeing conducts much of its airliner simulator training**

- **Story**

- **Shown in 2008 how a pilot is trained from ground school to final qualification on the simulator using a validated curriculum and performance-based assessment**
- **The simulator is impressive, but the graphics were disappointing as it was an older simulator**

# Personal Case Study - Teaching Programming to Children

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- **Role**
  - I am a father of two boys
- **Story**
  - Attempting to teach my children how to program in Scratch, Kodu, Logo, BASIC
  - Like herding cats...
  - They don't have to write their own software, they just download it...

# Ad - Name

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- **Company**
- **Year**
- **Story**

# Class Simulation

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- **Topic aspects**

# Poem

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Slide text

# Questions for Further Discussion

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- How do children learn according to John Holt? How do adults learn?
- How do \*you\* learn best?
- What is Seymour Papert's constructionist educational theory? - Compare and contrast it to standard educational theory (drill + kill)
- Who is Alan Kay and what is the significance of the Dynabook?
- Can a video game be educational? Why aren't there educational video games?
- What is needed for computers to reach their potential as the greatest learning tool ever?
- Have we fulfilled Alan Kay's vision for the Dynabook? We have the hardware but what about the software?
- What has been the ultimate effect of these educational theorists on our education system?
- What is a serious game?
- What computational challenges are faced by designers of educational tools?
- Does learning want to be free?
- What lessons from the past can we apply to the present and future?

# Reading Assignments

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- **Computing A Concise History Chapter x**
- **TED Talks for this Topic**
  - <http://www.computerhistories.org/ToLearnMore.html>

# Recommended Reading to Learn More

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- **Non-fiction**
- **Fiction**
- **Movies**
- **Simulations**

# Alan Kay Through the Years

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"Two hundred years ago the Federalist papers - essays by James Madison, Alexander Hamilton and John Jay arguing for ratification of the U.S. Constitution - were published in newspapers in the 13 colonies. Fifty years later the telegraph and its network shifted the goals of news from depth to currency, and the newspapers changed in response. Approximately 100 years after that, television started shifting the emphasis of news from currency to visual immediacy...

Where would the authors of the Constitution publish the Federalist papers today? Not in a book; not enough people read books. Not in newspapers; each essay is too long. Not on the television; it cannot deal with thoughtful content...

But the late 20th century provides an interesting answer to the question: transmitting over computer networks a simulation of the proposed structure and processes of the new Constitution..."

- Alan Kay, Computers, Networks and Education, Scientific American, Sept. 1991

# Conclusion

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**I invite each of you to sit down in front of your television set when your station goes on the air and stay there, for a day, without a book, without a magazine, without a newspaper, without a profit and loss sheet or a rating book to distract you. Keep your eyes glued to that set until the station signs off. I can assure you that what you will observe is a vast wasteland.**

**You will see a procession of game shows, formula comedies about totally unbelievable families, blood and thunder, mayhem, violence, sadism, murder, western bad men, western good men, private eyes, gangsters, more violence, and cartoons...**

**...Is there no room on television to teach, to inform, to uplift, to stretch, to enlarge the capacities of our children?**

**- Newton Minow, Chairman of the Federal Communications Commission, to the National Association of Broadcasters, May 9, 1961**

# Conclusion

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**"This instrument can teach, it can illuminate, and yes it can even inspire. But it can do so only to the extent that humans are determined to use it to those ends. Otherwise it's nothing but wires and lights in a box."**

**- Edward R. Murrow, journalist**

# Conclusion

## Role of the Computer in Education

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"I've helped with more computers in more schools than anybody else in the world and I absolutely convinced that is by no means the most important thing. The most important thing is a *person*. A person who incites your curiosity and feeds your curiosity; and machines cannot do that in the same way that people can."

- Steve Jobs, Smithsonian Institution Oral History Interview, Apr. 20, 1995

# Topic 3

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## History of Digital Libraries

# Thematic Quote

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**"Everything is deeply intertwined. In an important sense there are no 'subjects' at all; there is only all knowledge, since the cross-connections among the myriad topics of this world simply cannot be divided up neatly."**

**- Theodor Holm Nelson, hypertext visionary**

# The Painting

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## The Stacks

- Robert Tinney  
(Byte Magazine)

# Artifact

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- Name
  - As We May Think
- Year
  - 1945
- Story
- Name
  - Computer Lib / Dream Machines
- Year
  - 1974
- Story
- Name
  - Core Memory and Disk platter
- Year
  - 1950's
- Story
- Name
  - Detroit Weekly Free Press
- Year
  - October 13, 1862
- Story
  - Note the high density of information on the page

# The Question

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**"Don't be evil"**

**- Corporate motto of Google**

**Can we trust Google to not be evil?**

---

**The library is "An organized archive of the products of human intelligence"**

**- Pliny the Elder, author**

---

**"When I get a little money, I buy books. If there is any left over I buy food and clothes"**

**- Desiderius Erasmus, classical scholar**

---

**"Everybody gets so much info all day long  
they lose their common sense"**

**- Gertrude Stein, author**

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**"What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention, and a need to allocate that attention efficiently among the overabundance of information sources that might consume it"**

**- Herbert Simon, computer scientist**

# Information - Books

---

- **Substrates**
  - Rock
  - Clay
  - Papyrus
  - Velum
  - Paper
  - Electrons
- **Types**
  - Walls
  - Tablets
  - Scrolls
  - Codex (Illuminated manuscripts)
  - Printed (Gutenberg)
  - Printed + Personal (Aldus)
  - Digital Books

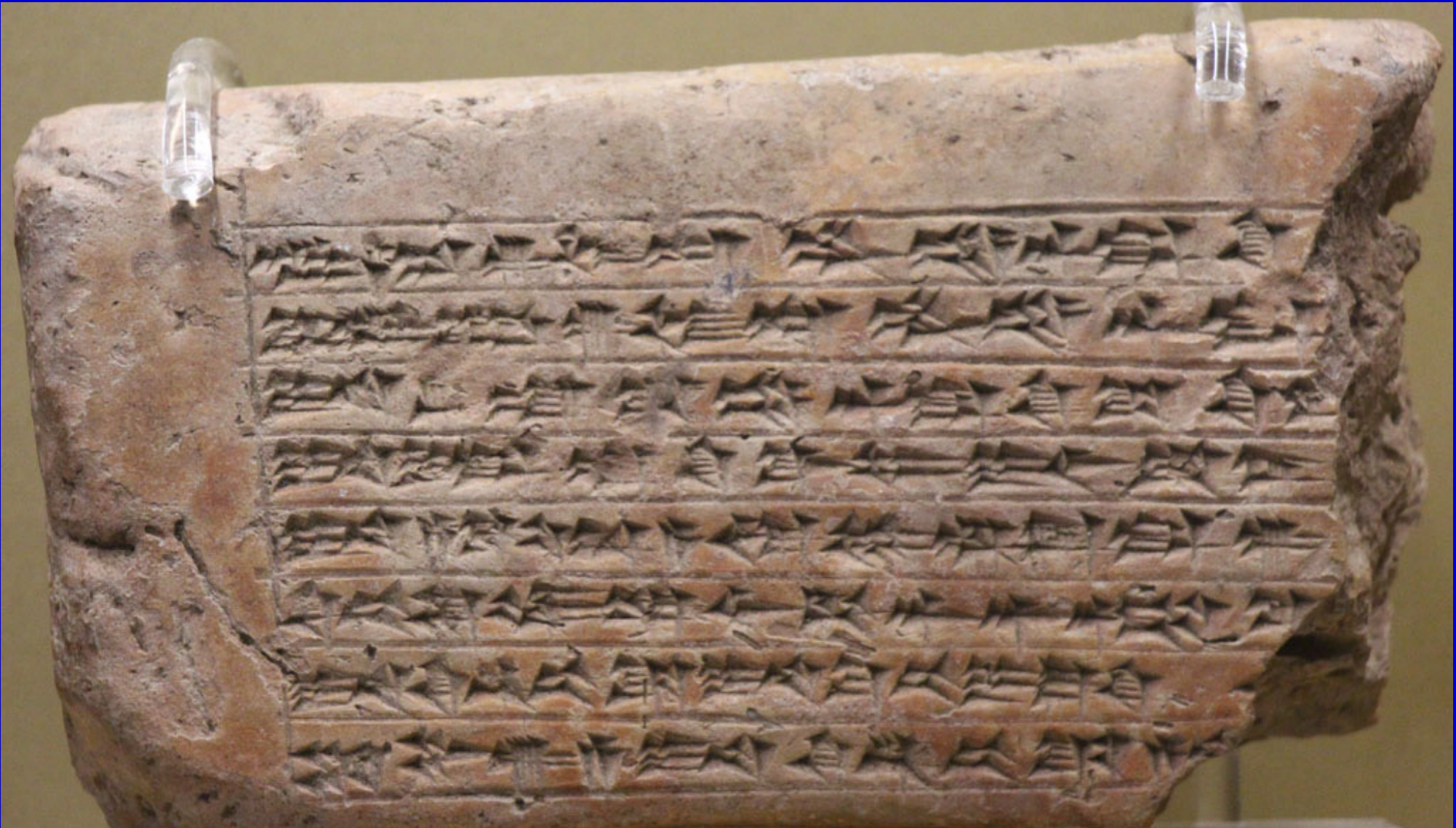
# Papyrus

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Papyrus plant

# Cuneiform Writing



Cuneiform tablet referring to Nebuchadnezzar II Of Babylon

# Ancient Libraries

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- **Earliest libraries were Babylonian + Syrian (2300 BC) and Hittite (1200 BC)**
  - Texts written in cuneiform, mainly of religious rituals
  - Signs of cataloguing + content summaries
  - Were private libraries for religious entities
- **Ancient Greeks had personal libraries**
  - Booksellers present in Athens (5<sup>th</sup> century BC)
- **First scholarly library in Alexandria (3<sup>rd</sup> century BC) founded by King Ptolemy**
  - Had 500,000 papyrus rolls
- **Rome's first public library planned by Julius Caesar (39 BC)**
  - By 350 AD there were 29 libraries in Rome, many attached to public baths
- **Monastic libraries (1<sup>st</sup> century AD onwards)**
  - Change medium from papyrus to parchment and form from roll to codex
- Peter Jones, When Libraries Were On a Roll, Books Online, May 21, 2001

# The Roman Library

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- Romans invested in culture + education of ruling classes, spread literacy through all classes of society, culturally unified many of Empire's territories + first instituted public education at state expense
- Julius Caesar was first to want to give Rome a public library, but it was Augustus who did it
- Libraries belonged to multicultural complexes that involved temples + gardens + housed works of art
- Romans helped develop codex - a book with pages, punctuation, capitalization in late first century AD
- Codices + volumina (papyrus scrolls) in library shelved by language / subject / genre were kept on armaria with indices drawn up on tablets next to armaria
- Each text had a titulus tied to it with the text's title + author
  - La Biblioteca Infinita (The Infinite Library), Flavian Amphitheater / Colosseum - 2014

# Roman Books and Libraries



Volumen on umbilicus with titulus  
Armoria  
Capsa for carrying volumina



Tabula Cerata

# Roman Library of Celsus at Ephesus



**Finished AD 110 ~ Destroyed by earthquake AD 270**

# The Printing Revolution

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- **1455 - Johannes Gutenberg + printing press create personal printed books**
- **1501 - Aldus Manutius miniaturizes books to hand-held form**
- **These technological breakthroughs democratized knowledge by extending it from libraries + wealthy to common person**

# Lessons in Preservation Run Amuck

## The Assault on Paper / Butchers of Books

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- The propositions
  - Librarians are driven to save space + worried about acidic papers formally used in printing so they first purged their shelves of newspapers, replacing them with microfilmed copies, and then moved on to books
  - None of this was needed
  - Paper holds up well, even the cheapest paper
  - Microfilm is not adequate substitute for paper - has worse chemistry than paper, quality assurance of scans was terrible, extremely expensive, horrible to use
  - Librarians crave space - answer is miniaturization with microfilm + deaccessioning the originals
  - Obsession with space became an ideology of demonizing paper size + self-destructive quality + promoted technologies for destroying it all in name of preservation
  - Preservation meant destruction
  - Destruction was unnecessary - books that failed the double-fold test were microfilmed + destroyed, but double-fold test is much more harmful to book than the act of reading it
  - Destruction was brutal - microfilming could have been done in non-destructive manner but it took too much time so they were guillotined, filmed, pulped
  - Destruction was expensive - it would have been cheaper to store originals in air-conditioned warehouses where they would last indefinitely
  - Librarians intentions were good but they acted in bad faith by concocting false crisis to clear their shelves - the books were turning to dust
- These propositions add up to a terrible indictment of a venerable profession
- Nicholson Baker, Deadline, New Yorker, July 24, 2000
- Robert Darnton, The Great Book Massacre, New York Review of Books, Apr. 26, 2001

# **Lessons in Preservation Run Amuck**

## **The Assault on Paper / Butchers of Books**

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**"In order to film a file for preservation, it was necessary to destroy it; once the volumes were cut for this purpose it was impractical, and usually impossible, to restore them"**

**- S. Branson Marley, Chief of Library of Congress serial division**

**"Serials Management in microform is our own slum clearance program"**

**- University Microfilms ad**

**"This country has strip-mined a hundred and twenty years of its history."**

**- Nicholson Baker**

- Baker bought part of the British Library's collection of American newspapers it was deaccessioning and formed non-profit American Newspaper repository which ultimately donated its collection to Duke University**
- Nicholson Baker, Deadline, New Yorker, July 24, 2000**
- Robert Darnton, The Great Book Massacre, New York Review of Books, Apr. 26, 2001**

# **New Means of Production Lead to New Means of Distribution + New Audiences + New Business Models**

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- **Technological changes in printing of books**
  - 16<sup>th</sup> Century - Leads to printing of short pamphlets which were purchased by people who could not afford a book
  - 19<sup>th</sup> Century - Stereotyping (typesetting of whole sheets at once) leads to printing of magazines + newspapers thus expanding world of people who could afford to buy printed material
  - 20<sup>th</sup> Century - Affordable + portable paperback books leads to new audiences for print
  - 21<sup>st</sup> Century - eBooks leads to letting another person doing the reading to you, screen readers for mobile devices that beam one word at a time to you (Spritz), books becoming more social as you learn what others think of what you are reading
- **Business model changes in printing of books**
  - 17<sup>th</sup> + 18<sup>th</sup> Centuries - books sold by subscription (think Kickstarter)
  - 19<sup>th</sup> Century - rise of circulating libraries that sold annual memberships
  - 21<sup>st</sup> Century - publishers obtain access to data about their readers - what they read, how they read, why they quit a book, etc.

- Papyrus to Pixels: The Digital Transformation of the Way Books are Written Published and Sold Has Only Just Begun, The Economist, Oct. 10, 2014

# Technological Solutions to Information Overload Caused By Books

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- **Table of contents**
- **Index**
- **Book reviews**

# Technological Solutions to Information Overload Caused By Web

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- Human curated directories (Yahoo)
- Search engines
- Social media

# Before Memex

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- **Paul Otlet in Belgium**
  - **1895 - Universal Bibliography**
    - 15 million entries on index cards, search queries submitted by telegraph
  - **1935 - Mundaneum**
    - Global knowledge network - microfilm-based web of linked multimedia documents accessed, annotated, shared by a Mondotheque
    - Content cataloged by experts
- **Emanuel Goldberg in Germany**
  - **1927 - Statistical Machine**
    - Search + retrieve data stored on microfilm, search queries submitted by telephone
- **H.G. Wells in Great Britain**
  - **1938 - World Brain**
    - A super-human memory in a world-wide network that would lead to an era of social equality + world peace
    - Content cataloged by experts
- **Vannevar Bush in U.S.**
  - **1939 / 1945 - Memex**
    - Microfilm-based web of linked text documents accessed, annotated, shared by a Memex
    - Content curated by trailblazers

- Alex Wright, The Secret History of Hypertext, The Atlantic, May 2014

# Vannevar Bush

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From Wikimedia Commons

# Person - Vannevar Bush

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- **Significance**

- Creator of the first differential analyzer in the United States. Science advisor to President Roosevelt during World War II. Creator of the concept of hypertext as documented in his landmark article "As We May Think" in the Atlantic Magazine in 1945
- "As We May Think" - Atlantic Magazine July 1945
  - Need to control information overload
  - Memex - mechanical machine to do what humans do poorly - store + retrieve large amounts of facts, thus allowing humans to do what they do well - make connections that allow for jumps between threads of information - Trailblazers to be guides through information

- **Profession**

- Professor of Electrical Engineering, MIT

- **Places worked**

- MIT, Chair of National Defense Research Committee in WW II

- **Years of work**

- 1927-1945

- **Things worked on**

- Differential Analyzer (analog computer), Memex

# Place - Memex

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- **Significance**

- The first description of a hypertext system

- **Location**

- As We May Think, Atlantic Monthly, July 1945

- **Definition**

- Device in which individuals would compress + store all of their books, records, + communications, "mechanized so that it may be consulted with exceeding speed and flexibility." Would provide an "enlarged intimate supplement to one's memory"

- **People who worked there**

- Vannevar Bush

- **Things created there**

- Inspired Douglas Englebart, Theodor Holm Nelson + others to implement the vision

# JCR Licklider

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From Wikimedia Commons

# Person - J.C.R. Licklider

- **Significance**

- **Vision - computer was a revolutionary device because it could be used to work in symbiosis with humans**
- **Computing could augment human thinking power in same way the lever + wheel extend our physical power**
  - - Licklider, JCR. Man-computer Symbiosis. IRE Transactions on Human Factors in Electronics HFE-1, (Mar. 1960), 4-11.
- **Computing could be used for communication among communities**
  - - Licklider JCR and Taylor, RW. The Computer as a Communications Device. Science and Technology (Apr. 1968)
- **Computer as a library**
  - Books are good at displaying information and bad at storing, organizing, retrieving it - "We should be prepared to reject the schema of the physical book itself...That involves rejecting the printed page as a long-term storage device."
  - Envisioned library where computers replaced books forming a "network in which every element of the fund of knowledge is connected to every other element."
  - - Licklider, JCR. Libraries of the Future (1965)

- **Profession**

- **Psychologist**

- **Places worked**

- **Director of Information Processing Techniques Office at ARPA**

- **Years of work**

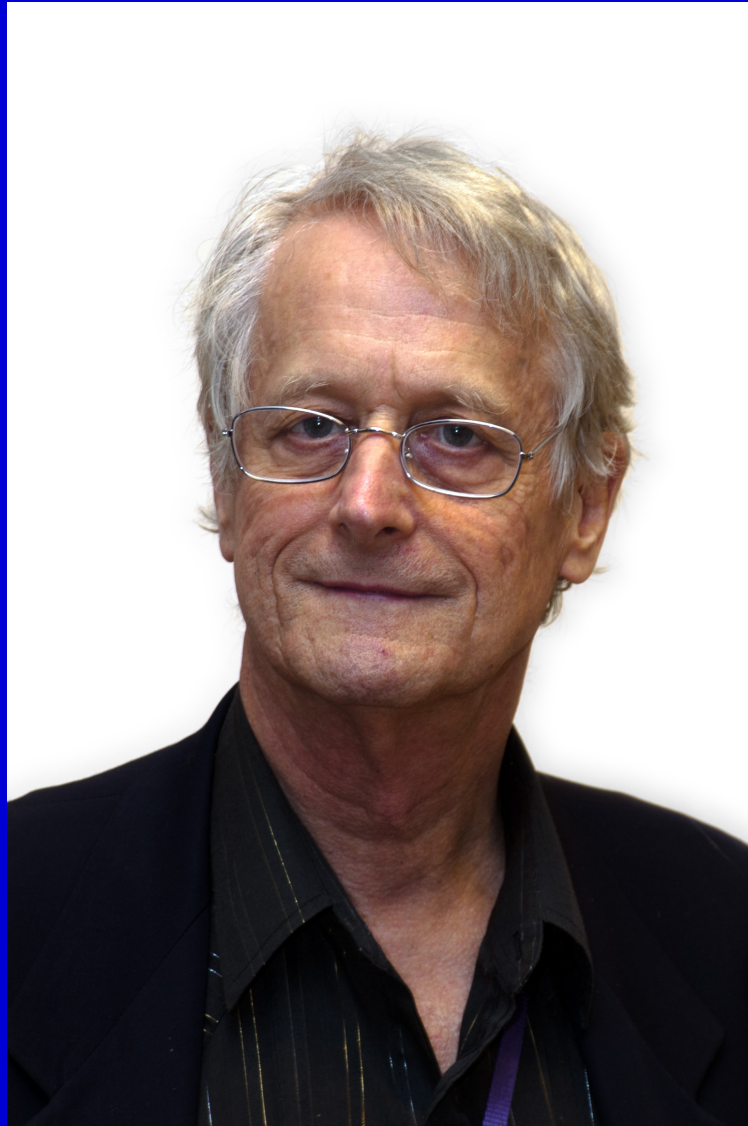
- **1957-1970**

- **Things worked on**

- **Founded Project MAC at MIT**
- **Founded ARPANet**

# Ted Nelson

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From Wikimedia Commons

# Person - Theodor Holm Nelson

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- **Significance**
  - Hypermedia visionary
  - Popularizer of hypertext in his landmark book, "Computer Lib / Dream Machines"
  - Spiritual father of World Wide Web
- **Profession**
  - Poet, philosopher, rogue (self described)
  - Software Designer, Author, "Visionary"
- **Places worked**
  - Independent artisan, Autodesk
- **Years of work**
  - 1960 - present
- **Things worked on**
  - Xanadu, Computer Lib / Dream Machines

# Place - Xanadu

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- **Significance**
  - All encompassing vision for a hypertext system
  - A fraction of the vision inspired the World Wide Web
- **Location**
  - Sausalito, California
- **Definition**
  - Xanalogical hypertext, a radical generalization of documents: unbreakable links to stabilized content, remix with overlays, and quotations connected to their sources.
- **People who worked there**
  - Theodor Holm Nelson
- **Things created there**
  - Never shipped a working product

# The Pioneer

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**"The book being celebrated, Computer Lib, made the outrageous claim in 1974 that personal computing, computer graphics, interaction and hypertext would fuse into an oncoming wave that would revolutionize the world-absurd, most people thought. After 40 years of Computer Lib being very right, here we are in a soup of resulting super-problems. Now they're listening to me again."**

**- Theodor Holm Nelson, hypertext visionary**

**"Ted is a very unique individual-he formulated his ideas before the world was ready to understand them, but that has not deterred him from continuing to believe in a different future for the world of computing. Irreverent, and yet tender, he is the modern/high tech version of Don Quixote..."**

**- Daniele Struppa, Chancellor, Chapman University**

**- Intertwined: A Celebration of the Work and Influence of Computer Iconoclast Ted Nelson, Chapman University, April 24, 2014**

# Thing / Software - HyperCard

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- **Firsts / Achievements / Uniqueness / Significance**
  - First widespread hypertext program on personal computer
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - Apple Computer ~ 1987 ~ USA
- **People involved (Programmer)**
  - Bill Atkinson
- **Type**
  - Hypertext creation
- **Price / Cost**
  - Free
- **Computer and operating system it runs on**
  - Macintosh - MacOS
- **Computer language written in**
  - Text
- **Memory required**
  - Text
- **Predecessors - Xerox NoteCards ~ Successors - World Wide Web**

# History of Digital Libraries Shows

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- They were always intended to support apprenticeship + apprentice learners

# Communications Case Study Summary - Gopher

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- **Goal**
    - Create campus wide information service at University of Minnesota in 1991
  - **Center of Gravity (Strategy)**
    - Connect computers with information together + make the information discoverable
  - **Technology / Equipment**
    - Client / server model
  - **Training ~ Leadership ~ Morale**
    - Team of 6 did the work
  - **Tactics**
    - Gopherspace contained text only, was browseable + searchable
  - **Intangibles**
    - Rejected for use on campus due to politics (did not use mainframe) so released into wild
  - **Mistakes**
    - In 1993 University of Minnesota says for-profit users of Gopher will need to pay licensing fee - users felt betrayed having to pay for software while programmers felt betrayed that users would not pay for software
  - **Outcome**
    - First viral Internet software
    - By 1992 there were hundreds of Gopher servers ~ Used by Tim Berners Lee to promote World Wide Web
    - By 1994 World Wide Web passes Gopher in traffic and leaves it in the dust
- Tim Gihring, *Obsolesced: The Rise and Fall of the Gopher Protocol*, MinnPost, Aug. 2016

# NeXT Machine

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# Thing / Hardware - NeXT Machine

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- **Firsts / Achievements / Uniqueness / Significance**
  - First workstation aimed at consumer market
  - Ultimately too expensive to become successful
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - NeXT Computer ~ 1988 ~ USA
- **People involved (Designer)**
  - Steve Jobs
- **Type**
  - Workstation
- **Price / Cost**
  - \$6,500
- **Size**
  - Text

# Thing / Hardware - NeXT Machine

---

- **Computing technology**
  - Integrated circuits ~ Motorola 68030 microprocessor
  - Operating system was NeXTSTEP which becomes MacOS X
- **Computing speed (in MIPS)**
  - 25 MHz
- **Primary memory type / technology ~ Size ~ Word length**
  - Integrated circuits ~ 8 megabytes ~ 16 bits
- **Secondary memory type / technology ~ Size**
  - 256 megabyte magneto optical drive
- **Uses / Applications / Software**
  - World Wide Web browser and editor and server created on it by Tim Berners-Lee at CERN
- **Predecessors - Macintosh ~ Successors - Macintosh**

# Place - World Wide Web

---

- **Significance**
  - First successful implementation of networked hypertext
  - First Web site was info.cern.ch
  - On April 30, 1993 CERN made source code available on royalty free basis
- **Location**
  - CERN, Switzerland
- **Definition**
  - Started in 1989 and released in 1991 - 3 components
    - Uniform resource locator (URL) - takes you to a computer anywhere on Internet
    - Hypertext transport protocol (HTTP) - sits on top of TCP / IP, facilitates file exchange amongst machines
    - Hypertext markup language (HTML) - allows simple creation of Web pages
- **Networking speed**
  - 56,000 - 1.5 million bits per second
- **People who worked there**
  - Robert Cailliau (gave administrative + technical support), Tim Berners-Lee
- **Things created there**
  - Web server + Web browser + Web editor on NeXT computer

# CERN

www.

# CERN

.CH

The world's largest physics laboratory,  
where the World Wide Web was born...

Particle Accelerator  
(underground)

... 5 minutes from here!

# Tim Berners-Lee

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From Wikimedia Commons

# Person - Tim Berners-Lee

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- **Significance**
  - **Inventor of the World Wide Web**
- **Profession**
  - **Computer scientist**
- **Places worked**
  - **CERN, MIT**
- **Years of work**
  - **1989 - present**
- **Things worked on**
  - **World Wide Web**

# Thing / Software - Mosaic

---

- **Firsts / Achievements / Uniqueness / Significance**
  - First graphical Web browser
  - Microsoft licensed it, transformed it into Internet Explorer
  - Team then formed Netscape, first commercial Web browser
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - National Center for Supercomputer Applications (NCSA) University of Illinois ~ 1992 ~ USA
- **People involved (Programmer)**
  - Marc Andreessen, Kim Stephenson (Macintosh)
- **Type**
  - Web browser
- **Price / Cost**
  - Free
- **Computer and operating system it runs on**
  - Wintel, Macintosh
- **Computer language written in**
  - Text
- **Memory required**
  - Text
- **Predecessors - WWW from CERN ~ Successors - Netscape Navigator, Microsoft Internet Explorer**

# Place - Netscape

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- **Significance**

- Made Internet available not just to scientists but to everyone
- Netscape browser included 1) Secure Socket Layers (SSL) for ecommerce, 2) Cookies to track user's interactions with Web site over successive screens
- First dot com success - stock doubled in value on opening day of Initial Public Offering (IPO) in August 1995 which set off Internet bubble
- Was destroyed by Microsoft who bundled Internet Explorer with Windows

"We made a difference, we invented cookies and pioneered downloading software from the Internet, yet Netscape is an asterisk in business history. Maybe the best way to think about it is as a classic tech story: a company creates, invents, succeeds - and gets bypassed." - Peter Currie, Netscape CFO

- **Location**

- Silicon Valley

- **Definition**

- Software company

- **People who worked there**

- Mark Andreessen, Jim Clark

- **Things created there**

- Netscape Navigator, in 1994, was first commercial graphical browser for Web, free for individuals but businesses needed to pay for it, quickly gained 90% market share
  - Code was ultimately open sourced and became Mozilla

- Tad Friend, Tomorrow's Advance Man, New Yorker, May 18, 2015

# Why Did the World Wide Web Triumph Over Gopher?

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- It was free / had no licensing fees which fit the Internet community's sensibilities
  - Gopher was well established, but University of Minnesota got greedy and started charging licensing fees which offended Internet community's sensibilities
- "It is said that despite its many glaring (and occasionally fatal) inaccuracies, the Hitchhiker's Guide to the Galaxy itself has outsold the Encyclopedia Galactica because it is slightly cheaper, and because it has the words "DON'T PANIC" in large, friendly letters on the cover."
  - Hitchhiker's Guide to the Galaxy
- It was graphical
  - It inspired people's creativity

# Why Did The Internet Triumph Over the Information Superhighway / Interactive TV?

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- The Internet and World Wide Web were sideshows to the telcos
  - Bob Metcalfe story on his ARPAnet demo to ATT executives in 1972
  - An ATT executive telling me in 1995 how "their" version of the Internet would be superior
- The Internet's triumph was an example of "Not by strength, but by guile"

# Place - Yahoo!

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- **Significance**
  - Web came with no index
  - Yahoo! was first index of browseable Web ~ Guide to Web ~ Portal to Web
- **Location**
  - Stanford University ~ 1994 ~ USA
- **Definition**
  - Yet Another Hierarchical Officious Oracle
- **People who worked there**
  - Jerry Yang + David Filo
- **Things created there**
  - Model for human indexing of Web which worked well until Web growth became exponential

# Place - AltaVista

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- **Significance**
  - Web came with no index
  - First search engine that really worked on account of its fast web crawler (Scooter) that comprehensively crawled the Web and the fast DEC Alpha hardware it ran on
- **Location**
  - Digital Equipment Corporation Network Systems Laboratory and Western Research Laboratory ~ 1995 ~ USA
- **Definition**
  - Best of first generation search engines which worked by full text indexing of Web pages with search result rankings based on statistical analysis of words in Web page
- **People who worked there**
  - Text
- **Things created there**
  - Built as showcase for Alpha microprocessors by DEC, but what really made it special was its software...DEC could have recreated itself as an Internet company but instead they fumbled the future and were acquired by Yahoo in 2003

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**"Altavista is new proof that sufficient  
quantitative change can be qualitative  
change"**

**- Bob Metcalfe, Infoworld, January 15, 1996**

---

**"Google's mission is to organize the world's information and make it universally accessible and useful."**

**- Google**

# Place - Google

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- **Significance**
  - Web came with no index
  - Altavista, built by DEC as showcase for Alpha microprocessors, was first search engine that really worked but DEC fumbled the future
  - Google, by focusing only on search, became best search engine to navigate the searchable Web
- **Location**
  - Stanford University ~ 1997 ~ USA
- **Definition**
  - A googol is the number  $10^{100}$
- **People who worked there**
  - Larry Page + Sergei Brin
- **Things created there**
  - PageRank algorithm for search delivers best search results - ranks results based on how many other Web sites link to a Web site / citation frequency indexing

# TomTom Mapping Car

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**Main mapping data provider for Apple Maps + Uber**

# What Geography Means to the Internet

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- **Internet land grab consists of 3 battles over 3 conceptual territories**
  - **What? - won by Google's search algorithms**
  - **Who? - won by Facebook**
  - **Where? - battle is still going on and location-awareness will be built into everything**

**"One thing for sure can be said about location-awareness: maps are required. Tomorrow's map, integrally connected to everything that moves (the keys, the tools, the car), will be so fundamental to their operation that the map will, in effect, be their operating system. A map is to location-awareness as Windows is to a PC. And as the history of Microsoft makes clear, a company that controls the operating system controls just about everything. So the competition to make the best maps, the thinking goes, is more than a struggle over who dominates the trillion-dollar smartphone market; it's a contest over the future itself."**

**- Adam Fisher, Google's Road Map to Global Domination, New York Times Magazine, Dec. 15, 2013**

# Internet Archive



# Place - Internet Archive

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- **Significance**
  - Web is fragile - Average life of a Web page is 100 days before they change or disappear
  - Keeps a copy of nearly the entire World Wide Web since 1996
  - Motto - "Universal Access to All Knowledge"
- **Location**
  - San Francisco, California
- **Definition**
  - \*The\* archive of the Web - The Internet's memory
  - In 2015, archives 1 billion Web pages a week, has 430 billion Web pages overall which is 20 petabytes of data (1 petabyte = 1 million gigabytes)
- **People who worked there**
  - Brewster Kahle
- **Things created there**
  - Wayback Machine
- Jill Lepore, The Cobweb, The New Yorker, Jan. 26, 2015

# Shift to the Mobile Internet

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- If  $> 30$  years old, primary computing device is desktop or laptop
    - Internet is experienced through single app = Web browser
    - Tablet replaces desktop / laptop + still experience Internet through Web browser
  - If  $< 30$  years old, primary computing device is mobile phone
    - Internet is experienced through numerous apps
    - Don't use Web browser, Web not important, leads to narrowing of information sources used
- Owen Williams, Smartphones: The Silent Killer of the Web As You Know It, The Next Web, May 5, 2014

# Paper Apps

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- App is interface for manipulating a dataset
- Antikythera Mechanism was a series of analog brass apps
- Astrolabes were brass analog apps for knowing the time and position of planets + stars
- In 11<sup>th</sup> century the volvelle was developed as a paper analog app
- In 19<sup>th</sup> century volvelles were popularized as calculation apps that could be used for advertising
  - flight computer, nuclear bomb effects computer, diet calculator
- Adam Rothstein, The Original Mobile App Was Made of Paper, Vice, Nov. 16, 2015

# To App or Not To App That Is The Question

- **Apps - if < 30 years old**
  - **Pros**
    - Polished user interface
  - **Cons**
    - Usually not free
    - Not interoperable
    - Small number of apps
- **Web - if > 30 years old**
  - **Pros**
    - Usually free
    - Interoperable
    - Large number of Web sites
  - **Cons**
    - Unpolished user interface



# Death of the Web

- **Web is dying + this has far reaching implications**
  - On phones, 86% of time spent on apps, 14% spent on Web
  - Apps are faster + easier to use than Web, but Web was open and apps are not
- **Web was invented by academics whose goal was exposing + sharing information, so Web was made open and controlled by standards bodies + became a commons**
  - Lack of payment system was bug forcing Web to depend on advertising
  - Result was anyone could put up Web page or launch new service + anyone could access it
  - Result was biggest creator + destroyer of wealth ever seen
- **App stores are closed walled gardens which are controlled by centralized gatekeepers**
  - Search on app stores is broken so discovery of new interesting apps very difficult

**"The history of computing is companies trying to use their market power to shut out rivals, even when it's bad for innovation and the consumer."**

**"The Web was a historical accident, an anomalous instance of a powerful new technology going almost directly from a publicly funded research lab to the public."**

**"in the transition to a world in which services are delivered through apps, rather than the Web, we are graduating to a system that makes innovation, serendipity and experimentation that much harder for those who build things that rely on the Internet."**

**- Christopher Mims, The Web is Dying; Apps are Killing it. Wall Street Journal, Nov. 17, 2014**

# Thing / Software - eBooks

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- **Firsts / Achievements / Uniqueness / Significance**
  - Project Gutenberg - First eBook created on July 4, 1971 by Michael Hart as ASCII text file - was Declaration of Independence
  - Digital Webster - First commercially available eBook created in 1988 by Michael Hawley and Steve Jobs for NeXT computer
- **Place Produced (Company / Institution) ~ Year ~ Country**
  - Text
- **People involved (Programmer)**
  - Text
- **Type**
  - Text
- **Price / Cost**
  - Text
- **Computer and operating system it runs on**
  - Text
- **Computer language written in**
  - Text
- **Memory required**
  - Text
- **Predecessors - N/A ~ Successors - N/A**

# Social Reading

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- Reading traditionally thought of as solitary communion between reader + author
- But reading has always been social - think of literary salons + book clubs that sprang up with proliferation of print
- Social media tools that allow social reading today are their digital heirs which allow for noisy new collective engagement
  - Sharing of annotations, bookmarks, passages that have drawn significant reader attention
  - All of these recast books as relationships

- Adrian Versteegh, Apps Reveal Reading's Social Side, Poets & Writers, Jan./Feb. 2012

# What is the Business Model?

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**"On the one hand, information wants to be expensive, because it's so valuable. The right information in the right place just changes your life. On the other hand, information wants to be free, because the cost of getting it out is getting lower and lower all the time. So you have these two fighting against each other.**

**- Stewart Brand, Founder Whole Earth Catalog**

# Digital Rights Management

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- You are not buying eBooks, music downloads, movies, etc. - you are renting them. Proprietary software ties the purchase to a particular device + the provider of content can revoke your rights at whim
- eBooks are software - you are purchasing a license to read that can be revoked
  - 2012 Amazon blocked Kindle account to Norwegian user without reason, blocking her access to 43 books
  - Amazon doesn't operate in Norway, so she bought Kindle in UK, purchasing her books with a Norwegian address + credit card
  - When the Kindle broke and she tried to return it to get it fixed, Amazon refused to ship it back to Norway and deactivated her account

---

**"Reading without surveillance, publishing without after-the-fact censorship, owning books without having to account for your ongoing use of them: these are rights that are older than copyright. They predate publishing. They are fundamentals that every bookseller, every publisher, every distributor, every reader, should desire. They are foundational to a free press and to a free society."**

**- Cory Doctorow**

# Personal Case Study - Ted Nelson

---

- **Role - Hypertext visionary**
- **Story**
  - **Dined with him at a conference at University of Iowa in November 1991**
  - **Found him to be brilliant, gracious, and different**
  - **He taped all conversations he had - an early form of lifelogging with audiotapes + post-it notes**
  - **Had a self-described "hummingbird mind"**

# Personal Case Study - Virtual Hospital

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- **Role - Co-founder of the first medical site on the World Wide Web, and the 250<sup>th</sup> Web site overall in 1993**
- **Story**
  - **Ultimately brought together hundreds of University professors and staff who created thousands of textbooks and booklets that were read by millions of users around the world, making the Virtual Hospital digital library one of the most respected brands for health information in the world**

# Questions for Further Discussion

---

- What is hypertext?
- What is the significance of Vannevar Bush and Memex? Have we fulfilled Vannevar Bush's vision for Memex?
- What is the significance of Ted Nelson and Xanadu? Have we fulfilled Ted Nelson's vision for Xanadu?
- Is the World Wide Web a pale vision of hypertext as envisioned by Bush and Nelson?
- What is an End User Licensing Agreement (EULA)?
- What is Digital Rights Management (DRM)?
- Do you own and control your digital music, movies, eBooks, etc.?
- Do you use eBooks? What is good about eBooks? What is bad about eBooks?
- When was the first eBook made? What was the first commercially available eBook?
- What computational challenge do designers of eBooks have to overcome?
- Is keeping all of human knowledge on magnetic media a full-proof way to preserve human knowledge for future generations?
- Does information want to be free?
- What lessons from the past can we apply to the present and future?

# Reading Assignments

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- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

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- **Non-fiction**
- **Fiction**
- **Movies**

# **Conclusion**

## **Ancient Printer's Creed**

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**This is a Printing-office  
Crossroads of civilization  
Refuge of all the arts against the ravages of time  
Armoury of fearless truth against whispering  
rumour  
Incessant trumpet of trade  
From this place words may fly abroad  
Not to perish as waves of sound but fixed in time  
Not corrupted by the hurrying hand but verified in  
proof  
Friend, you stand on sacred ground:  
This is a printing-office.**

# Conclusion

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**"There is not such a cradle of pure democracy upon the Earth as in the free public library."**

**- Andrew Carnegie, philanthropist**

# Topic 4

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## Digital Libraries and Digital Librarianship

# Thematic Quote

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**"Librarians are specifically trained to research, locate, evaluate, and present information. Because these skills are not technology dependent, they are enduring."**

**- King SB, MacDonald K. Metropolis redux: the unique importance of library skills in informatics. J Med Lib Assoc. 2004 Apr;92(2):209-17.**

# The Painting

---

**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

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- **Name**
  - **John P. McGovern M.D. Award in Information and Communication**
- **Year**
  - **1996**
- **Story**
  - **Awarded by professional librarians (Medical Library Association) to amateur librarians (Drs. D'Alessandro and Galvin) for their pioneering work on Virtual Hospital digital library**

# The Question

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**Is the librarian irrelevant in the age of the Internet?**

**How can we make the librarian relevant in the age of the Internet?**

# Evolution of Librarianship

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- **Being a librarian in Middle Ages as a monk**
  - A good life with a limited number of books to catalog - steady state of publishing
- **Then printing comes along with Gutenberg and Aldus leading to information explosion and chaos**
  - The new print literature was not as high in quality as the old illuminated manuscript literature
  - What happened was that bibliography (abstracting and indexing) developed to keep up with the information explosion which eventually became manageable

# Evolution of Librarianship

---

- **Recent past - steady state of print publishing**
  - Bibliography could handle what was being published
- **Advent of Internet leads to new information explosion and chaos again**
  - How will bibliography develop to gain control over this?
  - Librarianship was fairly straight forward over a static print collection - now how do you deal with a dynamic collection such as the Web and social media and apps?

# Values at the Core of Libraries + Archives

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- Access
- Equity
- Openness
- Privacy
- Preservation
- Integrity of information

# Fundamental Functions of a Library

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- **Selecting**
  - **Collecting**
  - **Organizing**
  - **Preserving**
  - **Providing access**
  - **...to a collection of information**
- Christine Borgman, Where is the Librarian in the Digital Library? Communications of the ACM, May 2001

# Traditional Functions of a Librarian

---

- **Select the material users require**
- **Abstracting / indexing (bibliography)**
  - **Catalog / organize / provide access to the material so those who would use it can know what is available and where it is kept**
- **Preserve the material so that both contemporary readers and those who follow will be able to use it**
- **Help users choose library materials most appropriate to their needs (reference desk)**
  - **Teach users how to locate appropriate resources, evaluate what they find, manage the data they generate**
- **Librarians have a "helper-sharer" gene**
  - **Librarians add value**

# What Makes a Good Librarian

---

- **Good print librarian can look at their library and know why it does or does not work**
  - **Quality of collection**
  - **Accessibility / barriers to access - organization, ventilation, stack height, hours of operation**

# Fundamental Functions of a (Digital) Library

---

- **Selecting**
  - **Collecting**
  - **Organizing**
  - **Preserving**
  - **Providing access**
  - **...to a collection of digital information**
- Christine Borgman, Where is the Librarian in the Digital Library? Communications of the ACM, May 2001

# Traditional Functions of a (Digital) Librarian

---

- **Select the material users require**
- **Abstracting / indexing (bibliography)**
  - **Catalog / organize / provide access to the material so those who would use it can know what is available and where it is kept**
- **Preserve the material so that both contemporary readers and those who follow will be able to use it**
- **Help users choose library materials most appropriate to their needs (reference desk)**
  - **Teach users how to locate appropriate resources, evaluate what they find, manage the data they generate**
- **Librarians have a "helper-sharer" gene**
  - **Librarians add value**

# Non-traditional Functions of a Digital Librarian

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- **Publicity and marketing of unique material in library**
  - No centralized bibliography for Internet
- **Site maintenance**
  - Link checking + repair
- **Reference desk to the world**

# The Reference Desk

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- **Your library used to have solely a local constituency**
  - Your reference desk was used by local walk-in users or local users who knew the local phone number
- **Now your library has a global constituency**
  - On the Internet, anyone in the world who knows your e-mail is a user
  - How to deal with challenge of e-mails from around the world
- **A digital library can become the virtual reference desk for the world in your area of expertise**

# What Makes a Good Digital Librarian

---

- **Good digital librarian can look at their library and know why it does or does not work**
  - **Quality of collection**
  - **Accessibility / barriers to access - organization, response time, logins**
- **Case study - US Navy Telelibrary vs. Virtual Naval Hospital**
  - **Telelibrary never performed needs assessment of users, licensed expensive commercial generic medical content, had a login, received 1/20<sup>th</sup> the usage of Virtual Naval Hospital**
  - **Virtual Naval Hospital performed needs assessment of users, obtained free military medical content that had been created by US military, had no login, received 1.5 million users / year**
  - **Budgets were similar**

# **Additional Skills a Good Digital Librarian Must Possess**

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- **Love of knowledge + curiosity**
- **Knowledge and experience and enthusiasm for the field / domain you are a librarian in**
- **Organizational skills (information architecture)**
  - **There is no OCLC for the Web yet**
- **Computer skills**
  - **Software / hardware / network**
- **Today you need to be a digital renaissance person to know this, but in the future this will be easier**

# Curation

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- Curation is needed when search doesn't exist or stops working due to spam, walled gardens, etc.
- Curation is humans gathering, organizing and filtering information
- Curation finds signal in the noise of the Internet
- Well done curation adds value where there is overwhelming noise

# Curation

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- **Curator is a trusted human editor who gathers scattered information into one location**
- **Curator is a tour guide**
- **Curator is viewed as trustworthy source of information**
- **Curator aggregates + republishes content they find interesting or think their readers will find interesting**
- **There is an overlap here with journalism but curators are passionate about the subject they cover while reporters are supposed to be dispassionate about the subject they cover**

- Josh Sternberg, Why Curation is Important to the Future of Journalism, Mashable, Mar. 10, 2011

# Disc Jockey as Curator

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- **Nic Harcourt, disc jockey of KCRW's "Morning Becomes Eclectic"**

- Has a knack for finding interesting new music ahead of everyone else
- His choices gives artists a break + influence what is played on larger commercial radio stations and in films / TV shows / commercials
- The country's most important disc jockey

"He has impeccable taste. Every time I talk to someone in L.A., whether they're a 16-year-old or a 40-year-old, if they're talking about some random band or the new Doves record, when I ask how they know about it, it's always KCRW." - Chris Martin, Coldplay

- Jaime Wolf, The Star Maker of the Semipopular, New York Times Magazine, June 26, 2005

**"The most influential DJ in America"...a "kingmaker"**

- Marc Weingarten, music writer

# Presumed Importance of Curatorship

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- **Vannevar Bush - Memex "Trailblazers"**
  - Learned individuals who would serve as guides, weaving trails that others could follow through vast amounts of information - put information in context
    - Vannevar Bush, As We May Think, Atlantic Magazine, July 1945
- **Theodor Holm Nelson - Xanadu "Hypercorps"**

**"Toward a subculture of intellect"**

  - More like science fiction subculture than academia

**"Like good woodsmen they will have a sense of the trails and byways of the territory to be explored. And like academics they will have a personal love for one or more topics that they will watch and study in their free time on the system."**

**- Theodor Holm Nelson, Literary Machines**

# Presumed Importance of Curatorship

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- **Nicholas Negroponte - "Digital Butlers"**

"In truth, we want fewer bits, not more...What I really need is intelligence in the network and in my receiver to filter and extract relevant information from a body of information that is orders of magnitude larger than anything I can digest. To achieve this we use a technique known as "interface agents."

- Nicholas Negroponte, Less is More: Interface Agents as Digital Butlers, Wired, Mar. 1994

- **Not "Anything, anytime, anywhere"**
- **But "Nothing, never, nowhere unless it is timely, important, amusing, relevant, or capable of reaching my imagination."**

- Nicholas Negroponte, Being Digital, p. 174

# Why is Curation Important?

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- **Web is large and growing larger**
  - **Internet Archive in March 2000**
    - 1 billion Web pages (14 terabytes) [1 terabyte = 1,024 gigabytes]
    - Growing at 2 terabytes / month
      - Library of Congress is 20 terabytes
      - Internet Archive in March 2000
  - **Internet Archive in January 2015**
    - 430 billion Web pages (20 petabytes) (1 petabyte = 1 million gigabytes)
    - Growing at 1 billion Web pages / week
    - Jill Lepore, The Cobweb, The New Yorker, Jan. 26, 2015
  - **Internet Archive in October 2016**
    - 10 petabytes in October 2012
    - 30 petabytes in October 2016, growing at 13-15 terabytes / day (including video)
    - 20,000 Hard Drives On a Mission, Internet Archive Blog, Oct. 26, 2016
- **From 0.014 petabytes to 30 petabytes in 16 years**
- **From 1 billion to 430 billion Web pages in 15 years**

# Why is Curatorship Important?

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- **Size of Web = 320 million pages in December 1997**
  - No search engine indexed more than 33% of Web
  - 6 major search engines collectively indexed 60% of Web so use metasearch engine for searching
  - Search engines may be limited by network bandwidth, disk storage, computational power, or a combination
    - Lawrence S, Giles CL. Searching the World Wide Web. Science Vol. 280 April 3 1998
- **Size of Web = 800 million pages of 6 terabytes of text data on 3 million servers February 1999**
  - No search engine indexed more than 16% of Web
  - 11 major search engines collectively indexed 42% of Web
  - Search engines are falling behind
    - Lawrence S, Giles CL. Accessibility of Information on the Web. Nature Vol. 400 July 8 1999

# Why is Curation Important?

---

- **Size of Web = > 1 billion pages in November 2001**
  - Pages on same topic tend to cluster into natural community structures that exhibit increased density of links
  - Characteristic pattern in such communities consists of a collection of hub pages - guides + resource lists - linking in a correlated fashion to a collection of authorities on a common topic with related pattern being one in which authorities on a topic link directly to other authorities again creating a density of links
    - Kleinberg J, Lawrence S, The Structure of the Web, Science Vol. 294 Nov. 30, 2001
- **Google PageRank was initially based upon importance of such hub pages**
- **The next year Steve Lawrence went to work for Google, indexing of the Web became \*much\* better + he ultimately received a Google Founder's Award**

# How Search Engines Work

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- First generation search engines worked by full text indexing of Web pages with search result rankings based on statistical analysis of words in Web page
- Second generation search engine was Google, with PageRank algorithm, with search result rankings based on the number of pages that link to a page = citation frequency indexing
- Third generation search engines also use artificial intelligence concepts of natural language processing for language analysis + machine learning to adjust parameters that control the search algorithms
  - William Arms, The 1990's: The Formative Years of Digital Libraries, Library Hi Tech, 30(4), 2012
- Google uses more than 200 signals in its search algorithms
  - Steven Levy, Google: Still in the Search Parts 1 - 4, Backchannel, Medium, 2015

# What is the Future of Search Engines?

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- Moving away from typed queries toward a personalized interactive service
- Search engines are evolving into apps (Siri, Google Now, Cortana) that answer questions but don't provide for context + learning
  - Personal example in radiology: StatDx app guiding you immediately to the right answer vs. SearchingRadiology.com guiding you to journal review articles for eventual answer in context
    - From which method do you better learn + retain the information?

# Future of Search

- **In 2015 Google**
  - Helps 1 billion people find information / day
  - Handles 3 billion search queries / day
  - 66% of searches use Google world-wide
  - 80% of mobile searches use Google
- **The present - transform Google Search from "ten blue links" into intelligent system that wisely interprets + satisfies your information needs through:**
  - **Knowledge Graph**
    - Structures world's information into vast database of 0.5 billion entities + growing (rapidly)
  - **Voice Search**
    - Use spoken language for search - regard all input as conversational - search becomes the interface to all computing
  - **Google Now**
    - Tells you what you want to know before you ask by merging the Knowledge Graph with your personal information
- **The future - Deep learning, a step beyond machine learning that uses unsupervised learning to automatically convert unstructured information into useful actionable knowledge, will lead to a system that knows the world**
  - Ultimate goal is create a system that inhales world's information, structures it into a form it understands, then takes action

- Steven Levy, Google: Still in the Search Parts 1 - 4, Backchannel, Medium, 2015

# What is the Future of Search Engines?

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- **Information retrieval is moving from searching to finding**
  - **Finding is retrieving or constructing a single result to fulfill an information need**
    - **Craig Silverstein, Director of Technology at Google**
- **Getting better at finding answers to specific questions**
- **Not getting better at teaching you about specific subjects + giving you the broader context**
  - **That's where curation comes in!**

# Curation - Pro

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**"The term (curation) has been revived and expanded to describe the way populations of Web participants can act as information finders and evaluators for each other, creating through their choices collections of links that others can use."**

**- Howard Rheingold, Net Smart, 2012**

**"Curation is a form of participation that is open to anyone who might not want to blog, tweet, or update a Facebook profile but instead are happy to bookmark, tag, or like other people's digital creations...People can gain attention, admiration, collaboration partners, professional reputations, and business relationships by becoming known curators."**

**- Howard Rheingold, Net Smart, 2012**

# Curation - Con

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- Professional curation is
  - Specialized line of museum work involving the care, accessioning + exhibition of artworks
  - Collaborative endeavor involving compromise, working within constraints, personal vision
- How has it come to mean "just picking stuff?"
  - Prestige appropriation
  - Reinforces many of personal values promoted by neoliberalism: individualism, aura of control, consumption-as-authenticity

- Miya Tokumitsu, The Politics of the Curation Craze, New Republic, Aug. 24, 2015

# Curating a Digital Library

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- **Data -> information -> knowledge -> wisdom**
  - **Data is discrete, objective facts**
  - **Information is data with some level of meaning**
  - **Knowledge is information that is accumulated, organized and integrated and used to handle problems**

# Curating a Digital Library

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- **Knowledge Management**

**"Providing the right information to the right person at the right time to create the right conditions for new knowledge to be created"**

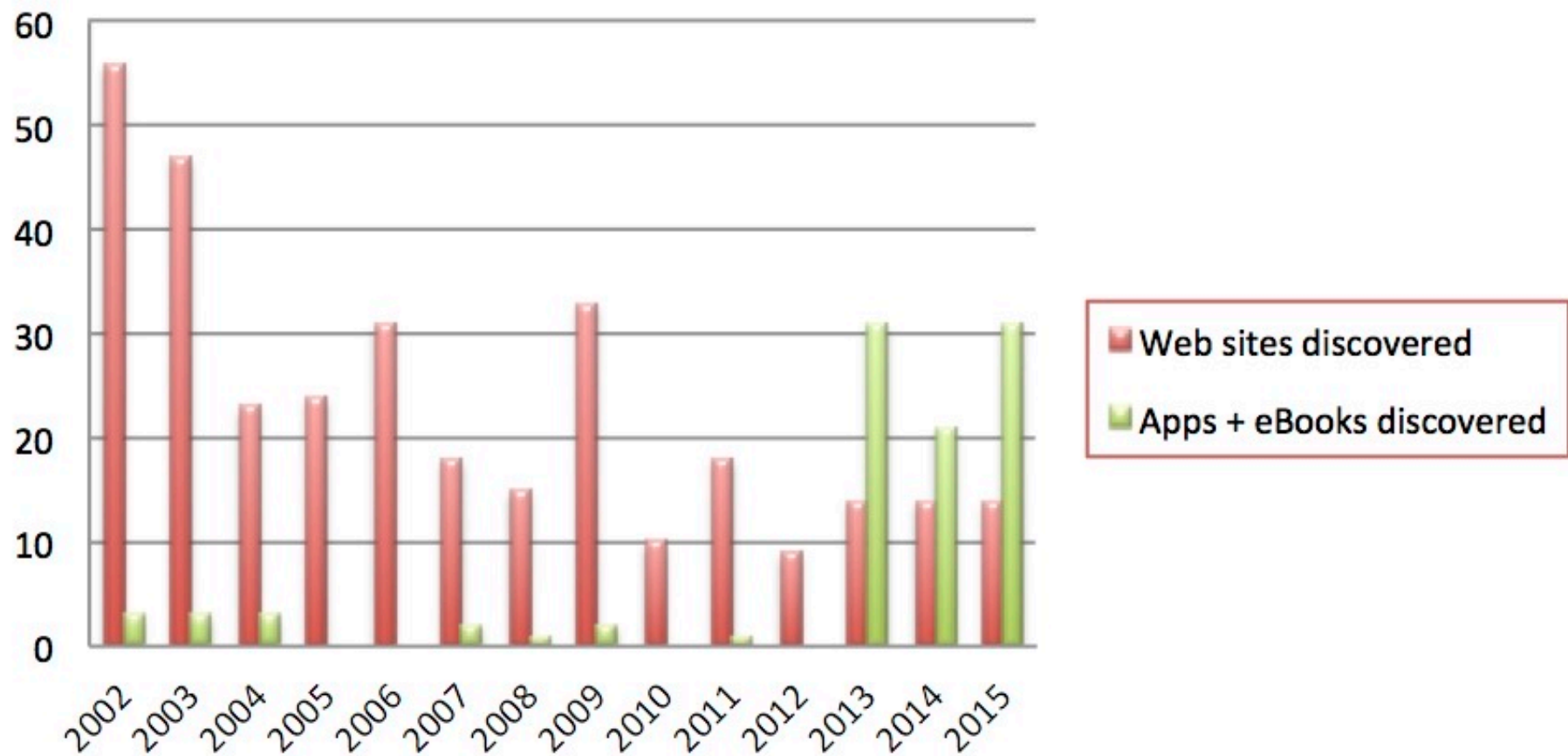
**- U.S. Navy Chief Information Officer, 1997**

**"Delivery of the right information at the right time to the right person so the right decision can be made"**

**- Michael P. D'Alessandro, M.D.**

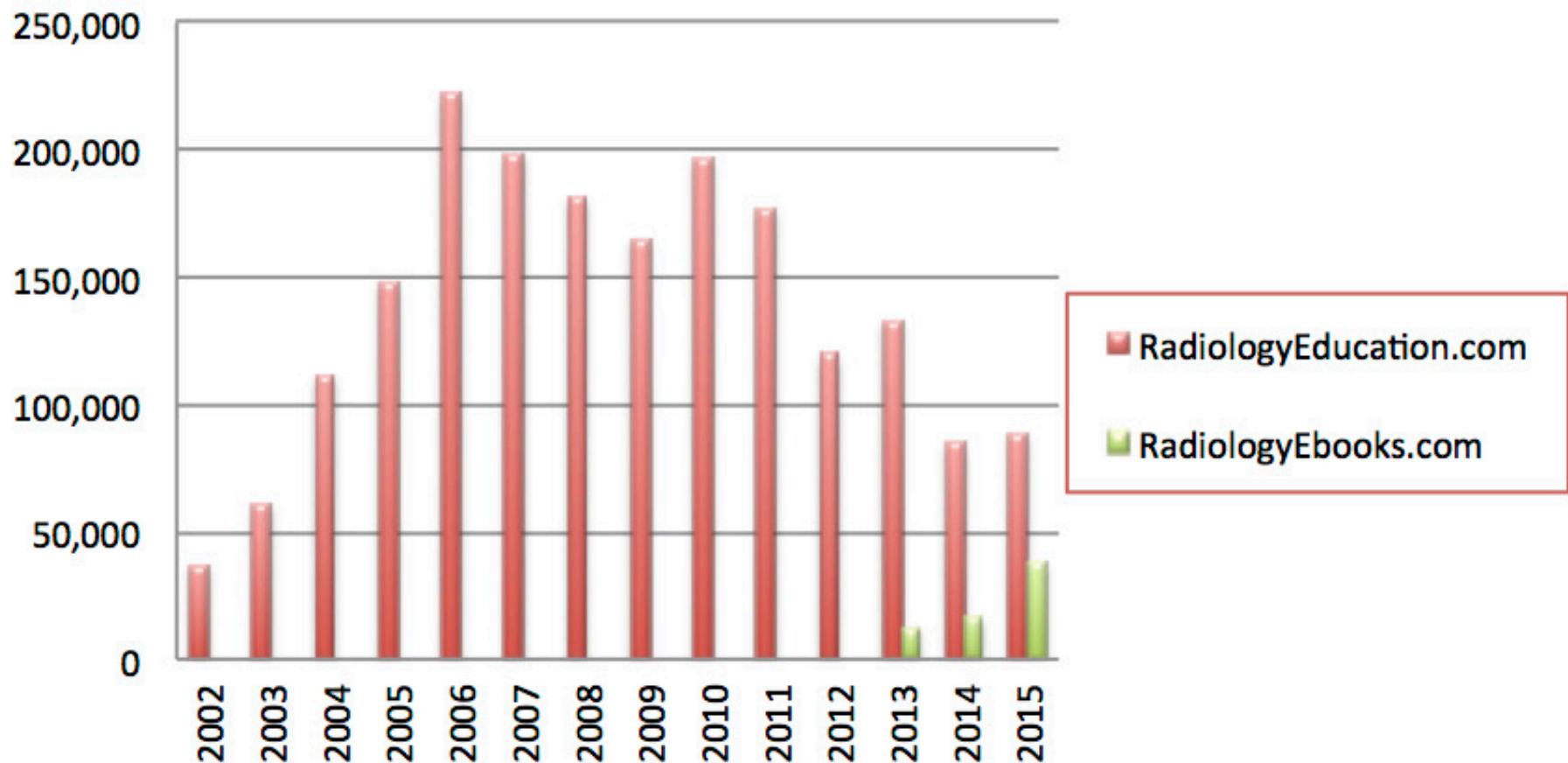
# True Importance of Curation - Web + Apps + eBooks

**Number of New Free Radiology Resources Discovered  
on Internet and Indexed on RadiologyEducation.com +  
RadiologyEbooks.com**



# True Importance of Curation - Web + Apps + eBooks

**Number of Users of RadiologyEducation.com (indexes free Web Sites) + RadiologyEbooks.com (indexes free Apps + eBooks)**



# **True Importance of Curation - Web + Apps + eBooks**

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- **For the subjects of pediatric radiology, pediatric imaging, radiology education, radiology apps and radiology eBooks**
  - **Our digital libraries have the highest impact factors on the Internet and are therefore amongst the top 10 authoritative Web sites on these subjects.**

# Curation Has to Go Where Users Are

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- **From**
  - **Web to**
  - **Apps to**
  - **Social**

# Curation of Social Media

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**"A tweet is an atom. A photo on Flickr is an atom. A conversation item on Google Buzz is an atom. A Facebook status message is an atom. A YouTube video is an atom.**

**Thousands of these atoms flow across our screens in tools like Seesmic, Google Reader, Tweetdeck, Tweetie, Simply Tweet, Twitroid, etc.**

**A curator is an information chemist. He or she mixes atoms together in a way to build an info-molecule. Then adds value to that molecule."**

**- Robert Scoble, The Seven Needs of Real-time Curators, 2010**

# Sophisticated Social Media Curation

## Seven Needs of Real-Time Curators

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- **The need to:**

- **Bundle**
- **Reorder**
- **Distribute**
- **Editorialize**
- **Update**
- **Invite participation**
- **Track your public**

- Robert Scoble, Seven Needs of Real-time Curators, Scobleizer.com, Mar. 27, 2010

- Howard Rheingold, Net Smart, 2012

# Ways To Get Started in Social Media Curation

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- **Tag intelligently**
  - Tags are metadata
  - New way of aggregating + organizing knowledge
  - In the past people organized world in ontologies (categories + subcategories) because search engines did not exist
  - Today when people tag, folksonomies (categories) emerge on their own and then tags can be explored via search engine
  - Tag and search is easier + more natural than categorize + pigeonhole
  - Communities of practice can emerge around folksonomies

- David Weinberger, Everything is Miscellaneous: The Power of the New Digital Disorder, 2007

# Ways To Get Started in Social Media Curation

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- **Social bookmarking of Web sites (delicious.com)**
  - By serving your own self-interest you multiply the value of a public good
  - Social bookmarking is a knowledge commons that all can freely harvest
- **Visual bookmarking of images (Pinterest, Flickr)**

# Ways To Get Started in Social Media Curation

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- **Public lists (Twitter lists)**

# Social Media Curation

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- **What is the overlap with journalism?**

# True Importance of Curation - Social Media

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- **@pedsimaging in 2015 on Twitter**
  - Followers ~ 300
  - Several tweets + retweets / day
  - Four Twitter lists
  - Tweets + Retweets viewed ~ 10,000 times / month
  - Community of practice has arisen
  - Work with radiology community of practice to encourage adoption of radiology hashtag ontology project + helped communities of practice emerge around these hashtags
  - For the #FOAMRad and #PedsRad and #RadRes hashtags - our digital library is amongst the Top 10 influencers and thus has the highest impact factors on the Internet and is therefore amongst the top 10 authoritative Twitter accounts on these subjects
    - According to Symplur Healthcare Hashtag Project

# **Curation: The Power of Selection in a World of Excess by Michael Bhaskar**

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**"Search, for example, tells us what we want to know, but can't help if we don't already know what we want. Far from disappearing, human curation and sensibilities have a new value in the age of algorithms. Yes, the more we have the more we need automation. But we also increasingly want informed and idiosyncratic selections. Humans are back."**

**Amazon owns Goodreads**

**Canopy.co curates Amazon**

**Spotify expands its range of playlist makers**

**Netflix trained viewers to tag its content**

**- Michael Bhaskar, In the Age of the Algorithm, the Human Gatekeeper is Back, The Guardian, Sep. 30, 2016**

# Curation: The Power of Selection in a World of Excess by Michael Bhaskar

---

"Curation can be a clumsy, sometimes maligned word, but with its Latin root *curare* (to take care of), it captures this irreplaceable human touch. We want to be surprised. We want expertise, distinctive aesthetic judgments, clear expenditure of time and effort. We relish the messy reality of another's taste and a trusted personal connection. We don't just want correlations - we want a why, a narrative, which machines can't provide. Even if we define curation as selecting and arranging, this won't be left solely to algorithms. Unlike so many sectors experiencing technological disruption, from self-driving cars to automated accountancy, the cultural sphere will always value human choice, the unique perspective."

- Michael Bhaskar, In the Age of the Algorithm, the Human Gatekeeper is Back, The Guardian, Sep. 30, 2016

# Summary - Why is Curatorship Important?

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- Search engines provide answers but not context
- Search engines in never ending battle against search engine optimization tricks + firms (spam)
- Social media silos / walled gardens are not being effectively crawled by search engines
- Digital libraries + curation are an answer

# Information Seeking Habits

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**"For every person entering a physical library today, twenty use a search engine"**

**- Michael Lesk, PhD,  
Division Director of Information and  
Intelligent Systems at the  
National Science Foundation -- 1998**

- The Web is not just a vanity press...**
  - William Y. Arms, Digital Libraries, 2000**

# **What is the Future for Librarians?**

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- **In the past, in life, most questions go unanswered**
- **Now the Internet lets us seek answers**
- **But the Internet is and will always be chaotic**
- **You can help bring order to this chaos**

# How Do We Get From

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**Marian the librarian...  
to  
...Marian the cybrarian**

# **Job of Librarian Will Not Change**

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- **It will remain to help us find answers to questions and understand those answers in context - but the way this is done has changed**
  - **Job #1 - Organize chaos in a subject on your own**
  - **Job #2 - Make those who are interested into amateur librarians**
  - **Job #3 - Serve as guide on side when needed for everyone**

# Organize Chaos

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- **Create and curate a digital library in area of subject matter expertise + passion**

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**"Everybody can set up a Web site, but it overwhelms people. There is a need for a disinterested mediator. There is also a need for an objective - but at the same time knowledgeable - navigator who knows what's going on in the archives and what's going on in the World Wide Web. The role of the librarian is going to increase."**

**- James Billington, Librarian of Congress**

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**Librarians are "knowledge navigators /  
information mediators"**

**"With this lack of filter (on the Internet) there are two ways of dealing with it: Define what's bad and try to keep it out - but that won't work too well and eventually it leads to committees to determine what's bad and committees of censorship. What we hope to do is isolate things that are good."**

**- James Billington, Librarian of Congress**

# **Make Those Interested Amateur Librarians**

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- **Train the amateur how to create a digital library**
  - There are too few professional librarians to organize the chaos of the Internet - must rely on amateur librarians with subject matter expertise to help
- **Demystify librarianship by teaching amateurs core librarian organizational principles**
- **Distributed systems can bring order to chaos**
  - Turtles, Termites, and Traffic Jams by Mitchell Resnick
  - **Distributed systems which are self organizing**
    - DMOZ vs. Yahoo
  - **Internet is the ultimate distributed system**

# Serve as Guide on the Side When Needed For Everyone

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- **Train the user how to use the digital library**
  - Make everyone an end user surfer (searcher)
  - Just as they teach users how to navigate, evaluate and organize the print information space - they must do the same for the digital information space...
- **Serve as a reference of last resort for those who need it - for those who can't find what they are looking for - a catcher's mitt - for when you need an expert at the process of searching**
  - Help those who can't help themselves
  - Remain the gold standard
  - Analogy here is medicine
    - Long controversy over librarian searching vs. end user searching in past
    - Today all end users search using techniques taught by librarian and librarian is expert searcher to turn to when in trouble

---

**"They (librarians) do much more than simply provide answers. They also are accomplished teachers who can help students become information literate: to learn how to locate appropriate resources, evaluate what they find, and manage the huge amounts of data that research generates."**

**- Martin Raish, librarian**

# So the Librarian...

---

- Is not a gatekeeper
- Is the ultimate intelligent agent
- Is a dreamkeeper

# Who is Today's Digital Librarian?

---

- **A person who runs, contributes to, or curates:**
  - Digital library of any size
  - Bookmarks on [delicio.us](http://delicio.us)
  - Directory on [dmoz.org](http://dmoz.org)
  - Hashtags on social media sites
  - Pinboards on Pinterest
  - Articles on Wikipedia
  - ...etc.
- ...includes professional and amateur librarians

# Questions for Further Discussion

---

- What do you think is the future of librarians and librarianship?
- What do you think is the future of digital librarians and digital librarianship?
- What digital librarian skills can amateur librarians perform?
- What are the potential roles librarians could play in the curation of app stores? Is it time for an Appopedia?

# Reading Assignments

---

- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

---

- **Non-fiction**
- **Fiction**
- **Movies**

# **Conclusion**

## **Curation as a Position of Power**

---

**"If we live in a world where information drives what we do, the information we get becomes the most important thing. The person who chooses that information has power."**

**- Seth Godin, author**

**- Steve Rosenbaum, Why Curation is Just as Important as Creation, Mashable, Mar. 17, 2011**

# Topic 5

---

## **The Ten Step Approach to Digital Libraries**

**How to design, create, curate, operate and  
evaluate a digital library for apprentice learners**

**...and...**

**How to be recognized for your work**

# Thematic Quote

---

**"Can we do it?  
Yes we can!"  
- Bob the Builder**

# The Painting

---

**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

---

- **Name**
  - **PC motherboard + hard disk**
- **Year**
  - **2000's**
- **Story**
  - **Look inside the digital library**

# The Question

---

**(How) Can we do it?**

# **Ideal Components of a Digital Library**

---

- **Hardware**
  - Fast, reliable, redundant
- **Software**
  - Standards-based with no vendor lock-in
  - Open source
- **Network**
  - Fast, reliable, redundant
- **Content**
  - Core of digital library, must be highest quality
- **Search interface**
  - Search engine optimization
  - Searchable by users
- **Browsing interface / information architecture**
  - Librarian-based - author, title, subject, annotated bibliography
  - Problem-based
- **Communication interface**
  - Feedback - comment forms + email
  - Collaboration - conferencing, groups, chat rooms, social media

# **Be wary of technology**

---

**The single most important principle of engineering:**

**"Use the lowest tech that will work"**

**- Burt Rutan, engineer, Scaled Composites**

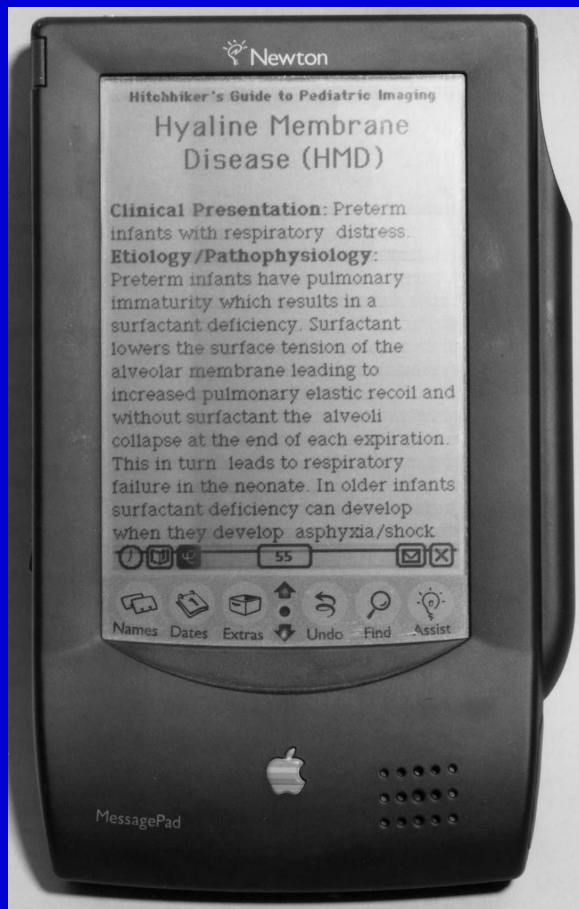
**(translation: Keep It Simple Stupid)**

# Rise and Fall of Technologies

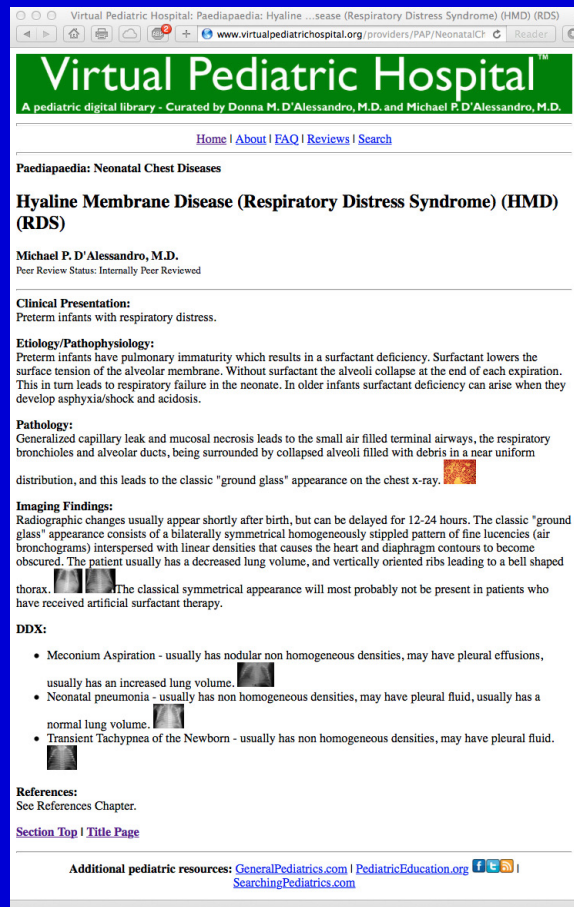
---

- **Flash**
- **Java**
- **PointCast**

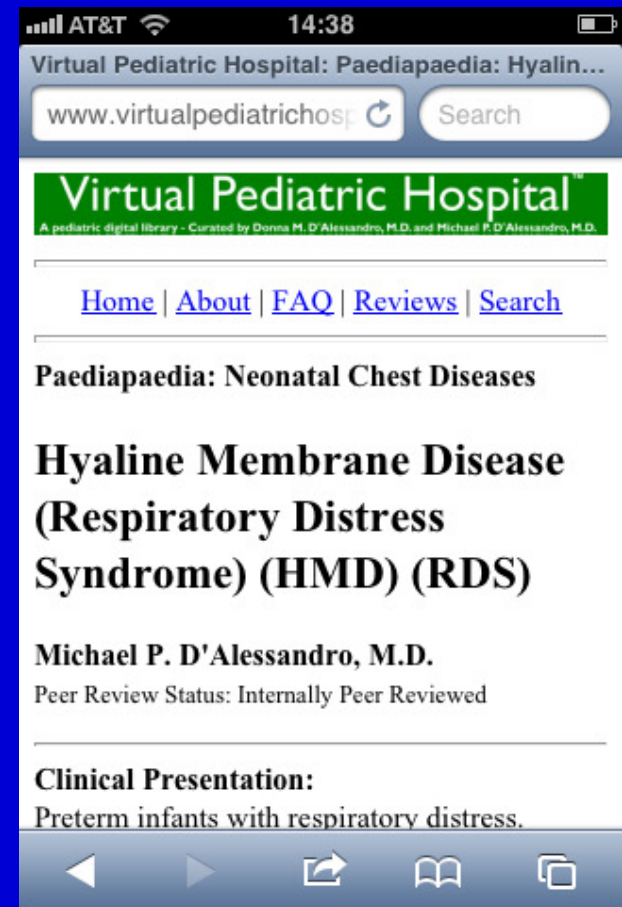
# Preservation and Access



Newton digital book



Desktop Web



Mobile Web

Content created 25 years ago - which one is still readable?

- Libraries and librarians are dedicated to preservation and access
  - Proprietary software + data formats limits preservation + access
  - So use open source software + open data formats / standards for projects - avoid vendor lock-in

# The Ten Step Approach

---

- **Design**
  - **Planning**
- **Creation**
  - **Choose a Technology**
  - **Define Page Style**
  - **Define Metadata Style**
  - **Define Information Architecture**
  - **Install Tools to Gather Data**
- **Curation**
  - **Create Content in a Disciplined Manner**
- **Operation**
  - **Publicity and Marketing**
  - **Regular Maintenance**
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**

# Step 1 - Planning

---

- **Subject you have expertise in + passion for**
  - To do it well is hard work, so be able to justify time you will spend on it
  - Have something new to say
- **Name**
  - Understandable ~ memorable ~ spellable ~ short
- **Mission / Audience**
  - Most important part
- **Educational construct**
  - How you will carry out mission (2<sup>nd</sup> most important part)
- **Metrics for success**

# Step 2 - Choose a Technology

---

- A. Web site
  - 1. Register domain name
    - Give content fixed address regardless of where you host it
      - Register4Less - [www.register4less.com](http://www.register4less.com)
  - 2. Choosing a Web software platform
    - Static site - HTML files (server side includes)
    - Dynamic site - Content management system / database
      - Wiki -
        - MediaWiki - [www.mediawiki.org](http://www.mediawiki.org), Google Sites - [sites.google.com](http://sites.google.com)
      - Blog
        - WordPress - [www.wordpress.org](http://www.wordpress.org)
  - 3. Choosing a Web host - [www.webhostingjury.com](http://www.webhostingjury.com)
    - Highest overall rating, highest % of reviewers with 1-3 years of hosting
    - Small static site - Register4Less - [www.register4less.com](http://www.register4less.com)
    - Dynamic site (server side includes)
      - Medium size sites - ICDSOft - [www.icdsoft.com](http://www.icdsoft.com)
      - Large size sites - Hostgator - [www.hostgator.com](http://www.hostgator.com)
  - 4. Beware of choosing a free hosting service (advertising company) where you are the product
    - Facebook, Flickr, Pinterest

# Step 2 - Choose a Technology

---

- **B. eBook - easy**
  - Choose platform / format - Kindle [.mobi /.azw /.kf8] (All), EPUB [.epub] (All), iBooks2 [.ibooks] (iOS), PDF [.pdf] (All)
  - Choose authoring tool - Sigil (EPUB), Calibre (convert EPUB to Kindle), iBooks Author (iOS + EPUB)
- **C. App - not for the faint of heart**
  - Choose platform - Android vs. iOS
  - Choose authoring tool - cross platform HTML5 app vs. dedicated app

# Step 3 - Define Page Style

---

- **Page template should include:**
  - **Site name**
  - **Minimal use of graphics**
  - **Author of content, affiliation, credentials**
  - **Attribution of content facts through references**
  - **Disclosure of site ownership and sponsorship**
  - **Currency of content**
  - **Contact information**
  - **Copyright information**
  - **URL (address)**

- Silberg WM, Lundberg GD, Musacchio RA. Assessing, controlling, and assuring the quality of medical information on the Internet: caveat lector et viewer-let the reader and viewer beware. JAMA. 1997;277:1244-1245.
- Modern Language Association Guidelines for Authors of Digital Resources ([http://www.mla.org/resources/documents/rep\\_it/web\\_guidelines](http://www.mla.org/resources/documents/rep_it/web_guidelines))

# **Step 3 - Define Page Style**

## **Stanford Guidelines for Web Credibility**

---

- **Make it easy to verify accuracy of information**
- **Show there is a real organization behind site**
- **Highlight the expertise of your organization**
- **Show honest + trustworthy people stand behind site**
- **Make it easy to contact you**
- **Design the site to look professional**
- **Make your site easy to use + useful**
- **Update site content often**
- **Use restraint with promotional content on site**
- **Avoid errors of all types**

- Stanford Guidelines for Web Credibility ([credibility.stanford.edu/guidelines](http://credibility.stanford.edu/guidelines))

# Step 3 - Define Page Style

## References

---

- Patrick Lynch, Sarah Horton. Web Style Guide, Third Edition, 2009 ([www.webstyleguide.com](http://www.webstyleguide.com))
- Jakob Nielsen. Designing Web Usability: The Practice of Simplicity. 1999
  - Also <http://www.useit.com> (especially Alertbox column)
- Jakob Nielsen. Homepage Usability: 50 Web sites Deconstructed. 2001

# Step 4 - Define Metadata Style

---

- **Dublin Core vs. Search Engine Optimization**

```
<title></title>
```

```
<meta name="keywords" content="list out a few">
```

```
<meta name="description" content="A short description">
```

# Information Architect Definition

---

**"The individual who organizes the patterns inherent in data, making the complex clear. It's a person who creates the structure or map of information which allows others to find their personal paths to knowledge, and it's also the name of the emerging 21st century professional occupation which addresses the needs of an age, focused upon clarity, human understanding and the science of the organization of information."**

**- Richard Saul Wurman, information architect**

# Step 5 - Define Information Architecture

---

- **Building of information structures that allow others to understand**
  - Make the complex clear - make the information understandable to others
- **5 ways to organize information - LATCH**
  - L - location
  - A - alphabetically
  - T - time
  - C - category
  - H - hierarchy
- **References**
  - Richard Saul Wurman, Information Architects, 1996
  - Louis Rosenfeld, Peter Morville. Information Architecture for the World Wide Web, 3rd Edition. 2006

# Step 6 - Install Tools to Gather Data

---

- **Take an engineering approach to digital libraries**
  - Quantify with sensors, analyze, act
- **Install tools to gather data**
  - Install a Web statistics package for Web site
    - SiteMeter - [www.sitemeter.com](http://www.sitemeter.com)
    - Google Analytics - [www.google.com/analytics](http://www.google.com/analytics)
  - Utilize preexisting App Store statistics packages for eBook / App
    - Amazon Kindle / Apple iTunes / Google Play
  - Install a comment / feedback form
  - Install a search engine
    - Google Custom Search Engine - [www.google.com/cse/](http://www.google.com/cse/)

# Step 7 - Create Content in a Disciplined Manner

---

- **Initially**

- Initial build of digital library
  - Devote a day
  - HTML 101 - <http://www.w3schools.com/html/default.asp>

- **Regularly**

- Create content and / or curate content
  - 15 minutes / day

- **Intellectual property licensing**

- Creative Commons - [www.creativecommons.org](http://www.creativecommons.org)
  - Some rights reserved
  - Use this to share or obtain content
- **Syndication**
  - Via RSS, Facebook, Twitter, etc.

# Step 8 - Publicity and Marketing Guerilla Marketing

---

- Submit Web site to
  - (Consider creating marketing Web site for eBook / App)
  - Search engines - [google.com](http://google.com), [www.bing.com](http://www.bing.com)
  - Internet Archive - [www.archive.org](http://www.archive.org)
  - Internet directories - [www.dmoz.org](http://www.dmoz.org)
  - Health sciences directories - [www.martindalecenter.com](http://www.martindalecenter.com)
  - Health on the Net - [www.hon.ch](http://www.hon.ch)
- Add links to related articles in Wikis
  - [www.wikipedia.org](http://www.wikipedia.org), [www.wikibooks.org](http://www.wikibooks.org)
- Index in Open Education Resources repositories
  - AAMC MedPortal, [www.curriki.org](http://www.curriki.org), [www.e-booksdirectory.com](http://www.e-booksdirectory.com), [www.lemill.net](http://www.lemill.net), [www.merlot.org](http://www.merlot.org), [www.oercommons.org](http://www.oercommons.org), [textbookrevolution.org](http://textbookrevolution.org), [wlh.webhost.utexas.edu](http://wlh.webhost.utexas.edu)
- Send announcement
  - [groups.google.com](http://groups.google.com) (misc.education.medical), [groups.yahoo.com](http://groups.yahoo.com), [www.medscape.com](http://www.medscape.com), [www.sermo.com](http://www.sermo.com), Facebook groups, Twitter, society mailing lists, friends / colleagues
- Check search engines for top 100 hits for related terms / keywords
  - Ask these sites to trade links
- Send e-mails to journal reviewers
- Professional meetings ~ hand out flyers ~ teach workshops
- Engage appropriate audiences on social media + become trusted curator of your subject
- News Alerts to track your progress - [www.google.com/alerts](http://www.google.com/alerts)
- References
  - Jay Conrad Levinson. Guerilla Marketing

# Step 9 - Regular Maintenance

---

- **Daily**
  - Usually most neglected step ~ Why most fail
  - Take the long view - commit to 10 years
  - Keep it simple stupid! - in terms of design + technology
  - Always have a backup of the Web site / eBook / App
  - Keep a diary from day one
- **Business model**
  - Ads, sponsorships, grants, work-related, self-funded

# Step 10 - Evaluation and Continuous Quality Improvement

---

- **Evaluation is key - listen to your users**
  - Formative / Summative / Feedback
  - Leads to continuous quality improvement + user-centric orientation
- **Yearly curation / scholarship harvest**
  - Reconfirm Step 1 - your mission / audience / goals / metrics
  - Check - links / HTML / accessibility
  - Preserve - archive, print, screen shot
  - Measure evolving metrics - inbound links, Web statistics, bibliometric analysis, downloads
  - Measure Altmetrics - [ImpactStory.org](http://ImpactStory.org)
  - Search for reviews - LexisNexis, Google News Archive, Google Scholar, Amazon 'Search Inside Books', Google Books

# **Mickey's 10 Commandments on Theme Park Design**

## **Creating an educational and entertaining experience**

---

- **Know your audience**
    - Do market research
  - **Wear your guests' shoes**
    - Stand in line - experience what they do
  - **Organize the flow of people and ideas**
    - It should make sense and be laid out with clear logic
  - **Create a "wienie"**
    - Lead visitors around with visual magnets that excite and attracts the eye
  - **Communicate with visual literacy**
    - Don't rely on words
  - **Avoid overload**
    - Keep it simple
  - **Tell one story at a time**
    - Have a theme and stick to it
  - **Avoid contradictions**
    - Be consistent with identity and with what differentiates you from others
  - **Provide an "ounce of treatment and a ton of treat"**
    - Focus on rewards, minimize rules
  - **Keep it up**
    - Maintain your identity with cleanliness + routine maintenance
- Marty Sklar, President of Walt Disney Imagineering

# **Institutional Hosting Pros / Cons**

---

- **Pros**
  - **Simplicity**
  - **Cost**
  - **Rise of institutional repository for intellectual philanthropy**
- **Cons**
  - **May be Intranet hosting only, closed to outside users**
  - **No control over URL**
  - **No control over functionality of Web site**
  - **At whim of institution's technical support staff**
  - **At whim of institution's support of the institutional repository**
    - **Can you entrust your reputation to the institution?**
  - **Limited Altmetrics (statistics / comments / etc.)**
    - **Evolving metrics to document scholarship**
- **Choosing one way should not preclude choosing the other in the future if circumstances change**

# Commercial Hosting Pros / Cons

---

- What happens when you want to share but institution does not?
  - What can you do with your life's work if you want to share it?
- Pros
  - Open to all users
  - Control over URL
  - Control over functionality of Web site
  - Commercial technical support staff responsive to your needs
  - Full Altmetrics (statistics / comments / etc.)
    - Evolving metrics to document scholarship
- Cons
  - May be more complex
  - More costly
  - At whim of your support of the personal repository
    - Can you entrust your reputation to yourself?
    - It's your time - It's your responsibility

# How To Be Recognized and Promoted For Your Technology-Enhanced Education Work

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# Introduction

---

**"The worst thing that can happen for a Promotion and Tenure committee is to not have data, and the second worst is to have a disorganized dossier."**

**- Interview comment from Simpson et. al. Acad Medicine, 2004**

- **Our goal**
  - **Help you to gather and organize your**  
**"Evidence of educational scholarly achievements"**  
**...and thus help you to manage your career**

# Uses of the Educator's Portfolio

---

- For self-reflection and learning
- In the promotion and tenure process
- To assist in advising and mentoring others
- To empower diversity in scholarship
- For "overcoming universal entropy"

# What You Need From Your Education Web Site / App / eBook for Your Educator's Portfolio

---

- **Why create an education Web site / eBook / App?**
  - To teach + enhance your reputation as educator
  - Is valid form of educational scholarship ~ Is a scholarly work
    - Counts towards promotion / tenure if documented
- **Documentation of scholarship**
  - Design ~ Build ~ Utilize ~ Evaluate ~ Refine
  - **Traditional metrics for scholarly works**
    - Grants obtained
    - Peer-reviewed articles published
  - **Evolving metrics for scholarly works ~ Web 1.0 metrics**
    - Peer reviews conducted by organizations
      - AAMC MedEdPORTAL, ACGME, Merlot
    - Reviews published in print journals
    - Awards
    - Bibliometric analysis / Impact factor
    - Web statistics ~ overall usage: pages read / visitors
    - Users comments (fan mail = true peer review)



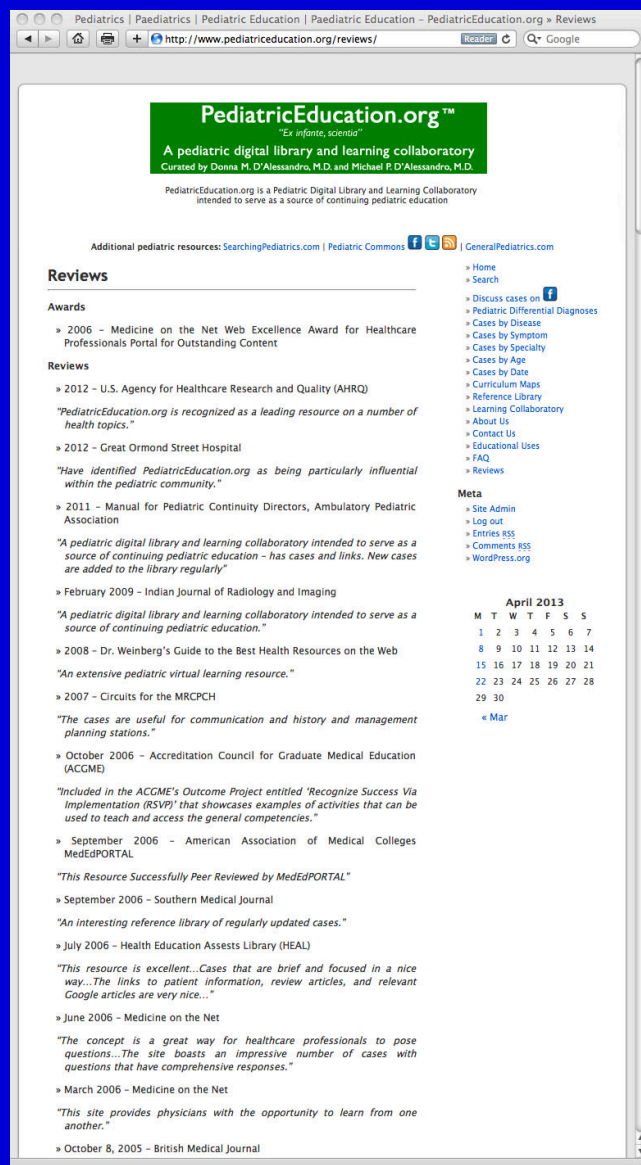
# Three Step Approach to Data Gathering

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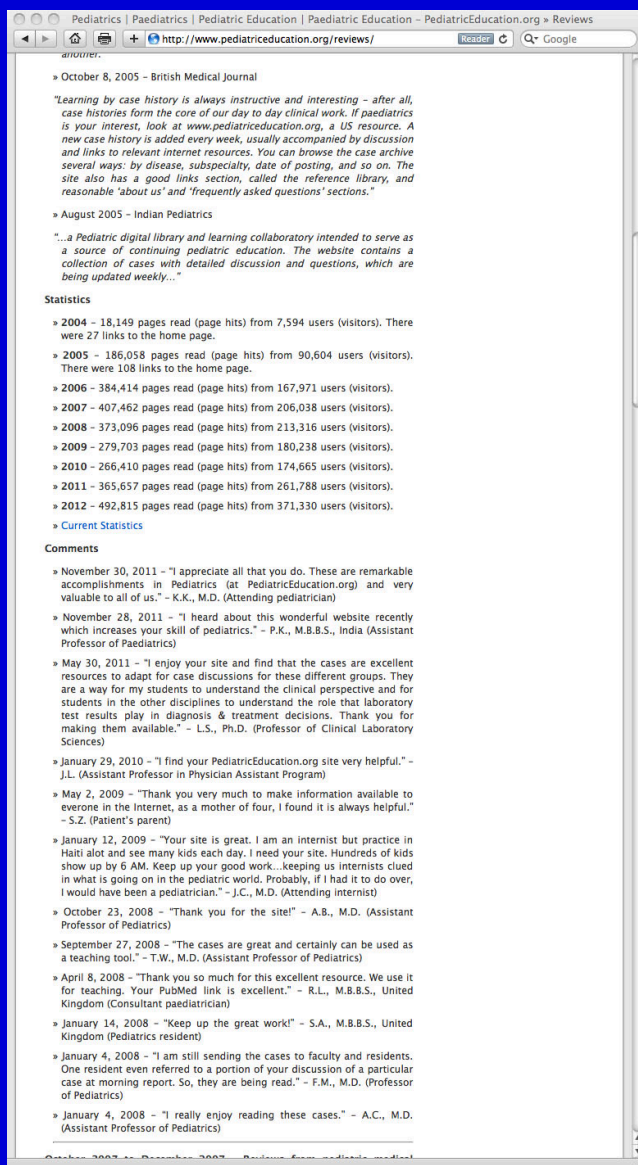
- **Install Tools to Gather Data (Step 7)**
- **Publicity and Marketing (Step 8)**
- **Evaluation and Continuous Quality Improvement (Step 10)**

# Results of Evolving Metrics = Peer Review By Quantitative Acclimation

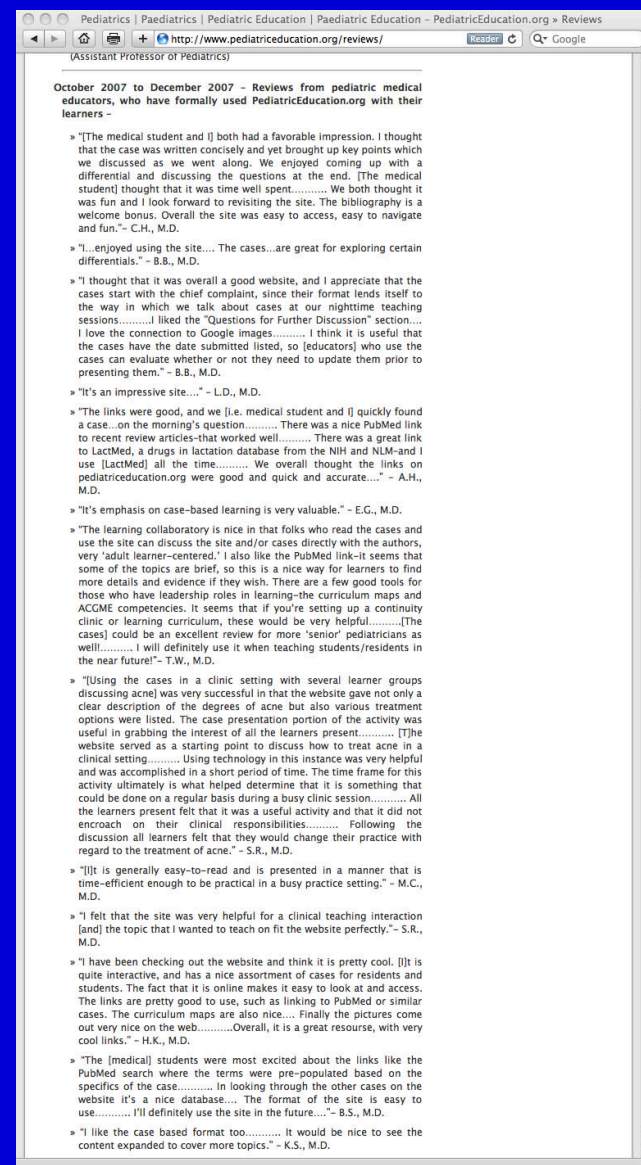
(What You Need From Your Educator's Portfolio For Your Medical Education Web Site / App / eBook)



The screenshot shows the homepage of PediatricEducation.org. At the top, there's a navigation bar with links to Pediatrics, Paediatrics, Pediatric Education, and Paediatric Education. Below this is a search bar and a Google logo. The main content area features a large green banner with the site's name and tagline "Ex infante, sonio". Below the banner, there's a section for "Additional pediatric resources" with links to SearchingPediatrics.com, Pediatric Commons, and GeneralPediatrics.com. The "Reviews" section is highlighted, showing a list of reviews from various sources, including the Net Web Excellence Award for Healthcare Professionals Portal for Outstanding Content, the U.S. Agency for Healthcare Research and Quality (AHRQ), and the Great Ormond Street Hospital. A calendar for April 2013 is also visible, showing a grid of dates.



The screenshot shows the reviews page of PediatricEducation.org. It features a list of reviews from various sources, including the British Medical Journal, Indian Pediatrics, and the American Association of Medical Colleges. The reviews are organized by date, with the most recent at the top. A "Statistics" section is also present, showing the number of pages read and hits for various categories. The "Comments" section at the bottom contains a list of user comments, including one from a pediatrician who praised the site's content and another from a medical student who found it helpful for clinical practice.



The screenshot shows the reviews page of PediatricEducation.org, continuing the list of reviews from the previous page. It includes reviews from the Assistant Professor of Pediatrics, the American Association of Medical Colleges, and the American Association of Medical Colleges. The reviews are organized by date, with the most recent at the top. The "Comments" section at the bottom contains a list of user comments, including one from a pediatrician who praised the site's content and another from a medical student who found it helpful for clinical practice.

[www.pediatriceducation.org/reviews.html](http://www.pediatriceducation.org/reviews.html)

# Altmetrics

## Web 2.0 metrics

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- **Bibliometrics = traditional techniques for measuring scholarly impact**
  - Citations, h-index, i10-index
- **Altmetrics = alternative metrics of measuring scholarly impact**
  - Creation and study of new metrics based on the social Web for analyzing and informing scholarship ~ [Altmetrics.org](http://Altmetrics.org)
  - Measures Web-driven scholarly interactions
    - How often are research products cited, downloaded, shared, viewed, mentioned, blogged, tweeted, bookmarked, commented on, liked, etc.
  - Example research products being measured
    - For published articles in PubMed, et.al.
    - For software in GitHub
    - For dataset in Dryad or figshare
    - For slides in SlideShare
    - For any Web site or Web resource

# Your First Step Towards Altmetrics ImpactStory.org

The image displays three screenshots of the ImpactStory.org website, illustrating how it tracks and displays altmetrics for a user's publications. The user profile shown is for Michael D'Alessandro.

**Left Screenshot:** Shows the user's profile page. It lists 112 products (expand all) and provides options to add products, refresh metrics, and download. The page is categorized into 'article', 'slides', and 'webpage' sections. Each item includes a title, a brief description, and a 'highly cited' or 'highly saved' badge. For example, 'The networked multimedia textbook: distributing radiology multimedia information across the Internet' is highly cited.

**Middle Screenshot:** Shows a list of publications under the 'slides' category. Each item has a 'recommended' badge and a 'viewed' button. For example, 'Lessons Learned In Radiology Research And Academia: A Radiologist's Odyssey In Making The Future Of Radiology' is recommended.

**Right Screenshot:** Shows a list of publications under the 'webpage' category. Each item has a 'discussed' badge and a 'saved' button. For example, 'Connecting your radiology learning to your clinical practice' is discussed.

The bottom of the page features a footer with links to 'About', 'Our team', 'FAQ', 'Follow', 'Twitter', 'Blog', and 'Facebook'. It also includes the logo of the Alfred P. Sloan Foundation.

5 minutes to set up if you have Google Scholar Profile

Results of Altmetrics = Peer Review By Quantitative Acclimation

# Bibliometric Analysis

- Digital library scholarship can be measured using traditional metrics such as grants obtained for it and peer-reviewed articles published about it as well as evolving metrics such as peer reviews conducted by organizations, reviews published in journals, bibliometric analysis, overall usage of it, and comments from users.
- In traditional print publishing, through bibliometric analysis performed by Thomson-Scientific, each journal article and each journal can be assigned an impact factor, which is a measure of authority, based upon the number of citations each receives from other journal articles. Web publishing has quickly evolved in an identical manner, and through bibliometric analysis each Web page and each Web site can be assigned an impact factor, which is a measure of authority, based upon the number of links each receives from other Web pages. Additionally, it has been shown that the impact factor of electronic editions of print journals on the Web correlates significantly to the impact factor of the print edition of the journal.
- The top three search engines (Google, Yahoo!, Bing) account for 90% of all searches on the Internet, each using a unique and proprietary algorithm to perform their bibliometric analyses. The end result is that the Web pages and Web sites with the highest impact factors are listed first in the results returned by a search engine for a given term.
- Today, the Internet is rapidly becoming the most common place that answers are sought to questions in many domains, including medicine. Most users (60%) doing a search never look beyond the first page of search engine results (first 10 hits) and an additional 30% of users never look beyond the first three pages of results (first 30 hits). Therefore, being on the first page of results for a given search term is a highly influential place to be.
- For the last several years, for the search engine terms "anatomy atlas," "biodefense," "medical student," "naval medicine," "pediatric education," "pediatric radiology" and "radiology education" my respective digital libraries BiodefenseEducation.org / MedicalStudent.com / Virtual Naval Hospital / PediatricEducation.org / PediatricRadiology.com and RadiologyEducation.com are consistently displayed on the first page of search results / first 10 hits for each of the top 3 search engines. This means that for these search engine terms, my digital libraries have the highest impact factors on the Internet and are therefore amongst the top 10 authoritative Web sites on these subjects.

# Questions for Further Discussion

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- What steps do you like?
- What steps do you dislike?
- What steps need to be improved?
- What steps need to be added?

# Reading Assignments

---

- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

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- **Non-fiction**
- **Fiction**
- **Movies**

# Conclusion

---

**"The easiest way to predict the future is to invent it  
Build what you use. Use what you build.  
You let what you build change you, then you move on"**  
- Xerox Palo Alto Research Center (PARC)

# Topic 6

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- **Case Studies in Digital Libraries**

# Thematic Quote

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**"Nothing succeeds like success."**

**- Sir Arthur Helps, writer**

# The Painting

---

**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

---

- **Name**
  - US Marine command coin
  - Middle Eastern Keffiyeh
- **Year**
  - 2000's
- **Story**
  - Gifts from grateful users

# The Question

---

**Is the Ten Step Approach generalizable?**

# Introduction

## Educational Informatics Laboratory

---

- **Laboratory Goal**

- To improve patients' care, outcomes and lives;
- By changing physician's knowledge, attitudes, and behaviors;
- Through the creation and evaluation of tools, techniques, and procedures that shift learning from the classroom and lecture hall to the point-of-care.

- **Laboratory Description**

- Educational informatics is the application of computers to education.
- We wish to gain a deeper understanding of learning and to develop new computational tools to think with - that is new computational tools that help people learn new things in new ways.
- Since 1989 we have pioneered the development in medicine of digital textbooks, digital libraries, institutional repositories and communities of practice. Our work spans the pre-Web, browseable Web, searchable Web, and social Web. We are internationally recognized as experts in the design, creation, curation, operation and evaluation of digital libraries and communities of practice.
- Our current research is focused on empowering physicians through learning tools that enhance learning at the point-of-care and documenting and preserving this learning to create a personalized learning environment / knowledge management / e-memory system for every physician.

- **Laboratory Results**

- Through these tools, we have practiced a form of intellectual philanthropy.
- The Internet serves an amplifier for us in that it allows the efforts of a few to have a global impact.
- Our learning tools help millions of learners each year.
- For many medical subjects, our digital libraries have the highest impact factors on the Internet and are therefore amongst the top 10 authoritative Web sites on these subjects.

# Before the Web

---

# Case Study

## Educational Technology Network (ETNet) - 1989-1994 Digital Library as filling station on information superhighway

---

- **Design**
  - **Planning**
    - Mission - Provide national online forum for discussion + dissemination of information on effective uses of computer technology in medical education
    - Audience - Developers + users of computer applications in health sciences education
    - Educational construct - Interdependent learning theory
    - Metrics for success - Achieve a vibrant community of practice
- **Creation**
  - **Technology**
    - Caucus computer conferencing software running on Compaq PC running Xenix at National Library of Medicine
    - Accessed first via dial-up Telenet network, then by SprintNet, then by Internet
  - **Page Style**
    - N/A - ASCII text on terminal emulator of 80 characters x 24 lines
  - **Metadata Style**
    - N/A
  - **Information Architecture**
    - Organized by category
  - **Tools to Gather Data**
    - Stats - Caucus' statistics
    - Communication - Discussion forums
    - Search engine - Caucus' search engine
- **Curation**
  - **Content creation strategy**
    - User-generated content

# Case Study

## Educational Technology Network (ETNet) - 1989-1994 Digital Library as filling station on information superhighway

---

- **Operation**
  - **Publicity and Marketing**
    - Described in journal articles, distributed flyers at meetings
  - **Regular Maintenance**
    - Daily - Verify new users, check new discussions for appropriateness, seed new discussions
    - Business model - Funded by National Library of Medicine as part of their mission of disseminating medical information to health science professionals
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - 227 users, 100 discussion items
    - Reviews - "We need something similar in Taiwan" - Taiwanese medical journal review by colleague of Dr. Liu, 1992
    - Awards - Recognized as one of the original medical Internet sites - The Whole Internet User's Guide and Catalog (First Edition), 1994
  - **Outcome**
    - Allowed individuals who are geographically + temporally separated to unite electronically
    - Never reached critical mass of participants ~ Those who used it found the user interface to be unfriendly
- **Lessons Learned**
  - Too far ahead of its time - target community was too small and too few of those were online
  - Human factors are important in design of system - those who tried to use it found user interface confusing

# Case Study

## Educational Technology Network (ETNet) - 1989-1994

### Digital Library as filling station on information superhighway

```
TELNET etnet.nlm.nih.gov
```

```
Login etnet
```

```
                Welcome to E.T.Net  
                from  
The National Library of Medicine
```

```
The current list of conferences on E.T.Net is:
```

- \* general - for general discussion on computers in health sciences education
- \* cai - computer assisted instruction in all forms
- \* avline - a subset of the NLM's AVLINE database
- \* hardware - computers, peripherals, etc.
- \* shareware - a place to exchange health sciences shareware
- \* users\_guide - an online tutorial for new users of ETNet
- \* digital\_images - computing in radiology
- \* archive - online archive of ETNet Volume 1
- \* nucare - research in nursing care

```
All new users are urged to read the 'users_guide' conference once.  
If confused at any time, type 'HELP'  
To end your session and logoff, type 'BYE'
```

```
Michael D'Alessandro & Michael Ackerman
```

```
Please send your comments to:
```

```
E.T.Net  
The Learning Center for Interactive Technology  
Educational Technology Branch  
Lister Hill National Center for Biomedical Communications  
The National Library of Medicine  
8600 Rockville Pike  
Bethesda, MD 20894  
Phone:      (301) 496-0508 -- Ask for Dr. Susan Sparks  
FAX:        (301) 480-3035  
E-mail:     sandro@lhc.
```

[etnet.nlm.nih.gov](http://etnet.nlm.nih.gov)

# Case Study

## HyperLung + HyperAirway - 1991-1992

### Digital Library as digital textbook

---

- **Design**
  - **Planning**
    - Mission - Create multimedia textbooks that are easily updateable
    - Audience - Medical students, medical residents, practicing physicians
    - Educational construct - None
    - Metrics for success - Successfully distribute digital textbooks
- **Creation**
  - **Technology**
    - The Annotator, a HyperCard stack on Macintosh that served as a hypermedia authoring tool which created a HyperCard stack containing a digital textbook
  - **Page Style**
    - User interface should look + act like a book to make it easy for computer novices to use - do this by presenting hypermedia in linear rather than non-linear form
  - **Metadata Style**
    - N/A
  - **Information Architecture**
    - Organized by category
  - **Tools to Gather Data**
    - Stats - None
    - Communication - By phone
    - Search engine - HyperCard's search engine
- **Curation**
  - **Content creation strategy**
    - Author-generated content

# Case Study

## HyperLung + HyperAirway - 1991-1992

### Digital Library as digital textbook

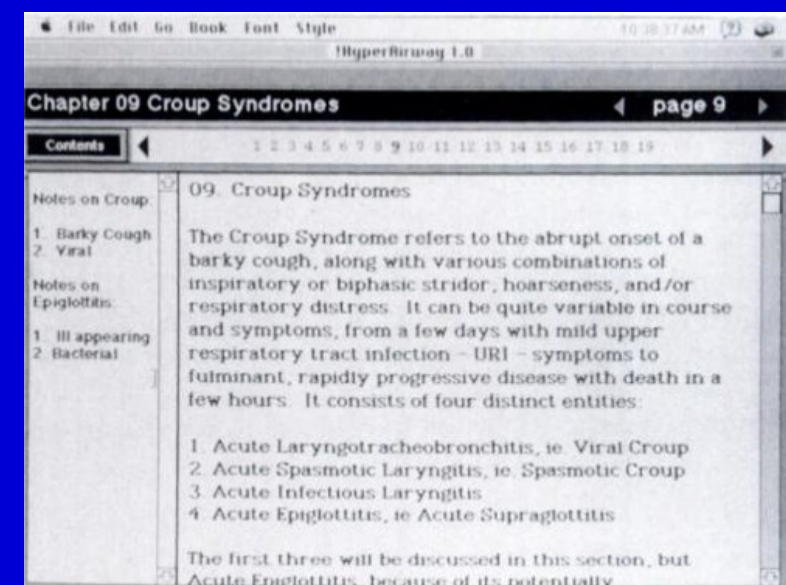
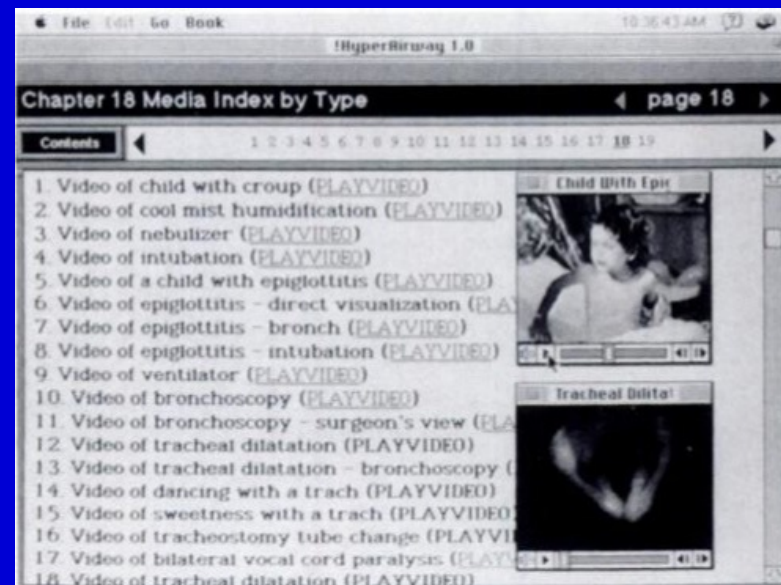
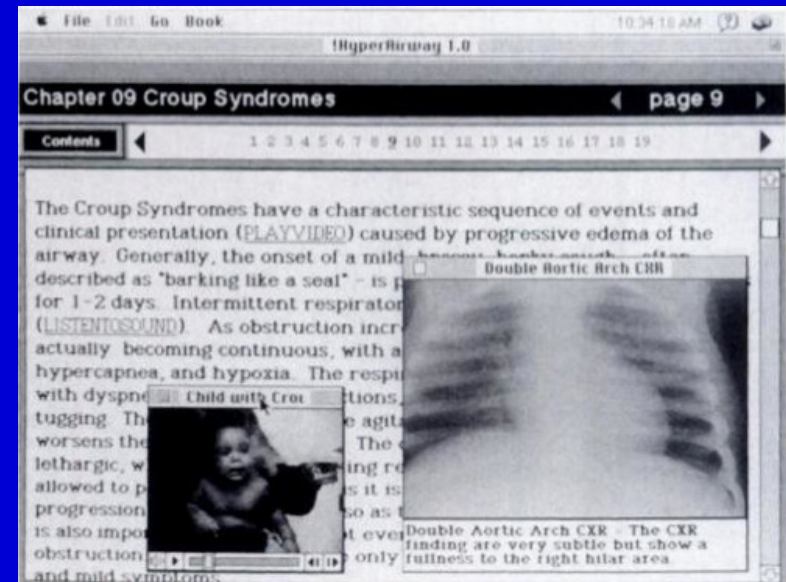
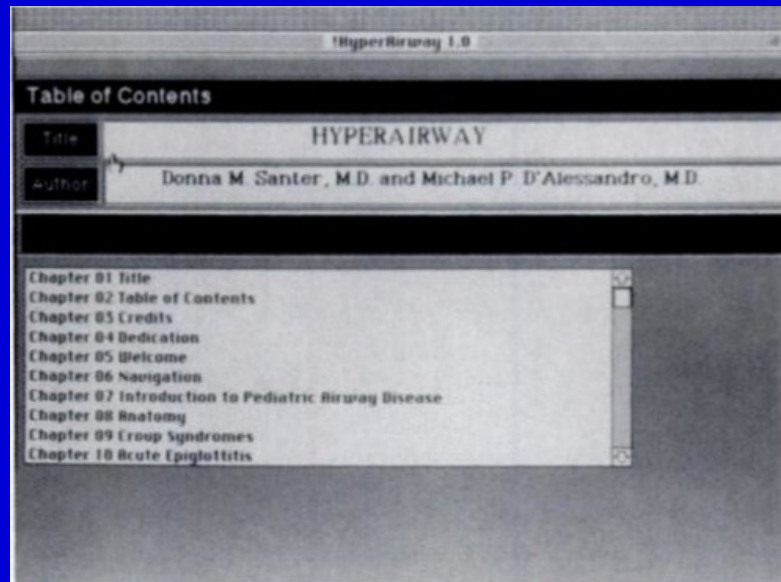
---

- **Operation**
  - **Publicity and Marketing**
    - Described in articles in journals, performed demos + distributed flyers at meetings
  - **Regular Maintenance**
    - Daily - None - published once on CD-ROM + never updated
    - Business model - Gave it away as technology demonstration + to share our vision + showcase our department
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - Distributed 1,000 CD-ROMs containing digital textbooks around the world via mail
    - Reviews - Our work was finally respected once we were reviewed in Reader's Digest
    - Awards - None
  - **Outcome**
    - First completely digital medical textbooks
    - Instructional effectiveness greater than that of lecture + same as that of printed textbook ~ Instructional efficiency of all three (lecture / printed textbook / digital textbook) the same
    - Became founding content of Virtual Hospital digital library
- **Lessons Learned**
  - You don't want to be providing tech support by phone for your products
  - You want to create textbooks to an open standard that is platform independent

# Case Study

## HyperLung + HyperAirway - 1991-1992

### Digital Library as digital textbook



Text

# Case Study

## Hitchhiker's Guide to Pediatric Imaging - 1993-1995

### Digital Library as eBook

---

- **Design**
  - **Planning**
    - Mission - Place digital book of radiology information at radiologist's fingertips for decision support at point-of-care
    - Audience - Physicians at all levels of training practicing pediatric imaging
    - Educational construct - Learning situated in practice
    - Metrics for success - How many were distributed
- **Creation**
  - **Technology**
    - Marked up text run through Newton Bookmaker with that output run through Newton Toolkit to create a Newton digital book
  - **Page Style**
    - Stanford Guidelines
  - **Metadata Style**
    - N/A
  - **Information Architecture**
    - Organized by category
  - **Tools to Gather Data**
    - Stats - None
    - Communication - By email
    - Search engine - Newton search engine
- **Curation**
  - **Content creation strategy**
    - Author-generated content, adapted from Paediapaedia textbook on Virtual Hospital digital library

# Case Study

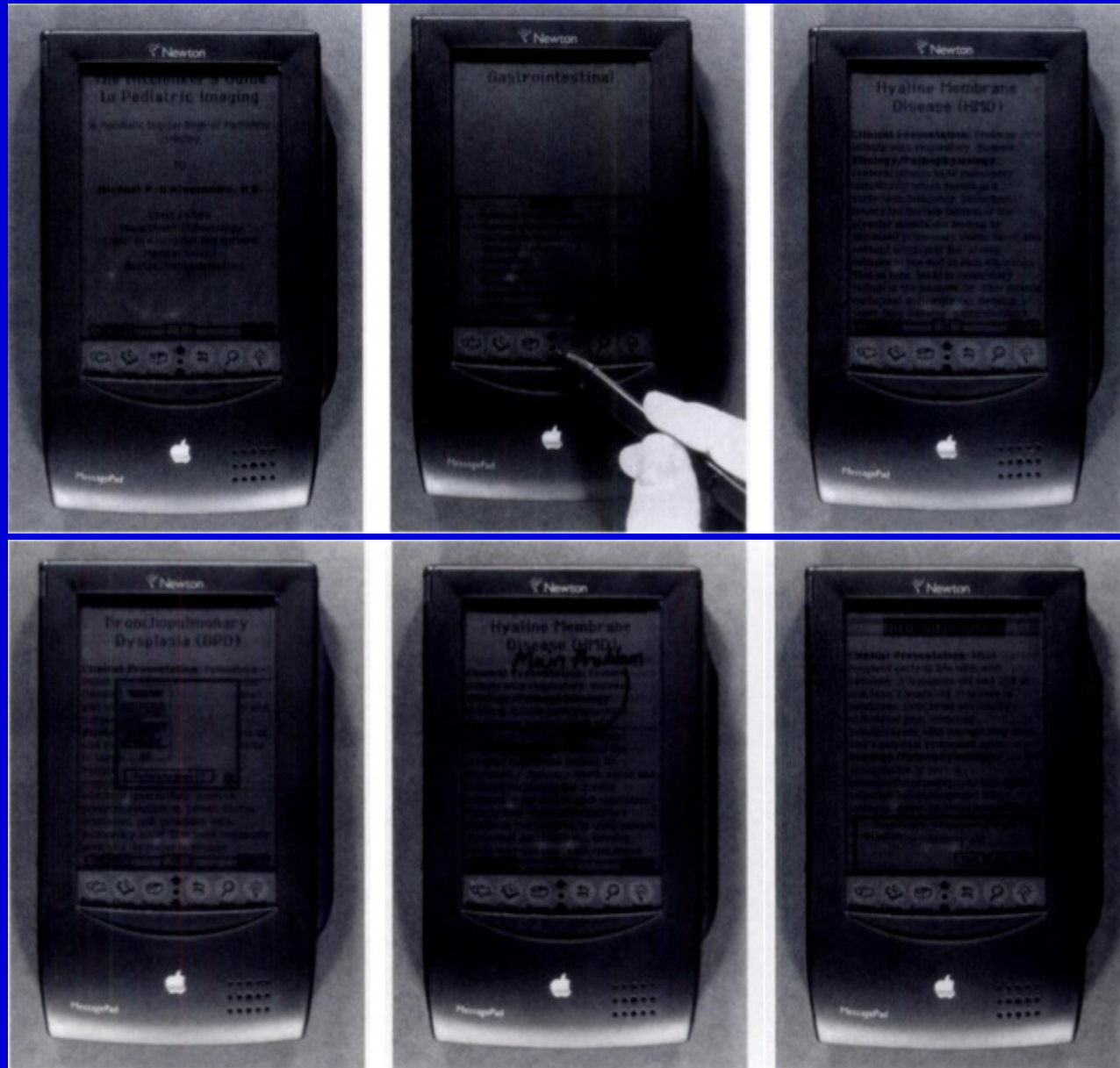
## Hitchhiker's Guide to Pediatric Imaging - 1993-1995 Digital Library as eBook

---

- **Operation**
  - **Publicity and Marketing**
    - Described in articles in journals, performed demos + distributed flyers at meetings
  - **Regular Maintenance**
    - Daily - None - published once, never updated
    - Business model - Self funded at \$0 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - Used by author, distributed a few copies including one to Australia
    - Reviews - "The use of handheld digital books in radiology was first pioneered by Michael D'Alessandro and colleagues in the mid-1990s." - Clinical Radiology, 2006
    - Awards - None
  - **Outcome**
    - First radiology eBook
    - "If a tree falls in a forest and no one is around to hear it, does it make a sound?"
- **Lessons Learned**
  - Don't develop for a platform your target audience doesn't use

# Case Study

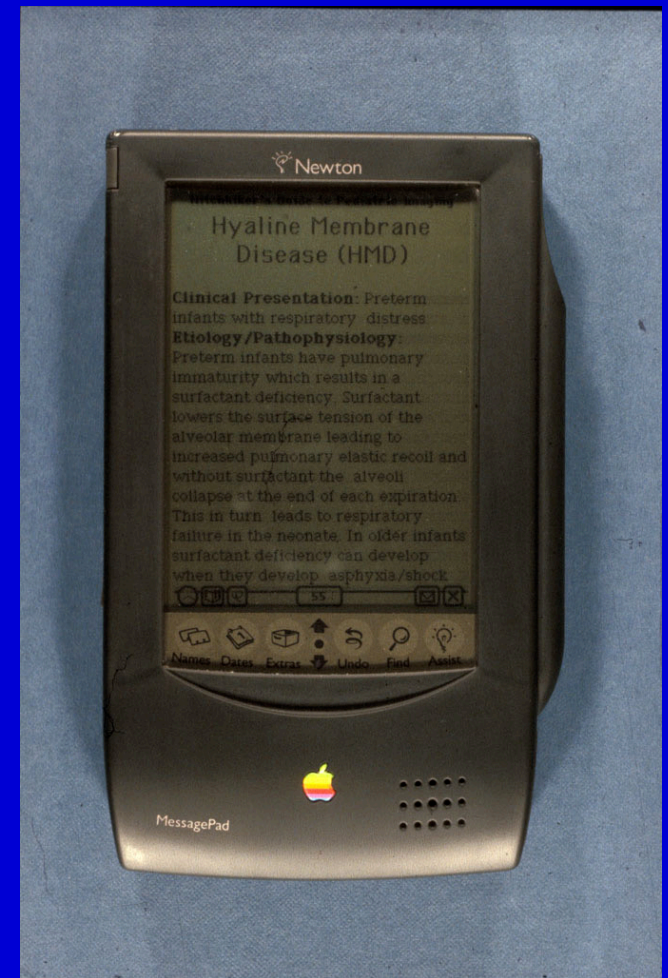
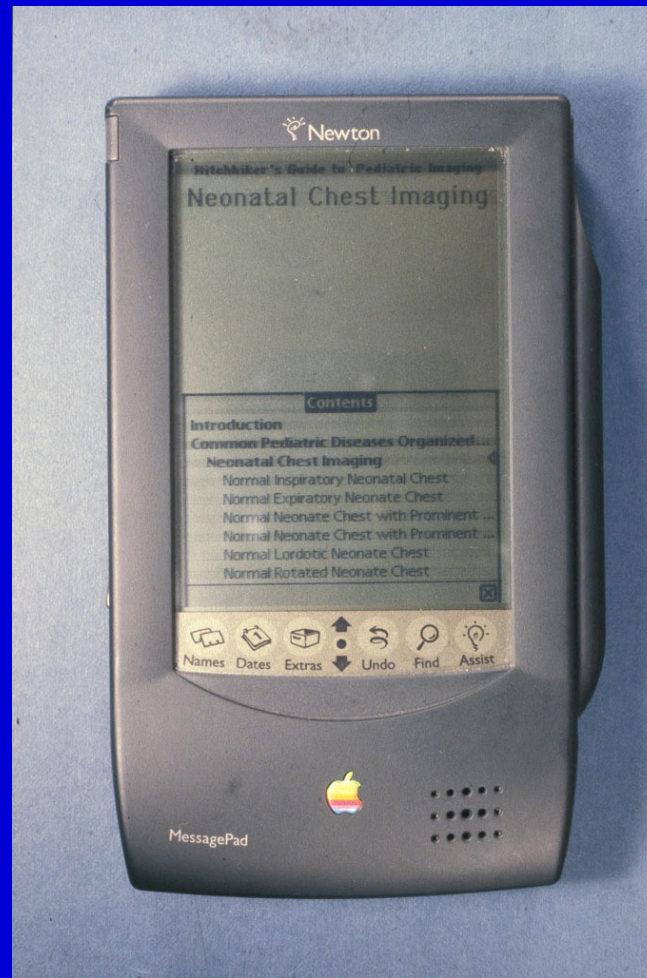
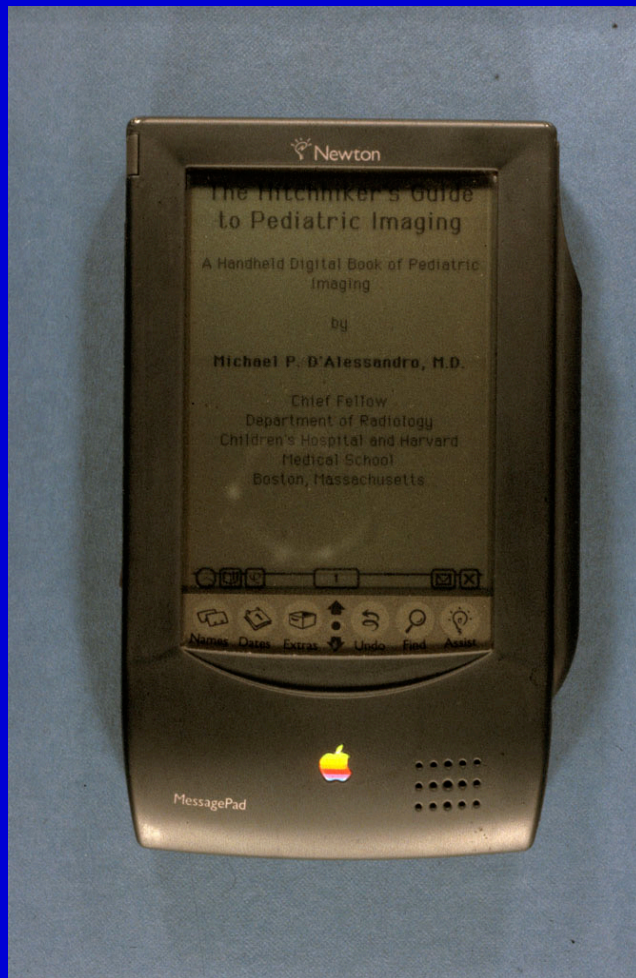
## Hitchhiker's Guide to Pediatric Imaging - 1993-1995 Digital Library as eBook



# Case Study

## Hitchhiker's Guide to Pediatric Imaging - 1993-1995

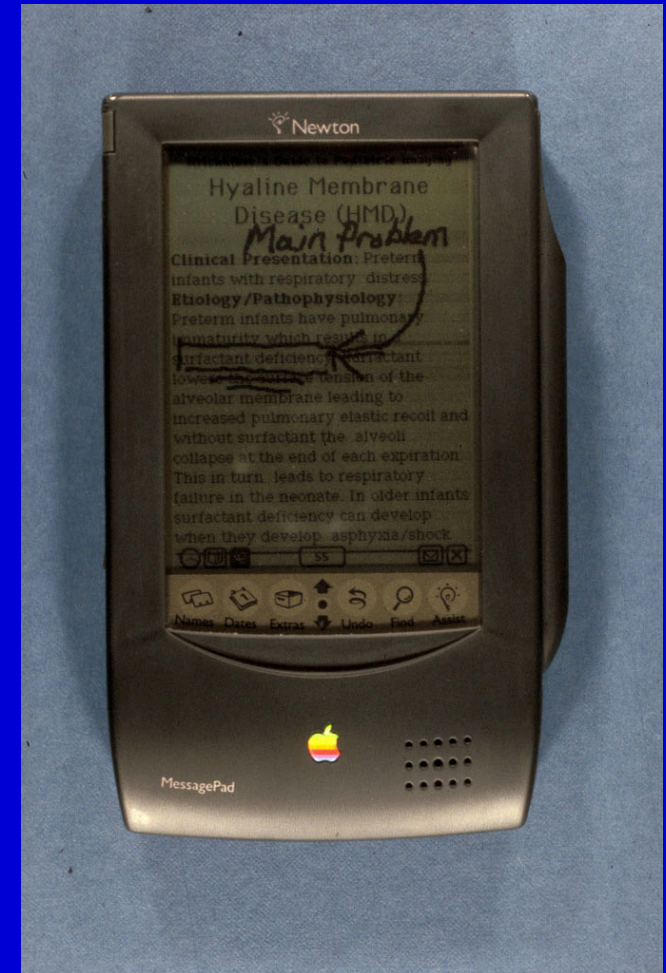
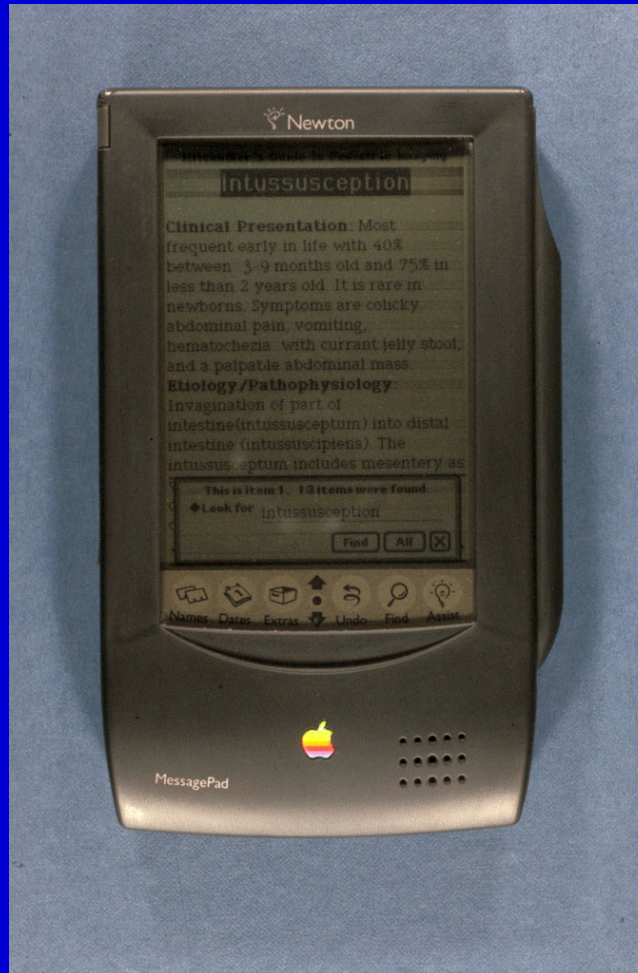
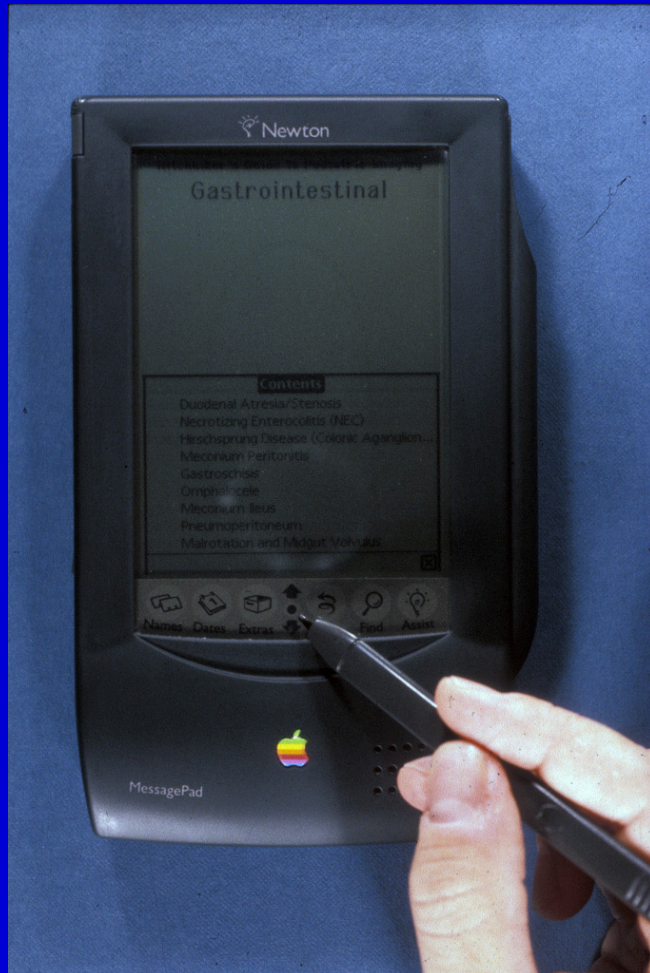
### Digital Library as eBook



Text

# Case Study

## Hitchhiker's Guide to Pediatric Imaging - 1993-1995 Digital Library as eBook



Text

# Browseable Web

---

# Case Study

## Virtual Hospital - 1992-2005

### Digital Library as digital press / Digital library as institutional repository

---

- **Design**
  - **Planning**
    - Mission - Be the premier source of medical educational information on Internet ~ Task is to present information to users rather than eyeballs to advertisers ~ Shared same mission as Lord Reith had for BBC: to inform, educate, entertain
    - Audience - Health care providers and patients
    - Educational construct - Learning situated in practice
    - Metrics for success - Help people learn about medicine
- **Creation**
  - **Technology**
    - Dynamic Web site ~ 19,000 pages, 15,000 images, 530 movies, 18 audio files ~ Hosted at University of Iowa
    - Bit refinery for digitizing - Macintosh, OmniPage Professional for optical character recognition, Adobe PageMill -> Claris HomePage -> BareBones BBEdit for markup, Adobe Photoshop for images, Adobe Premiere for video
    - Distribution - Unix NeXT Station personal computer -> Apple Work Group Server 95 -> IBM RS-6000 server + RAID with Netscape Commerce Server -> Sun server + Solaris -> Generic x86 server + LAMP (Linus, Apache, MySQL, PHP)
    - Global mirroring of library via Cobalt Qube + rsync in Australia, Iceland, Japan, Korea, Taiwan, Venezuela
  - **Page Style**
    - Stanford Guidelines with minimalist graphics - Clearly displays accountability for content, makes content easily accessible, makes digital library feel quick + responsive to user, makes navigation intuitive
  - **Metadata Style**
    - Search engine optimization at site level
  - **Information Architecture**
    - Organized by hierarchy and by category and by alphabetically (librarian-based) + Problem-based interface of 50 most common medical problems for patients + providers
    - Textbooks indexed alphabetically by title, organ system, medical discipline, author, type of information
  - **Tools to Gather Data**
    - Stats - Analog, Webalizer, Wusage
    - Communication - By comment forms + email ~ Cries for help from patients given automated response directing them to local + Web resources to help them answer their questions
    - Search engine - Glimpse -> ht://dig -> Google Custom search engine

# Case Study

## Virtual Hospital - 1992-2005

### Digital Library as digital press / Digital library as institutional repository

---

- **Curation**

- **Content creation strategy**

- Content Providers Cooperative - 350 faculty authors in 26 departments in 5 colleges recruited to digital press + produced 2,000 textbooks / booklets ~ Content peer reviewed ~ Received yearly book reports on their content usage + comments ~ Yearly newsletter on whole project
    - Content licensed from author through Author's Agreement giving them ownership of content + University a non-exclusive license to it
    - Content peer review boards in Internal Medicine, Pediatrics, Nursing
    - Translation of content a challenge - machine translation was cheap but bad + human translation was expensive and good so little was translated
    - Overseen by Board of Directors with representation from College of Medicine, University Hospitals, University Legal, University Health Science colleges

- **Operation**

- **Publicity and Marketing**

- Standard guerilla marketing on Web developed for this site

- **Regular Maintenance**

- Daily - Broken links found with LinkLint + fixed, answer all emails, handle rights management requests
    - Business model - Funded initially by Department of Radiology -> Funded by grant from National Library of Medicine -> Funded by University of Iowa Health Care because University is a knowledge factory: "It is a university's task to advance knowledge, and to diffuse it not merely among those who can attend the daily lectures, but far and wide." - Daniel Coit Gilman, founder of first university press at Johns Hopkins University

# Case Study

## Virtual Hospital - 1992-2005

### Digital Library as digital press / Digital library as institutional repository

- **Evaluation**

- **Evaluation and Continuous Quality Improvement**

- Usage - At peak: 13 million users read 59 million pages per year, 33% usage outside USA
    - Reviews - Journals in Anesthesia, Family Medicine, Internal Medicine, Medical Informatics, Nursing, Orthopaedics, pathology, Pediatrics, Podiatry, Radiology, Surgery claimed it to be amongst best Web sites in their specific field
      - "(The Virtual Hospital) is an example of the potential for the World Wide Web in medical education...."- The Lancet, 1995
      - "The Virtual Hospital is one of the best medical sites and a compelling demonstration of the Internet's potential to impact medical training and practice." - JAMA, 1996
      - The Virtual Hospital was listed as one of 10 "sites that your doctor might even recommend." - Time, 1996
      - "(the Virtual Hospital is) Fascinating--you can walk through a diagnosis." - Regis McKenna, 1996
      - Virtual Hospital listed as one of nine "Suggested Consumer Health Information Sites" on the Internet. - JAMA, 1998
      - "The Virtual Hospital contains digital versions of hundreds of medical textbooks...in essence, it opens the bookshelves of the staff to the world." - New York Times, 1999

- **Awards**

- Exhibition entitled "The Networked Planet: Traveling the Information Highway" featured Virtual Hospital - The Computer Museum, 1995
    - One of the best on the Internet when reviewed for quality, accuracy of content, presentation and usability - Britannica.com, 2000
    - One of the top Science sites on the Internet - British Broadcasting Corporation, 2000
    - Sci/Tech Web Award - Scientific American, 2001

- **Outcome**

- First medical Web site, 250th Web site overall ~ Accounted for first mention of "World Wide Web" in MEDLINE biomedical literature database in February 1994 ~ Apollo astronaut planting flag on the moon: we were there first
  - Result was a unique, author-owned, international mirrored university digital library + press that served as an authoritative medical reference + education tool for users around the world

# Case Study

## Virtual Hospital - 1992-2005

### Digital Library as digital press / Digital library as institutional repository

---

- **Lessons Learned**

- In order to successfully introduce new computing tool for physicians you must 1) provide compelling reason for its use, 2) seamlessly integrate the tool into professional's workflow, 3) tool must be easy to use + you must provide training
- To be of optimal assistance to users, digital health sciences libraries should 1) contain broad base of information on common and uncommon medical problems, 2) accommodate the needs of the significant percentage of users that are international through content translation and mirroring, 3) ensure they are indexed and catalogued in the major Web search engines and Web general and medical indices so they can be easily found by users
- University digital libraries have four key features to distinguish them from for-profit digital libraries - 1) they are free + open to all thus lowering barriers to access + their usage is anonymous guaranteeing patron privacy, 2) they emphasize primarily information for health care providers which patients can graduate to, 3) they have commitment to publishing complete medical reference + education textbooks as well as booklets, 4) they are free from pressures from advertisers
- Go with open standards and cross-platform multimedia solutions which allows scalability, interoperability, modifiability
- Text is key annotated with media for speed ~ Less is more
- Minimalist graphics with user interface of books + library to make it easy to use and understand for computer novices
- Was a mechanical Web site that did not rely on plug-ins like a Rolleiflex camera does not rely on batteries
- Build simple systems + let complex behaviors / problems emerge + then find solutions (intellectual property, mirroring)
- Reason this model not widely replicated is that faculty + universities undervalue their intellectual property. To get ahead at university, university forces faculty to give away intellectual property to publishers...thus publishers still prevail today

# Case Study

## Virtual Hospital - 1992-2005

### Digital Library as digital press / Digital library as institutional repository

Virtual Hospital Home Page

Virtual Hospital®  
the apprentice's assistant™

Welcome to Virtual Hospital

For Healthcare Providers

For Patients

Common Problems

Beyond Virtual Hospital

University of Iowa Health Care

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Outline Search Virtual Children's Hospital Continuing Education Informm Healthnet

Virtual Hospital® is the Apprentice's Assistant (TM) and is a service of [University of Iowa Health Care](#).

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Please help the Virtual Hospital to better serve your needs by completing this [brief survey](#).

- [Welcome to Virtual Hospital](#)  
Look here to learn how to use Virtual Hospital, find out what's new, and discover who we are.
- [For Healthcare Providers](#)  
Look here for educational materials for healthcare providers in the form of multimedia textbooks, teaching files, patient simulations and lectures.
- [For Patients](#)  
Look here for the Iowa Health Book of educational materials for patients and families in the form of brochures and books.
- [Common Problems](#)  
Look here for information for health care providers and patients on common medical problems.
- [Beyond Virtual Hospital](#)  
Look here for information about the University of Iowa, its Health Sciences Colleges, Hardin Library for the Health Sciences, and links to other Internet health sciences resources.
- [University of Iowa Health Care](#)  
Look here for information about University of Iowa Health Care.
- [Virtual Children's Hospital](#)  
Look here for pediatric-related information from the Children's Hospital of Iowa.
- [Continuing Education](#)  
Look here for on-line continuing education courses for healthcare providers.
- [INFORMM \(requires password & 3270 terminal emulation\)](#)  
For authorized University of Iowa students, faculty and affiliates only. Micromedex, a pharmaceutical database dealing with drugs and drug interactions, is available to UI Health Care staff only. Providers who have referred patients to the UI Health Care can also find information about those patients.

Pediatrics | Pediatric | Radiology - Virtual Hospital: A digital library of health information

Virtual Hospital®  
a digital library of health information

Virtual Children's Hospital Site Map Mirror Sites Search

For Providers: Health Topics A - Z Textbooks

For Patients: Health Topics A - Z Textbooks

About Us Continuing Education Translations Links Support Us

For Providers

Scores of medical textbooks:

- [By Topic](#)
- [By Specialty](#)
- [By Body Location/Systems](#)
- [By Symptom](#)

Highlights:

- [Family Practice Handbook](#)
- [Anatomy Resources](#)
- [Patient Simulations](#)
- [Radiology Resources](#)

For Patients

Hundreds of patient booklets:

- [By Topic](#)
- [By Specialty](#)
- [By Body Location/Systems](#)
- [By Symptom](#)

Highlights:

- [Aging Begins at 30](#)
- [Pediatrics Common Questions, Quick Answers](#)
- [Preventing Disease and Staying Healthy](#)

For Other Constituents

Teaching and reference resources for:

- [K-12 Teachers and Students](#)
- [Medical Students](#)
- [Medical Specialists](#)
- [Health Reporters](#)
- [Users of PDAs](#)

New content was added to this library on May 26, 2005--see [What's New](#).

October Health Spotlight

- [Breast Cancer](#)
- [Brain Injury](#)
- [Fire Safety](#)
- [Domestic Violence](#)

Health Topics in the News

- [Mixing Herbs and Rx](#)
- [Plastic Surgery](#)
- [Anxiety Disorders](#)

Our Author of the Month

[Mary Nettelman, M.D., M.S.](#)  
Her travel medicine book addresses patients on the go.

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<http://www.vh.org/index.html>

[www.vh.org](http://www.vh.org) (via Internet Archive)

# Case Study

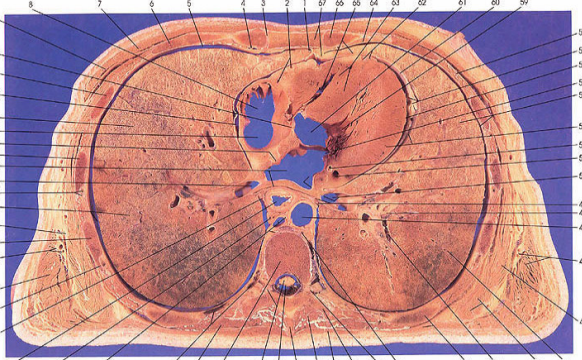
## Virtual Hospital - 1992-2005

### Digital Library as digital press / Digital library as institutional repository

Virtual Hospital: Atlas of Human Anatomy in Cross Section: Section 3. Middle Thorax (Heart and Lungs)

**Plate 3.5**

Ronald A. Bergman, Ph.D., Adel K. Afifi, M.D., Jean J. Jew, M.D., and Paul C. Reimann, B.S.  
Peer Review Status: Externally Peer Reviewed



| Upper Left Quadrant                            | Lower Left Quadrant                                    | Lower Right Quadrant                      | Upper Right Quadrant   |
|--|--|---|--|
| 1. Costomediastinal recess                     | 19. Intercostal neurovascular bundle                   | 36. Semispinalis dorsi and multifidus mm. | 50. Lung, left upper lobe, lower division (lingular) inferior segment, and left pulmonary v. |
| 2. Right coronary a. and v. in coronary sulcus | 20. Lung, right lower lobe, superior segment           | 37. Trapezius m.                          | 51. Coronary sinus, pulmonary interlobar (oblique) fissure                                   |
| 3. Costosternal articulation, synovial joint   | 21. Long thoracic nerve and lateral thoracic a. and v. | 38. Vertebral transverse process (T8)     | 52. Left coronary a., circumflex br.   |
| 4. Internal thoracic a. and v.                 | 22. Rib 7  | 39. Spinal nerve ganglion                 | 53. Left ventricular myocardium, cardiac fossa   |
| 5. Pleural cavity                              | 23. Thoracodorsal nerve and thoracodorsal a. and v.    | 40. Hemiazzygos v.                        | 54. Lung, left lower lobe, superior segment, and parietal pleura                             |
| 6. Rib 4                                       | 24. Latissimus dorsi m.                                | 41. Rib 8 and latissimus dorsi m.         | 55. Mitral valve, ostium   |
| 7. Pectoralis major m.                         | 25. Intercostal neurovascular bundle in costal groove  | 42. Left pulmonary v. br.                 | 56. Epicardium (visceral pericardium)  |
| 8. Right atrium                                | 26. Right vagus and esophageal plexus                  | 43. Teres major m.                        | 57. Pericardial fat, pericardial and pleural cavities  |
|  |  | 44. Lung, left lower lobe                 | 58. Intercostal mm.  |

Virtual Hospital: Illustrated Encyclopedia of Human...vascular System: Veins: Abdomen: Inferior Vena Cava

**Inferior Vena Cava**

Ronald A. Bergman, PhD  
Adel K. Afifi, MD, MS  
Ryosuke Miyauchi, MD  
Peer Review Status: Internally Peer Reviewed

The inferior vena cava, in cases of transposition of the viscera (0.2-0.5% of individuals), may lie on the left side of the aorta. It may also lie to the left of the aorta, without visceral transposition, crossing to the right to gain the caval opening immediately below the diaphragm. It may also cross over after receiving the left renal vein. When the inferior vena cava is doubled, the left cava usually passes across the aorta into the right after receiving the left renal vein. In this case, there may be a communication between the right and left veins in the position of the normal left common iliac vein.

The inferior vena cava may join with the azygos vein to enter the superior vena cava. In this case, the hepatic veins open independently into the right atrium.

The inferior vena cava may be doubled (2.2-3.0% of cases) or it may be absent.

If the inferior vena cava is absent, the blood from the lower limbs may pass through the diaphragm into the superior vena cava by way of a large vein in the location of the ascending lumbar and azygos veins. As a result, the hepatic veins drain directly into the right atrium through the normal caval opening in the diaphragm.

The inferior vena cava may receive the left spermatic vein. On occasion it receives a left accessory renal vein that passes behind the aorta. It is into this vessel that the usual tributaries of the left renal vein may open.

The right ureter has been found passing behind the vena cava; it may receive several accessory renal veins, and as many as seven on each side have been seen. The lumbar veins may enter the inferior vena cava on one or both sides as a common trunk.

It should be noted that any venous channel returning blood through the aortic hiatus of the diaphragm is called a "persistent posterior cardinal vein."

The inferior vena cava may be unusually short (about 6 cm) and may be formed from three roots.

[Image 106](#), [Image 170](#), [Image 195](#), [Image 209](#), [Image 216](#), [Image 374](#), [Image 418](#), [Image 419](#), [Image 426](#)

**Doubled**

See [Image 106](#), [Image 224](#), See [Image 374](#), [Image 375](#), [Image 404](#)

**Left Persistent**

[Image 169](#), See [Image 195](#), See [Image 209](#), [Image 210](#), [Image 214](#), See [Image 216](#), [Image 260](#), [Image 373Y](#), See [Image 374](#), See [Image 375](#)

**Transposition**

Virtual Hospital: Lung Tumors: A Multidisciplinary Database

**Lung Tumors: A Multidisciplinary Database**

**Editors:**

**Jeffrey R. Galvin,\* M.D.**  
Professor  
Department of Radiology

**Michael W. Peterson,\*\* M.D.**  
Professor  
Department of Internal Medicine

**Associate Editors:**

**Natisha P. Busick, B.S.**  
**Peter C. Fretz, B.S.**

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\*\* Currently Professor, Department of Internal Medicine, University of California-Fresno

Peer Review Status: Internally Peer Reviewed  
Creation Date: August 1996  
Revision Date: August 1999

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Sponsored by the University of Iowa College of Medicine Departments of Medicine, Radiology, Surgery, and Pathology; and by the University of Iowa Hospitals and Clinics Department of Pharmaceutical Care.

[Awards, Reviews and Comments](#)

**Interactive Diagnostic Aids**

- [Staging Tool](#) - An interactive device that allows you to stage your patients.
- [Nodule Tool](#) - Predicts risk of malignancy in solitary pulmonary nodules.

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- [View Case Studies by Category](#)

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  - [Introduction](#)
  - [Clinical Presentation and Initial Evaluation](#)

www.vh.org (via Internet Archive)

# Case Study

## Virtual Hospital - 1992-2005

### Digital Library as digital press / Digital library as institutional repository

Virtual Children's Hospital: Orthopaedics

file:///RetiredSites/FinalVH+VNH/Sites/VHCompleteFromWidener/

Children's Virtual Hospital®  
a digital library of pediatric information

Virtual Hospital Site Map Mirror Sites Search

For Providers: Health Topics A-Z Textbooks

For Patients: Health Topics A-Z Textbooks

About Us Continuing Education Translations Links Support Us

### Treating Scoliosis with Posterior Spinal Fusion with Instrumentation

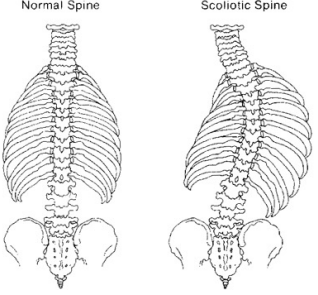
Departments of Nursing and Orthopaedic Surgery  
University of Iowa Hospitals and Clinics

Peer Review Status: Internally Peer Reviewed  
First Published: Unknown  
Last Revised: December 1999

You have developed a curvature of your spine called scoliosis. Scoliosis and other back problems are treated by a bone and joint specialist called an orthopaedic surgeon. The purpose of this booklet is to give you some information concerning scoliosis and possible treatments. We hope that knowing a little bit about scoliosis treatment will help you and your parents be better prepared for your visit with the orthopaedic staff

#### What is Scoliosis?

Scoliosis is a problem with your backbone, or spine, causing it to bend sideways and twist. Scoliosis can occur in either the upper back (thoracic), lower back (lumbar), or very rarely, in the neck (cervical region). Idiopathic scoliosis (scoliosis of an unknown cause) is the most common type of scoliosis in the United States. Eighty percent of diagnosed cases are of the idiopathic type. Idiopathic scoliosis is usually noticed at the onset of puberty and is more often seen in females. People with scoliosis often have uneven shoulders or hips, and a shoulder blade which sticks out. Changes are especially noticeable when the person is bending over. Most scoliosis is found during school screening.



Normal Spine Scoliotic Spine

#### Treatment

If the spinal curvature progresses despite the use of conservative measures such as bracing, the doctor might recommend surgery called a "posterior spinal fusion with instrumentation." The purpose of this surgery is to halt progression of the curve and stabilize that portion of the spine. Doctors recommend surgery when the curve gets to a certain size, usually 45-50 degrees. If the curve is getting bigger and it's not treated, it can cause physical deformities and possibly lead to back, lung and heart problems in later years.

How the Surgery Works

Virtual Hospital: Aging Begins at 30: 2000: Exercise

file:///RetiredSites/FinalVH+VNH/Sites/VHCompleteFromWidener/

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### Aging Begins at 30

### Doctors Should Stress Exercise To Patients

Ian Maclean Smith, M.D.  
Emeritus Professor  
Department of Internal Medicine  
University of Iowa Hospitals and Clinics

Creation Date: April 2000  
Last Revision Date: April 2000  
Peer Review Status: Internally Peer Reviewed

As Eubie Blake, the jazz pianist, said "If I'd known I was going to live this long, I'd have taken better care of myself." How can you take better care of yourself? Exercise is the key.

Investigators from Edmonton estimate that improvements in mental and physical function may reduce the risk of institutionalization after hip fracture by almost 95%. They made a study of about 600 patients three months after hip fracture, (the time of most complications). There were 340 who had a fracture when living in the community but were later admitted to a nursing home. Indexes of mental health, physical function and social support were measured at the time of injury and three months later. Low mental status, male gender, and low physical function all increased the likelihood of institutionalization. Male gender increased the likelihood of death. Low physical function at fracture time increased nursing home admission five fold. They conclude that "intervening to increase postfracture physical function may be particularly beneficial to older patients." There are 200,000 U.S. hip fractures yearly costing \$7 billion.

The second article from Johns Hopkins Hospital starts with "Sedentary persons who improve their physical fitness are less likely to die of all causes." They review 60 published articles with evidence that exercise can improve body composition, diminish falls, increase strength, reduce depression, reduce arthritis pain, reduce osteoporosis, reduce risks for diabetes, reduce obesity (42% over 60 are obese), reduce coronary artery heart disease, and improve longevity. A third of all deaths from heart failure, colon cancer, and diabetes could be prevented if all Americans were vigorously active.

There are few contraindications to exercise. They are a recent heart attack, a narrowing of the aortic exit valve from the heart, untreated heart failure, unstable angina, active heart inflammation (myocarditis), acute lung clots, and serious abnormal heart rhythms. Care is needed if you have diabetic eye disease and are on blood thinners.

How do you motivate the sedentary older patient? More doctors should talk about exercise. First educate, then take a detailed history of any exercise both now, lifelong, and the activity level in the past three months. TV viewing time gives an index of sedentaryness. Ask what are the patient's barriers to doing more? What motivation and what social preferences are there in regard to participation? Physicians should be specific and endorse their recommendations by writing them on a prescription pad as important treatment.

Start low and go slow. Park a block away from your destination this week and maybe two blocks next week. Increase the time spent on exercise by only 5% weekly. The goal is 30 minutes a day of moderate intensity activity most days of the week. Most favored activities are cycling on a stationary bicycle, brisk walking, swimming, and water aeratics. If you are doing resistive exercises warm up and stretch both before and after and avoid holding your breath while doing it. The aim is to lift a weight that is 75% of a one-repetition maximum. Only increased monthly. Follow up is important.

Eubie Blake lived to be 100 and played the piano, composed, and sang well into his nineties. Maybe you can too. A sedentary lifestyle is hazardous to your health.

[Section Top](#) | [Title Page](#)

Virtual Children's Hospital: Common Questions Quick Answers: Pediatrics

file:///RetiredSites/FinalVH+VNH/Sites/VHCompleteFromWidener/

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### Common Questions Quick Answers: Pediatrics


[Donna M. D'Alessandro M.D.](#)  
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Research Assistant  
Virtual Hospital

Peer Review Status: Internally Reviewed  
Creation Date: 2001-2004  
Revision Date: October 2004

[Table of Contents](#)



Full A - Z List | [Diseases & Conditions](#) | [Health Promotion](#) | [Procedures](#)

[Teen Topics](#)

Pediatricians have written a new Virtual Children's Hospital feature called Common Questions, Quick Answers as a means to help parents respond to typical childhood diseases and health issues. Your questions are likely to be found among the questions answered by University of Iowa Health Care pediatricians. The information in Common Questions, Quick Answers is not meant to be a substitute for your own physician's advice and care.

[Help improve Pediatrics Common Questions, Quick Answers by completing this brief Comment Form](#)

[CQQA Awards Page](#)

Links included below that are specifically for teens also can be found as a group on [Teen Common Questions Quick Answers](#).

- Abdominal Pain
  - [Acute Abdominal Pain](#)
  - [Chronic Abdominal Pain](#)
- [Acne](#)
- [Adolescence](#)
- [Airway Obstruction](#)
- Allergies
  - [General Allergies](#)
  - [Food Allergies](#)

www.vh.org (via Internet Archive)

# Case Study

## Virtual Naval Hospital - 1997-2005

### Digital Library as knowledge management system

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- **Design**

- **Planning**

- Mission - Maximize readiness by creating + curating medical digital library that can be used as medical reference / health promotion / knowledge management tool to deliver expert medical information to providers + patients at the point-of-care in order to help providers take better care of patients and help patients live healthier lives
    - Audience - Naval health care providers + patients
    - Educational construct - Learning situated in practice
    - Metrics for success - Own the keywords "military medicine" + "naval medicine" + "humanitarian medicine" and get a top 10 ranking for it in search engines ~ Follow Admiral Koenig desire to take healthcare to the deckplates + move information not people

- **Creation**

- **Technology**

- Static Web site ~ 2,300 pages ~ Hosted at University of Iowa
    - Great challenge was to deliver digital library services to nomadic patron population on the sea, under the sea, in the air + in the field who have heterogeneous access to Internet bandwidth
    - Mirror of Web site at Navy Medical Information Management Center ~ 5,000 CD-ROM mirrors distributed every other year to operational corpsmen + physicians

- **Page Style**

- Stanford Guidelines with minimalist graphics

- **Metadata Style**

- Search engine optimization at site level + book level

- **Information Architecture**

- Organized by hierarchy + by category + by alphabetically (librarian-based) and by problem-based interface with user-centered design

- **Tools to Gather Data**

- Stats - Analog, Webalizer, Wusage
    - Communication - By comment forms + email
    - Search engine - [ht://dig](http://dig) -> Google Custom Search Engine

# Case Study

## Virtual Naval Hospital - 1997-2005

### Digital Library as knowledge management system

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- **Curation**

- **Content creation strategy**

- Serve as depository library for Navy Medicine = 60 US government medical textbooks
    - Information on Internet poorly organized, growing rapidly, of questionable authority so digital librarians acted as intelligent agents + did surfing for users on most common medical problems + health promotion tasks creating > 1,000 links to authoritative Web content on 80 common medical problems + 25 health promotion topics
    - Content quickly + easily updated in response to changing world situation (i.e. chemical + biological warfare content)
    - Content overseen by clinical Specialty Advisory Board

- **Operation**

- **Publicity and Marketing**

- Standard guerilla marketing on Web ~ News release to Navy Medicine ~ Lecture at Surgeon General's Leadership Conference ~ Lectures to General Medical Officer + Independent Duty Corpsmen trainees ~ Emails to physician + corpsman training program directors ~ Word of mouth / scuttlebutt

- **Regular Maintenance**

- Daily - Broken links found with LinkLint + fixed, answer all emails
    - Business model - Funded by grant from US Navy Bureau of Medicine + Surgery ~ From 2006-on self-funded at \$50 / year

# Case Study

## Virtual Naval Hospital - 1997-2005

### Digital Library as knowledge management system

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- **Evaluation**

- **Evaluation and Continuous Quality Improvement**

- Usage - At peak: 1.6 million users read 7 million pages per year ~ At end: 10,000 users read 15,000 pages per year
    - Reviews
      - "The Virtual Naval Hospital is a digital health sciences library designed to provide naval health care providers access to current, authoritative information...thereby improving quality of care." - Harold M. Koenig, Vice Admiral, Medical Corps - Surgeon General of the U.S. Navy - Testimony on Medical Issues before the Defense Subcommittee of the House Appropriations Committee, 1998
      - Virtual Naval Hospital named as one of the Navy's five "Success Stories" in the field of Knowledge Management - The Department of the Navy's Chief Information Officer, 1999
      - "One of the premier web sites in the military is the Virtual Naval Hospital..." - Military Medicine, 2000
      - An independent evaluation found that Virtual Naval Hospital users like what they see and that the benefits of the Virtual Naval Hospital well exceed its costs as the Virtual Naval Hospital saves dollars, improves the quality of health care, and improves readiness - Center for Naval Analyses, 2000
      - "The Navy's award-winning web application, the Virtual Naval Hospital is a well-organized health promotion tool. Its digital library of training and reference materials helps members of the service who might need medical expertise while at isolated duty stations. - PriceWaterhouseCoopers study of Federal Web sites, entitled "The State of Federal Web sites: The Pursuit of Excellence" found the US Navy Web site to be one of 5 sites given an "A-1" grade by the study, and specifically the Virtual Naval Hospital was singled out for mention amongst US Navy Web sites, 2002
      - "My view is that this project should continue to grow. It is something that is very useful to us...I expect this to grow. No matter where you are, the experts are with you. This is an important relationship and I would like to expand it. It's so important when doctors are in the field to be able to tie back to an expert source of knowledge. I believe this will continue to grow in scope and value." - Secretary of the Navy Gordon England, 2002
      - "Although there are a few books on shipboard medicine, the US Navy's Virtual Naval Hospital constitutes a comprehensive digital library of medical information tailored to the Sea Service..." - Textbook of Military Medicine, Medical Aspects of Harsh Environments Volume 2 Shipboard Medicine by CAPT Terrence Riley, MC, USN (retired), 2003

- **Awards**

- Award for Knowledge Sharing / Outstanding Knowledge Expert System - Department of the Navy, 2000
    - Selected for inclusion in Current Web Contents - Thomson Scientific, 2005 Current Web Contents
    - Recognized for its contributions to telemedicine - American Telemedicine Association, 2006

# Case Study

## Virtual Naval Hospital - 1997-2005

### Digital Library as knowledge management system

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- **Evaluation**
  - **Outcome**
    - Used by US Navy, US Coast Guard, Canadian Navy, Royal Navy, Greek Navy (and US Army + US Air Force) ~ Unauthorized mirror site created by Chinese military
    - Economic analysis showed it was used 8.2 hours / week, 70% thought it improved patient care + improved diagnosis + treatment, decreased need for medical evacuations, 94% were satisfied with it, saved \$144,000 / year

# Case Study

## Virtual Naval Hospital - 1997-2005

### Digital Library as knowledge management system

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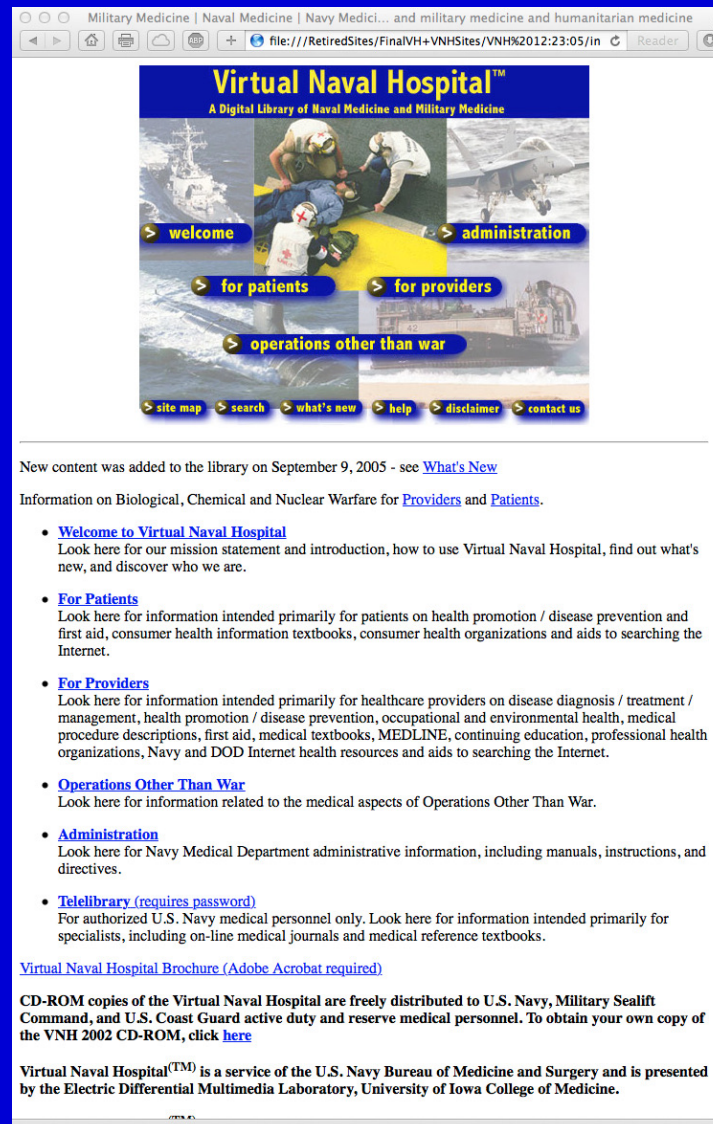
- **Lessons Learned**

- Begin with formal needs assessment - defining patrons information needs provides foundation on which digital library is built
- Incorporate principles of user-centered design in information architecture - design information architecture around results of formal needs assessment gives patrons compelling reason for its use to change their paradigm of Internet usage from Web surfing to problem solving
- Use lowest common denominator Web technology and design in the data architecture: less is more - allows digital library to be cross platform + device independent
- People, not technology, make the project work - key intermediaries are individuals with multidisciplinary backgrounds who can interact with different constituencies + who translate + negotiate between them to overcome obstacles + keep project on course + moving forward
- Listen to + act on patron feedback - gold mine of information = Continuous quality improvement
- Also important are ease of use + integration into workflow
- Problem-based interface + user-centered design changed Internet usage paradigm from Web surfing to problem solving
- Nomadic user's intermittent access to the Internet at sea + in field overcome by local CD-ROM mirrors of digital library
- Maximized readiness + had a beneficial impact on Navy health care by improving health promotion + patient care + being economically cost-effective
- Biggest advantage was being outsiders to Navy Medicine / Biggest disadvantage was being outsiders to Navy Medicine
- To succeed...one must focus initially and then consistently on population served and what their mission is and tailor digital library to their needs ~ Result will be a tool that is heavily used + sincerely appreciated
- Consistently over delivered + came in under budget -> defunded ~ Our focus was in operating with Sailors and Marines at the tip of the spear...not in operating within BUMED bureaucracy
- Once our clinical champion in Navy retired, we were taken out politically ~ Like all good veterans, continues to serve
- Successes: User-centric, well received, tri-service, international, military + civil usage, cost-effective
- Perhaps it was canceled because it was done by outsiders that made Navy look bad... ~ "You should get it funded through an earmark, it would be an earmark we would actually use for once" - SOCOM operator

# Case Study

## Virtual Naval Hospital - 1997-2005

### Digital Library as knowledge management system



[www.vnh.org](http://www.vnh.org) (via Internet Archive)

# Case Study

## Virtual Naval Hospital - 1997-2005

### Digital Library as knowledge management system

Virtual Naval Hospital: Providers HomePage

file:///RetiredSites/FinalVH+VNHsites/VNH%2012:23:05/Pr Reader



### Virtual Naval Hospital™

#### Virtual Naval Hospital Information for Providers

[Common Medical Problems](#) | [Common Pediatric Problems](#) | [Dentistry](#) | [Pharmacy](#) | [Health Promotion](#) | [Occupational and Environmental Health](#) | [Biological, Chemical and Nuclear Warfare and Radiation Safety](#) | [Medical Intelligence and Medical Planning](#) | [Operations Other Than War](#) | [Procedures](#) | [First Aid](#) | [Textbooks](#) | [Administrative Manuals](#) | [MEDLINE and Medical Journals](#) | [Continuing Education](#) | [Professional Health Organizations](#) | [Palm Handheld Computer Medical Resources](#) | [Navy and DOD Resources](#) | [Search the Internet](#)

#### Common Medical Problems

#### Anesthesia

**Field and Regional Anesthesia Blocks**  
[Emergency War Surgery - Chapter 9: Anesthesia](#) | [Iowa Family Practice Handbook](#) | [Global Textbook of Anesthesiology](#)

**IV Sedation**  
[GMO Manual - Acute Pain Management](#) | [GMO Manual - Practical Sedative Use](#)

**Local Anesthesia**  
[Emergency War Surgery - Chapter 9: Anesthesia](#) | [GMO Manual](#) | [Iowa Family Practice Handbook](#) | [Global Textbook of Anesthesiology](#)

#### Cardiovascular

**Arrhythmias**  
[Flight Surgeon Manual](#) | [GMO Manual](#) | [Iowa Family Practice Handbook](#) | [Merck Manual](#)

**Chest Pain**  
[Flight Surgeon Manual](#) | [GMO Manual - Angina](#) | [GMO Manual - Chest Pain](#) | [Sickcall Screener's Handbook](#) | [Sickcall Screener's Handbook LTG](#) | [Iowa Family Practice Handbook - Acute Chest Pain](#) | [Iowa Family Practice Handbook - Acute Coronary Syndromes](#) | [Merck Manual](#)

**EKG Interpretation**  
[Flight Surgeon Manual](#) | [ECGs by Example](#)

**Hypertension**  
[Flight Surgeon Manual](#) | [GMO Manual](#) | [Sickcall Screener's Handbook](#) | [Sickcall Screener's Handbook LTG](#) | [Iowa Family Practice Handbook - Hypertension](#) | [Iowa Family Practice Handbook - Hypertensive Crisis](#) | [Merck Manual](#)

**Myocardial Infarction**  
[GMO Manual](#) | [Sickcall Screener's Handbook](#) | [Sickcall Screener's Handbook LTG](#) | [Standard First Aid Course](#) | [Iowa Family Practice Handbook](#) | [Merck Manual](#)

#### Dental

**Tooth Abscess**  
[GMO Manual](#) | [Merck Manual](#)

**Toothache**

Virtual Naval Hospital: Patients HomePage

file:///RetiredSites/FinalVH+VNHsites/VNH%2012:23:05/Pr Reader



### Virtual Naval Hospital™

#### Virtual Naval Hospital Information for Patients

[Health Promotion](#) | [Common Pediatric Problems](#) | [Biological, Chemical and Nuclear Warfare](#) | [First Aid](#) | [Textbooks](#) | [Consumer Health Organizations](#) | [TRICARE](#) | [Search the Internet](#)

#### Health Promotion

**Alcohol Abuse Prevention**  
[Navy Health Book - Alcohol Affects Judgment](#) | [Navy Health Book - Drink in Moderation](#) | [Navy Health Book - Have a Drinking Problem?](#) | [American Academy of Family Physicians](#) | [MedlinePlus - Alcohol Consumption](#) | [MedlinePlus - Alcoholism](#) | [Merck Manual Home Edition](#) | [National Institute on Alcohol Abuse and Alcoholism](#) | [Alcoholism](#) | [National Institute on Alcohol Abuse and Alcoholism - Cut Down on Drinking](#) | [NEHC Health Promotion](#) | [PREVLINe](#)

**Back Injury and Musculoskeletal Injury Prevention**  
[Navy Health Book - Good Posture Boosts Energy](#) | [Navy Health Book - Maintain Good Posture](#) | [Navy Health Book - Put the Brakes on Back Pain](#) | [Navy Health Book - Treating Back Pain](#) | [American Academy of Family Physicians](#) | [American Academy of Orthopaedic Surgeons - Back Pain Exercises](#) | [American Academy of Orthopaedic Surgeons - Preventing Back Pain at Work and at Home](#) | [American Academy of Orthopaedic Surgeons - Low Back Pain](#) | [American College of Rheumatology](#) | [MedlinePlus - Back Injuries](#) | [MedlinePlus - Back Pain](#) | [Merck Manual Home Edition](#)

**Chewing Tobacco Cessation**  
[Navy Health Book - Oral Cancer: Are You at Risk?](#) | [Navy Health Book - Tobacco Kills](#) | [American Academy of Otolaryngology](#) | [MedlinePlus](#) | [NEHC Health Promotion](#)

**Cholesterol**  
[Navy Health Book - Cholesterol Facts](#) | [Navy Health Book - Good and Bad of Cholesterol](#) | [Navy Health Book - What is Cholesterol?](#) | [American Heart Association](#) | [MedlinePlus](#) | [Merck Manual Home Edition](#) | [National Institutes of Health](#)

**Dental Care**  
[Navy Health Book - Brush and Floss](#) | [Navy Health Book - Clean Your Teeth](#) | [Navy Health Book - Dental Plaque](#) | [Navy Health Book - Gum Disease](#) | [Navy Health Book - Reduce Your Risk of Tooth Decay](#) | [Standard First Aid Course](#) | [American Dental Association - Cleaning Your Teeth](#) | [MedlinePlus](#)

**Domestic Violence**  
[Navy Health Book - Domestic Violence Awareness Month](#) | [Navy Health Book - Programs Designed to Keep Families Strong](#) | [American Academy of Family Physicians](#) | [MedlinePlus](#)

**Drug Abuse Prevention**  
[Navy Health Book - Helping Substance Abusers](#) | [Standard First Aid Course](#) | [Merck Manual Home Edition](#) | [MedlinePlus](#) | [National Institute on Drug Abuse](#) | [NEHC Health Promotion](#) | [PREVLINe](#)


**Eye Protection**  
[Navy Health Book - Does Your Computer Cause Eyestrain?](#) | [Navy Health Book - Prevent Sun Damage](#) | [Navy Health Book - Sunglasses](#) | [Navy Health Book - Watch Your Vision](#) | [MedlinePlus](#) | [OSHA](#)

**Family Planning**  
[MedlinePlus](#) | [Merck Manual Home Edition](#) | [Planned Parenthood](#)

**Hearing Protection**  
[Field Hygiene and Sanitation](#) | [Navy Health Book - Noise Induced Hearing Loss](#) | [Navy Health Book - Protect](#)


Virtual Naval Hospital - General Medical Officer Manual: NAVMED P-5134

file:///RetiredSites/FinalVH+VNHsites/VNH%2012:23:05/GI Reader



### Virtual Naval Hospital™

#### General Medical Officer (GMO) Manual



#### NAVMED P-5134 Revised: January 2000

**Department of the Navy**  
Bureau of Medicine and Surgery  
2300 E Street, NW  
Washington, DC 20372-5300

Peer Review Status: Internally Peer Reviewed  
Citation Date: 1991  
Last Revision Date: January 2000

[Foreword](#)  
[Preface](#)

#### Administrative Section

#### Clinical Section

- **Allergy**
  - [Anaphylaxis](#)
  - [Urticaria and Angioedema](#)
- **Anesthesia**
  - [Acute Pain Management](#)
  - [Local Anesthetics](#)
  - [Practical Sedative Use](#)
- **Cardiovascular Disorders**
  - [Angina Pectoris](#)
  - [Arrhythmias](#)
  - [Chest Pain Evaluation](#)
  - [Hypertension](#)
  - [Myocardial Infarction](#)
  - [Pericarditis](#)
  - [Subacute Bacterial Endocarditis \(SBE\) Prophylaxis](#)
- **Dentistry**
  - [Dental Emergencies](#)
- **Dermatology**
  - [Operational Dermatology](#)
- **Environmental Injuries**

www.vnh.org (via Internet Archive)

# Case Study

## UI Health Care - 1999-2005

### Digital Library as marketing tool

---

- **Design**
  - **Planning**
    - Mission - Virtualize services of physical hospital, provide platform for e-health, market your services
    - Audience - Current + potential patients
    - Educational construct - None
    - Metrics for success - Increase number of new patients to UI Health Care
- **Creation**
  - **Technology**
    - Dynamic Web site ~ Thousands of pages in size ~ Hosted at University of Iowa
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search Engine Optimization at site level
  - **Information Architecture**
    - Organized by category and alphabetically
  - **Tools to Gather Data**
    - Stats - Analog, Webalizer, Wusage
    - Communication - By comment forms
    - Search engine - [ht://dig](http://dig) -> Google Custom search engine
- **Curation**
  - **Content creation strategy**
    - Start by serving as digital press for administrative units of UI Health Care which linked to patient education information on Virtual Hospital
    - Evolved into dumbed-down marketing-controlled mouthpiece with licensed patient education information from third party

# Case Study

## UI Health Care - 1999-2005

### Digital Library as marketing tool

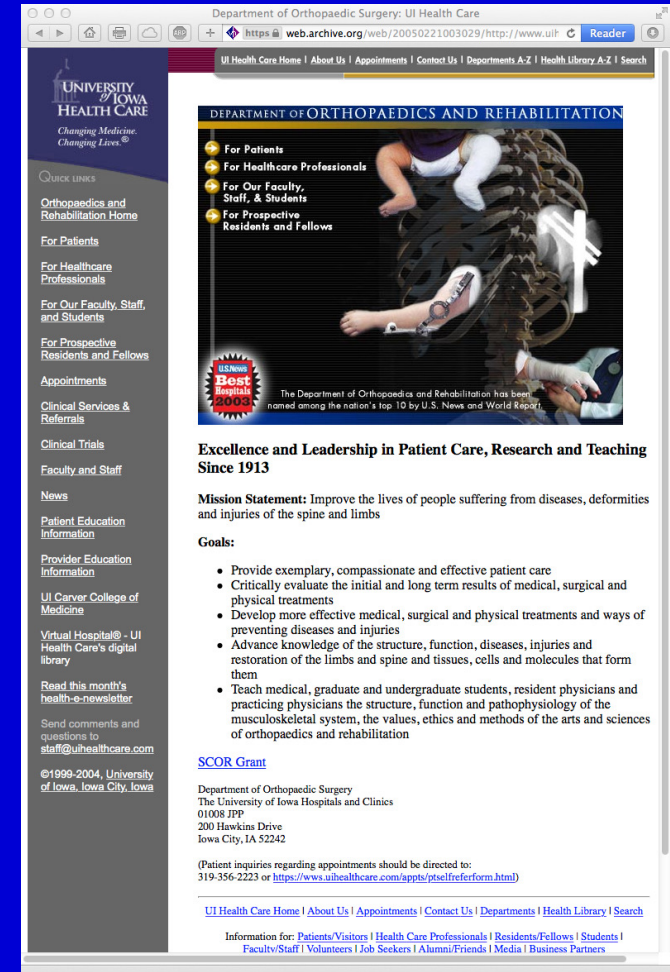
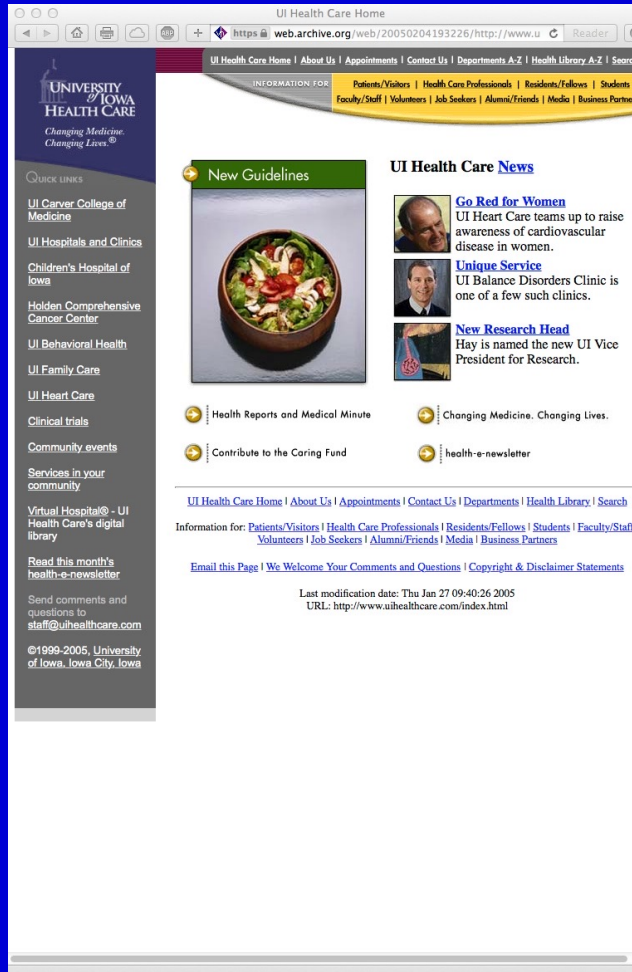
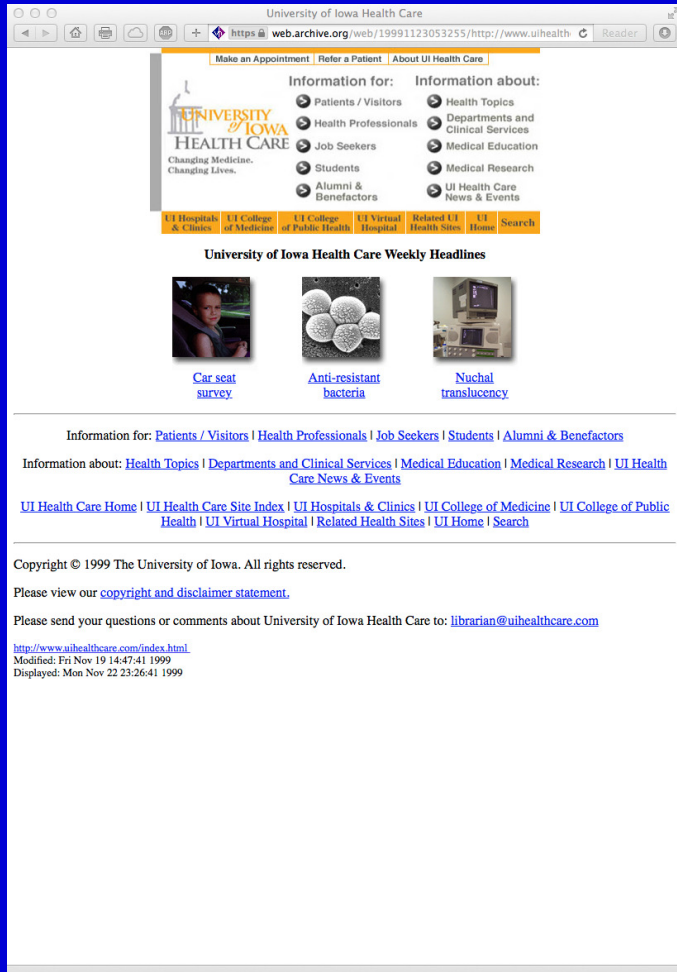
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- **Operation**
  - **Publicity and Marketing**
    - URL used eventually, with much persuasion, on all UI Health Care print, radio + TV products
  - **Regular Maintenance**
    - Daily - Broken links found with LinkLint + fixed, answer all emails, schedule all appointments
    - Business model - Funded by UI Health Care to support their business ~ Catcher's mitt / paid the freight for the Virtual Hospital digital library
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 5.6 million users read 16 million pages per year
    - Reviews - None
    - Awards - Gold Quill Award of Excellence in Organizational Communication, International Association of Business Communicators, 2002
  - **Outcome**
    - To achieve complete control over site, marketing had us removed from operating it without our knowledge
    - Has become purveyor of slogans rather than purveyor of information
    - Neglects faculty's writings as source of quality marketing materials
- **Lessons Learned**
  - Marketing can be done at a higher level but this is anathema to most marketing people
  - See The Cluetrain Manifesto - "markets are conversations" - Mayo Clinic is a great example

# Case Study

## UI Health Care - 1999-2005

### Digital Library as marketing tool



[www.uihealthcare.org](http://www.uihealthcare.org) (via Internet Archive)

# Case Study

## Virtual Pediatric Hospital - 2006-Present

### Digital Library as phoenix

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- **Design**
  - **Planning**
    - Mission - Provide authoritative information to pediatric patients, families, and providers
    - Audience - Patients and providers
    - Educational construct - Learning situated in practice
    - Metrics for success - Own the keywords "pediatrics" + "paediatrics" + "pediatric education" + "paediatric education" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Static Web site using server side includes ~ 1,750 pages / 2,000 images / 30 movies / 5 audio files ~ Hosted at ICDSOft
    - Mirrored to developing world via Widernet + Internet.org
  - **Page Style**
    - Stanford Guidelines
  - **Metadata Style**
    - Search engine optimization at site level + textbook level
  - **Information Architecture**
    - Organized by hierarchy
  - **Tools to Gather Data**
    - Stats - Google Analytics, SiteMeter (also AWStats, Webalizer)
    - Communication - By email
    - Search engine - Google Custom search engine
- **Curation**
  - **Content creation strategy**
    - Give new life to author-generated pediatric content from Virtual Hospital which had been shut down

# Case Study

## Virtual Pediatric Hospital - 2006-Present

### Digital Library as phoenix

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- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web ~ Asked those sites who had linked to content on Virtual Hospital to link to content's new home on Virtual Pediatric Hospital
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self funded at \$150 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 510,000 users read 2.3 million pages per year ~ Today: 545,000 users read 718,000 pages per year
    - Today: 85% of visitors are for consumer health information, 71% of pages read are consumer health information, 81% of visitors come from Google, 6% of visitors come from other search engines, 90% of visitors come once, 33% of visitors are from outside US, 69% of visitors are on mobile devices (57% phones + 12% tables), 96% of visitors speak English
    - **Reviews**
      - "This is a digital health sciences collection devoted to paediatrics created by physicians. It provides information to meet the needs of healthcare providers and patients..." - International Journal of Electronic Healthcare, 2010
    - **Awards**
      - Best of the Pediatric Internet Award for Correlapaedia, ElectricAirway and Paediapaedia textbooks - American Academy of Pediatrics, 1997
      - One of the three most reliable pediatric Internet resources - Wall Street Journal, 1998
      - Named one of the "Top Nonprofit Websites" in their study Digital Medicine: Health Care in the Internet Era - The Brookings Institution, 2009
      - Named one of the "Top 100 Health Websites You Can Trust" and specifically to be one of the top 10 Parenting and Kids Websites - Consumer and Patient Health Information Section (CAPHIS) of the Medical Library Association, 2010
  - **Outcome**
    - Preserved 10% of Virtual Hospital's content which today draws 5% of Virtual Hospital's traffic

# **Case Study**

## **Virtual Pediatric Hospital - 2006-Present**

### **Digital Library as phoenix**

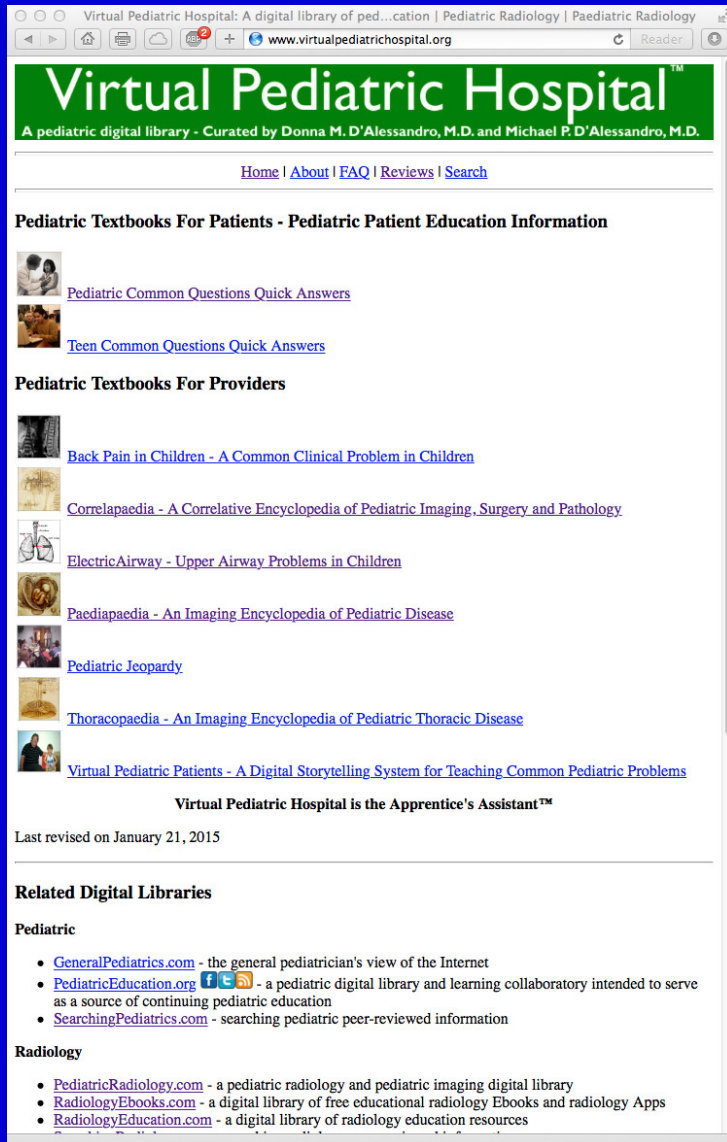
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- **Lessons Learned**
  - Large digital library (4,000 text/image/video files) can be successfully operated for peanuts
  - Most usage is for consumer health information, thus there is still a large market for authoritative consumer health information
  - Mirroring to developing world is important - Mirrors see same amount of traffic as main Web site

# Case Study

## Virtual Pediatric Hospital - 2006-Present

### Digital Library as phoenix




Virtual Pediatric Hospital: A digital library of pediatric education | Pediatric Radiology | Paediatric Radiology  
www.virtualpediatrichospital.org


## Virtual Pediatric Hospital™

A pediatric digital library - Curated by Donna M. D'Alessandro, M.D. and Michael P. D'Alessandro, M.D.


[Home](#) | [About](#) | [FAQ](#) | [Reviews](#) | [Search](#)


### Pediatric Textbooks For Patients - Pediatric Patient Education Information


 [Pediatric Common Questions Quick Answers](#)


 [Teen Common Questions Quick Answers](#)


### Pediatric Textbooks For Providers


 [Back Pain in Children - A Common Clinical Problem in Children](#)


 [Correlapaedia - A Correlative Encyclopedia of Pediatric Imaging, Surgery and Pathology](#)

 [ElectricAirway - Upper Airway Problems in Children](#)

 [Paediapaedia - An Imaging Encyclopedia of Pediatric Disease](#)

 [Pediatric Jeopardy](#)

 [Thoracopaedia - An Imaging Encyclopedia of Pediatric Thoracic Disease](#)




 [Virtual Pediatric Patients - A Digital Storytelling System for Teaching Common Pediatric Problems](#)

**Virtual Pediatric Hospital is the Apprentice's Assistant™**

Last revised on January 21, 2015

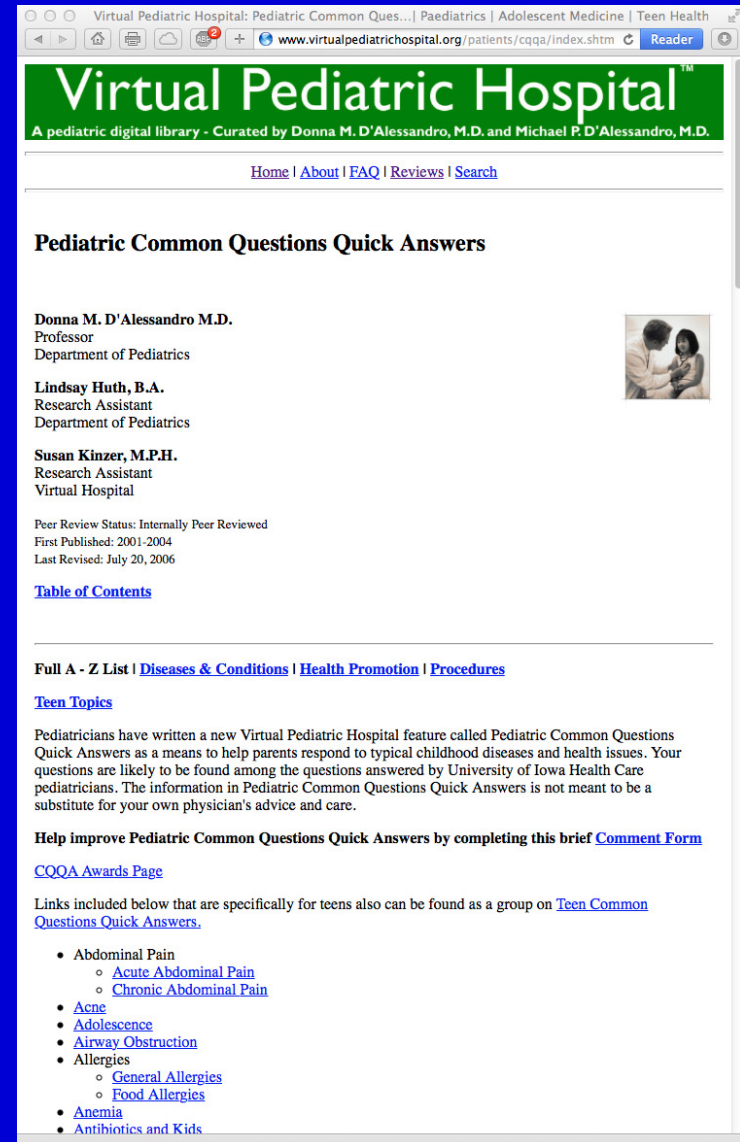
### Related Digital Libraries

#### Pediatric

- [GeneralPediatrics.com](#) - the general pediatrician's view of the Internet
- [PediatricEducation.org](#)    - a pediatric digital library and learning collaboratory intended to serve as a source of continuing pediatric education
- [SearchingPediatrics.com](#) - searching pediatric peer-reviewed information

#### Radiology

- [PediatricRadiology.com](#) - a pediatric radiology and pediatric imaging digital library
- [RadiologyEbooks.com](#) - a digital library of free educational radiology Ebooks and radiology Apps
- [RadiologyEducation.com](#) - a digital library of radiology education resources



Virtual Pediatric Hospital: Pediatric Common Questions Quick Answers | Paediatrics | Adolescent Medicine | Teen Health  
www.virtualpediatrichospital.org/patients/cqqa/index.shtm

## Virtual Pediatric Hospital™

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### Pediatric Common Questions Quick Answers

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Last Revised: July 20, 2006

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**Full A - Z List** | [Diseases & Conditions](#) | [Health Promotion](#) | [Procedures](#)

[Teen Topics](#)

Pediatricians have written a new Virtual Pediatric Hospital feature called Pediatric Common Questions Quick Answers as a means to help parents respond to typical childhood diseases and health issues. Your questions are likely to be found among the questions answered by University of Iowa Health Care pediatricians. The information in Pediatric Common Questions Quick Answers is not meant to be a substitute for your own physician's advice and care.

Help improve Pediatric Common Questions Quick Answers by completing this brief [Comment Form](#)

[CQQA Awards Page](#)

Links included below that are specifically for teens also can be found as a group on [Teen Common Questions Quick Answers](#).

- Abdominal Pain
  - [Acute Abdominal Pain](#)
  - [Chronic Abdominal Pain](#)
- Acne
- Adolescence
- Airway Obstruction
- Allergies
  - [General Allergies](#)
  - [Food Allergies](#)
- Anemia
- Antibiotics and Kids

[www.virtualpediatrichospital.org](http://www.virtualpediatrichospital.org)

# Case Study

## E-Map - 1996-2014

### Digital Library as map of Internet

---

- **Design**

- **Planning**

- Mission - Serve as an electronic map of high quality information on the Internet for Internet travellers ~ Provide a starting point for entry into places of enlightenment, entertainment + education on Internet
    - Audience - Everyone
    - Educational construct - None
    - Metrics for success - Own the keyword "map" and get a top 10 ranking for it in search engines

- **Creation**

- **Technology**

- Static Web site ~ 1 page in size ~ Hosted at Avalon then Register4Less

- **Page Style**

- Stanford Guidelines with minimalist graphics

- **Metadata Style**

- Search engine optimization at site level

- **Information Architecture**

- Organized by category ~ Apply cartographic principles of roadmap to Internet: Newsstands (media), Roadside Attractions (interests), Routing Directions (directories + search engines), Service Stations (computer hardware + software vendors)

- **Tools to Gather Data**

- Stats - HitBox -> SiteMeter, Google Analytics
    - Communication - By email
    - Search engine - None

# Case Study

## E-Map - 1996-2014

### Digital Library as map of Internet

---

- **Curation**

- **Content creation strategy**

- Identify high quality, broad interest Web sites ~ Serve as middle ground between personal home pages + directories that index everyone
    - Went to public library, wrote down most popular newspaper + magazine titles, found them on Web
    - Criteria for Web site selection: 1) Peer review by accreditation. To become accredited, a site must display four core quality standards: a. Authorship, b. Attribution of facts, c. Disclosure of site ownership and sponsorship, d. Currency of the site. 2) Site must be free to use. 3) Site's information must be primarily in Hypertext Markup Language format so it can be read by users with lowest common denominator Web browser

- **Operation**

- **Publicity and Marketing**

- Standard guerilla marketing on Web ~ Also publicized to librarian + education Listservs

- **Regular Maintenance**

- Daily - Yearly link check with Big Brother + archive
    - Business model - Self-funded at \$50 / year ~ Intended eventually to create + sell printed plastic trifold version of Web site

- **Evaluation**

- **Evaluation and Continuous Quality Improvement**

- Usage - At peak: 100,000 users read 136,000 pages per year ~ At end: 11,000 users read 16,000 pages per year
    - Review - "It has a clean, uncluttered interface, and unlike most directories, states the criteria for inclusion in its listings." - Christchurch Press, 1998
    - Awards - Top 10 rated Web Directory - Lycos Internet Guide, 1999

- **Outcome**

- No one linked to it ~ Shut down due to lack of use from others beside my father and my friend

- **Lessons Learned**

- Tried to serve too broad an audience ~ If you are going after a broad market you need lots of money rather than good intentions

# Case Study

## E-Map - 1997-2014

### Digital Library as map of Internet



www.e-map.com (via Internet Archive)

# Case Study

## MedicalStudent.com - 1998-Present

### Digital Library as customized view for the apprentice learner

---

- **Design**
  - **Planning**
    - Mission - Provide curated collection of most authoritative medical textbooks on Web for medical generalist
    - Audience - Healthcare providers (and patients)
    - Educational construct - None
    - Metrics for success - Own the keyword "medical student" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Static Web site ~ 1 page in size ~ Hosted at Avalon then Register4Less
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level ~ In English, French, German, Spanish
  - **Information Architecture**
    - Organized by category
  - **Tools to Gather Data**
    - Stats - HitBox -> SiteMeter, Google Analytics
    - Communication - By email
    - Search engine - None ~ Later made best resources searchable through SearchingMed.com
- **Curation**
  - **Content creation strategy**
    - At first Virtual Hospital was the entire medical Web ~ Then medical Web grew in size + needed indexing and MedicalStudent.com was born to index best of the medical Web
    - Criteria for Web site selection: 1) Peer review by accreditation. To become accredited, a site must display four core quality standards: a. Authorship, b. Attribution of facts, c. Disclosure of site ownership and sponsorship, d. Currency of the site. 2) Site must be free to use. 3) Site's information must be primarily in Hypertext Markup Language format so it can be read by users with lowest common denominator Web browser

# Case Study

## MedicalStudent.com - 1998-Present

### Digital Library as customized view for the apprentice learner

---

- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web ~ Also publicized to medical newsgroups + forums
    - Could not get our own medical school to publicize Virtual Hospital to our own medical students ~ Used MedicalStudent.com to publicize our work on Virtual Hospital to all medical students + eventually stuffed all our medical student's mailboxes with flyers for Virtual Hospital + MedicalStudent.com
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self-funded at \$50 / year ~ Intended eventually to create + sell printed plastic trifold version of Web site

# Case Study

## MedicalStudent.com - 1998-Present

### Digital Library as customized view for the apprentice learner

---

- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 0.5 million users read 1.1 million pages per year ~ Today: 130,000 users read 200,000 pages per year
    - Reviews
      - "First stop for medical students." - The Lancet, 1998
      - "Extensive links with no commercial bias." - American College of Physicians - American Society of Internal Medicine, 2000
      - "I have always liked Web sites that gather lots of information in one place because they often make searching the Internet more effective and less time consuming. MedicalStudent.com is such a Web site...This Web site that acts as a portal, by offering a wide range of information to which you can direct yourself, should be a good and resourceful tool." - Student British Medical Journal, 2003
      - "MedicalStudent.com is a site notable for its excellence and currency. Every student should have this wonderful metasite bookmarked, because it offers such a wealth of valuable Web pages in its very comprehensive listing of basic science and clinical medicine sites." - Journal of the American Podiatric Medical Association, 2007
      - "Provides numerous links to electronic texts and resources." - American Library Association Choice Reviews On Line, 2009
      - "A digital library of authoritative medical information for medical students, but is also very useful to consumers" - Library of Congress Science Reference Services, 2014
    - Awards
      - "Clean Bill of Health" Award - HardinMD, 1998-2001 ~ "Web Pick of the Day" - HMS Beagle, 1999
  - **Outcome**
    - Very popular + appreciated resource ~ Feedback especially heartfelt from developing world
- **Lessons Learned**
  - When Google accounts for most of your traffic, falling out of Google due to search engine algorithm redesign is painful
  - Imitation is sincerest form of flattery - copied / stolen many times all over world and this can't be controlled

# Case Study

## MedicalStudent.com - 1998-Present

### Digital Library as customized view for the apprentice learner



[www.medicalstudent.com](http://www.medicalstudent.com)

# Case Study

## PediatricRadiology.com - 1997-Present

### Digital Library as organizer of chaos via automated curation of content

- **Design**
  - **Planning**
    - Mission - Create specialized medical reference library giving curated view of Internet for subspecialist ~ Create and curate a pediatric radiology digital library that will make the Internet a useful reference tool for the radiologist at the point-of-care
    - Audience - Physicians at all levels of training practicing pediatric radiology
    - Educational construct - Learning situated in practice
    - Metrics for success - Own the keywords "pediatric radiology" + "paediatric radiology" + "pediatric imaging" + "paediatric imaging" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Static Web site ~ 10 pages in size ~ Hosted at Avalon.net then Register4Less
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level ~ In English, French, German, Spanish
  - **Information Architecture**
    - Organized by category (librarian-based) and by hierarchy (problem-based disease)
  - **Tools to Gather Data**
    - Stats - HitBox -> SiteMeter, Google Analytics
    - Communication - By email, monthly mailing list
    - Search engine - ht://dig search engine to make best resources searchable, later replaced by SearchingRadiology.com
    - Today - Learn of new sites through Google Alerts, Twitter, physicians I work with
    - Criteria for Web site selection: 1) Peer review by accreditation. To become accredited, a site must display four core quality standards: a. Authorship, b. Attribution of facts, c. Disclosure of site ownership and sponsorship, d. Currency of the site. 2) Site must be free to use. 3) Site's information must be primarily in Hypertext Markup Language format so it can be read by users with lowest common denominator Web browser

# Case Study

## PediatricRadiology.com - 1997-Present

### Digital Library as organizer of chaos via automated curation of content

- **Curation**

- **Content creation strategy**

- Initially - Search engines used to find resources = Altavista, HotBot, Northern Light ~ Metasearch engines used to find resources = Metacrawler, SavvySearch ~ indices browsed to find resources = HealthWeb, Martindales, Medical Matrix, MedWeb, PedInfo, Pediatric Points of Interest, Yahoo
    - Past - Automated curation of content using 4 intelligent agents:
      1. WebCrawler Agent - To discover new resources - Perl script to scrape results from search engines which were stored in MySQL database - Started scraping Altavista + Northern Light, then Google, then HotBot + AllTheWeb - All of them eventually banned us or stopped working but over time discovered 35 new pediatric radiology Web sites containing 730 cases -> Google Alerts (still used today)
      2. WebSiteMonitoring Agent - Keeps track of home pages of 30 resources indexed in MetaTextBook - From WebSecretary - > WatchThatPage.com -> None (today)
      3. Gathering Agent - Provides scoped search of curated slice of 60 pediatric radiology Internet Web sites - From ht://dig -> Google Custom Search Engine at SearchingRadiology.com (today)
      4. Notifying Agent - Notify users of changes - From Lyris -> MailMan -> FreeLists (today)
    - Today - Learn of new sites through Google Alerts, Twitter, physicians I work with
    - Criteria for Web site selection: 1) Peer review by accreditation. To become accredited, a site must display four core quality standards: a. Authorship, b. Attribution of facts, c. Disclosure of site ownership and sponsorship, d. Currency of the site. 2) Site must be free to use. 3) Site's information must be primarily in Hypertext Markup Language format so it can be read by users with lowest common denominator Web browser

- **Operation**

- **Publicity and Marketing**

- Standard guerilla marketing on Web ~ Described in articles in journals, performed demos + distributed flyers at meetings ~ Emails to all pediatric radiologists

- **Regular Maintenance**

- Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Intelligent agent automated curation research funded by RSNA ~ Now self-funded at \$50 / year

# Case Study

## PediatricRadiology.com - 1997-Present

### Digital Library as organizer of chaos via automated curation of content

- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 72,000 users read 100,000 pages per year ~ Today: 15,000 users read 25,000 pages per year
    - **Reviews**
      - "A digital health sciences collection devoted to paediatrics created by physicians. It provides information to meet the needs of healthcare providers and patients" - International Journal of Electronic Healthcare, 2010
      - PediatricRadiology.com is praised for being "active in the evaluation of online radiology information resources." - Academic Radiology, 1999
      - "On the Internet, there are few pediatric radiology databases. The most important and complete Web site is PediatricRadiology.com...PediatricRadiology.com has developed into a reputable source of pediatric radiological information on the Internet." - Pediatric Radiology, 2005
      - "A pediatric radiology and pediatric imaging digital library to turn the Internet into a productive reference and teaching tool." - Royal Australasian College of Physicians, 2012
    - **Awards**
      - "Clean Bill of Health Award" - Hardin MD, 1998-2001
      - Singleton-Taybi Education Award - Society for Pediatric Radiology, 2007
  - **Outcome**
    - Growth of pediatric radiology Internet - in 1999 Altavista + Northern Light returned 4,276 documents containing the terms "pediatric radiology" + "paediatric radiology" + "pediatric imaging" + "paediatric imaging" - In 2015 Bing + Google returned 1.5 million documents containing those terms
    - In 2002 Google returned 1.2 million documents containing the term "radiology" - In 2015 Google returned 53 million documents containing that term
    - Indexed at peak in 2000 168 pediatric radiology resources encompassing 1,886 cases covering 321/402 diseases in Society of Pediatric Radiology's curriculum in pediatric radiology in MetaTextBook of Pediatric Radiology which was retired in 2009

# Case Study

## PediatricRadiology.com - 1997-Present

Digital Library as organizer of chaos via automated curation of content

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- **Lessons Learned**
  - Software agents are extremely useful in aiding the curation of a digital library in helping to keep it growing in size, up-to-date, and thus useful as a reference tool at the point-of-care for radiologists
  - As this was in the time of the browseable Web, the Web site was heavily used and the Gathering Agent (for scoped search) was little used

# Case Study

## PediatricRadiology.com - 1997-Present

### Digital Library as organizer of chaos via automated curation of content

PediatricRadiology.com  
A Pediatric Radiology Digital Library  
Curated by Michael P. D'Alessandro, M.D.

PediatricRadiology.com is a pediatric radiology and pediatric imaging digital library

Please help PediatricRadiology.com to better serve your needs by completing this [brief survey](#).

[Search](#) | [Common Pediatric Clinical Problems](#) | [Pediatric Radiology Textbooks, Teaching Files and Lectures](#) | [Anatomy Atlases](#) | [Embryology Atlases](#) | [Pediatric Textbooks](#) | [Digital Carousels](#) | [Patient Education / Consumer Health Information](#) | [Guidelines](#) | [Continuing Medical Education Courses](#) | [Journals and Forums and Mailing Lists](#) | [Professional Societies](#) | [Internet Directories and Search Engines](#) | [About PediatricRadiology.com and What's New](#)

**Search**

[Internet for Pediatric Radiology Information](#) | [Online Mendelian Inheritance in Man \(OMIM\)](#) | [PUBMED \(MEDLINE\)](#)

**Common Pediatric Clinical Problems**

| Imaging Approaches to Common Pediatric Clinical Problems (79 Approaches)  | Performing Common Pediatric Radiology Procedures (87 Procedures)  |
|---|---|
| <a href="#">Cardiovascular</a><br><a href="#">Chest - Neonatal</a><br><a href="#">Chest</a><br><a href="#">Gastrointestinal</a><br><a href="#">Genitourinary</a><br><a href="#">Musculoskeletal</a><br><a href="#">Neurological</a> | <a href="#">Cardiovascular</a><br><a href="#">Chest - Neonatal</a><br><a href="#">Chest</a><br><a href="#">Gastrointestinal</a><br><a href="#">Genitourinary</a><br><a href="#">Musculoskeletal</a><br><a href="#">Neurological</a> |

**Imaging Appearances of Common Pediatric Diseases (402 Diseases covered by 1,886 Cases)**

| <a href="#">Cardiovascular</a>   | <a href="#">Genitourinary</a>   |
|--|---|
| <a href="#">Congenital Heart Disease</a><br><a href="#">Acquired Heart Disease</a><br><a href="#">Cardiac Operations</a> | <a href="#">Kidneys</a><br><a href="#">Adrenal Gland</a><br><a href="#">Bladder, Ureters, Urethra</a><br><a href="#">Male Genital Tracts</a><br><a href="#">Female Genital Tracts</a>   |
| <a href="#">Chest and Airway</a><br><a href="#">Upper Airway</a><br><a href="#">Chest</a>                                | <a href="#">Musculoskeletal</a><br><a href="#">Congenital</a><br><a href="#">Infection / Inflammatory</a><br><a href="#">Neoplasm</a><br><a href="#">Trauma</a><br><a href="#">Metabolic / Endocrine</a><br><a href="#">Osteochondroses</a> |
| <a href="#">Gastrointestinal</a><br><a href="#">Biliary System</a><br><a href="#">Liver</a><br><a href="#">Spleen</a>    |   |

Virtual Children's Hospital: Metatextbook of Pediatric Radiology: Chest and Airway

**Children's Virtual Hospital®**  
the apprentice's assistant™

**MetaTextbook of Pediatric Radiology**

**Chest and Airway**

Michael P. D'Alessandro M.D.  
Peer Review Status: Internally Peer Reviewed

[Imaging Modalities](#) | [Normal Variants](#) | [Upper Airway](#) | [Chest](#)

**I. Imaging Modalities**

[Paediapaedia - Chest](#) | [Paediapaedia - Neonatal Chest](#) |

A. Plain radiographs  
B. CT (including high resolution)  
C. Bronchography  
D. Sonography  
E. Fluoroscopy  
F. Esophagography  
G. MR

**II. Normal Variants**

A. Embryology  
B. Anatomy | [Electric Lung Anatomy](#) | [Illustrated Encyclopedia of Human Anatomic Variation](#) |  
C. Miscellaneous

1. Normal Neonatal Chest | [Chiang Mai U](#) |
2. Expiratory Chest | [CERF - Expiratory Chest](#) | [Paediapaedia - Expiratory with Tracheal Buckling](#) |
3. Pectus | [Correlapaedia - Pectus Excavatum](#) | [Paediapaedia - Pectus Carinatum](#) | [Paediapaedia - Pectus Excavatum](#) | [Thoracopaedia](#) |
4. Poland's Syndrome | [Thoracopaedia](#) |
5. Thymic Hypertrophy | [CERF - Thymic Hypertrophy - 1](#) | [CERF - Thymic Hypertrophy - 2](#) | [CERF - Thymic Hypertrophy - 3](#) | [CERF - Thymic Hypertrophy - 4](#) | [CERF - Thymic Hypertrophy - 5](#) | [Paediapaedia - Prominent Thymus](#) | [Paediapaedia - Thymic Hyperplasia](#) | [Thoracopaedia - Prominent Thymus](#) | [U of Sydney - Prominent Thymus](#) |

**III. Upper Airway**

PediatricRadiology.com  
A Pediatric Radiology Digital Library  
Curated by Michael P. D'Alessandro, M.D.

**Search the Internet for Pediatric Radiology Information**

Over 60 pediatric radiology [Web sites](#) are indexed and made searchable by our [Gathering software agent](#).

Search the contents of all these Web sites by typing the word or phrase you are looking for into the search box. Results will be returned in order of presumed relevancy.

Search:

Match: [All words](#) | Description: [Long Format](#) | Sort by: [Relevancy](#)

[Home](#) | [Search](#) | [Imaging Appearances of Common Pediatric Diseases](#) | [What's New](#) | [New Site Notification](#) | [Comments](#) | [Awards, Reviews, Statistics, and Fan Mail](#)

PediatricRadiology.com is curated by [Michael P. D'Alessandro, M.D.](#)

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PediatricRadiology.com was funded in part by a grant from the Radiological Society of North America's Research and Education Foundation.

Last Revised: September 29, 2000  
URL: <http://www.pediatricradiology.com/>

[www.pediatricradiology.com](http://www.pediatricradiology.com)

# Case Study

## dalessandro.org - 1999-Present

### Digital Library as personal reference library

---

- **Design**

- **Planning**

- Mission - Keep track of Internet resources related to my professional interests + personal hobbies
    - Audience - Me
    - Educational construct - None
    - Metrics for success - Be useful to me

- **Creation**

- **Technology**

- Static Web site ~ 1 page in size ~ Hosted at Freeservers.com then Register4Less

- **Page Style**

- Stanford Guidelines with minimalist graphics

- **Metadata Style**

- None

- **Information Architecture**

- Organized by category

- **Tools to Gather Data**

- Stats - None
    - Communication - None
    - Search engine - None

- **Curation**

- **Content creation strategy**

- Serve as single place to organize my Daily / Weekly / Monthly Web sites to read, the media I consume, my own sites, and all the professional + personal links I need to manage

# Case Study

## dalessandro.org - 1999-Present

### Digital Library as personal reference library

---

- **Operation**
  - **Publicity and Marketing**
    - None
  - **Regular Maintenance**
    - Daily - Add links ~ Don't fix useful broken links so I can pull removed Web sites out of Internet Archive
    - Business model - Self funded at \$50 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - N/A
    - Reviews - N/A
    - Awards - N/A
  - **Outcome**
    - Is my homepage that I use everyday ~ Most neglected of my digital libraries, needs a good cleanup
- **Lessons Learned**
  - Part of it could be implemented with a social bookmarking tool, but when that tool disappears, you are out of luck

# Case Study

## dalessandro.org - 1999-Present

### Digital Library as personal library



www.dalessandro.org

# Searchable Web

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# Case Study

## SearchingRadiology.com - 2006-Present

### Digital Library as decision support tool

---

- **Design**
  - **Planning**
    - Mission - Create a point-of-care decision support tool for radiologists
    - Audience - Physicians at all levels of training practicing radiology
    - Educational construct - Learning situated in practice
    - Metrics for success- Own the keywords "radiology education" + "radiology" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Static Web site ~ 1 page in size ~ Hosted at Register4Less
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level
  - **Information Architecture**
    - Organized by location - most relevant information is at top of results page
  - **Tools to Gather Data**
    - Stats - SiteMeter, Google Analytics
    - Communication - By email
    - Search engine - Google Custom Search Engine
- **Curation**
  - **Content creation strategy**
    - Curate an index of most authoritative radiology journals + textbooks whose content is free to use
    - Radiology information that powers SearchingRadiology.com consists of radiology journals + textbooks + atlases that meet two criteria: 1) Peer-reviewed and 2) Open Access
    - Information from radiology journals made available due to their membership in Washington DC Principles for Free Access to Science (journals owned by their societies)
    - Can further scope search to textbooks, differential diagnoses, anatomy atlases, journals, images
    - Can receive CME for its use

# Case Study

## SearchingRadiology.com - 2006-Present

### Digital Library as decision support tool

---

- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self-funded at \$50 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 44,000 users performed 520,000 searches per year ~ Today: 33,000 users perform 480,000 searches per year
    - Reviews
      - Chosen as an interesting and helpful Web site for radiologists in the article "Internetressourcen fur Radiologen. Eine Positivauslese (Internet resources for radiologists - A positive selection)" - Radiologie, 2013
    - Awards - None
  - **Outcome**
    - Has one-third the traffic of the RSNA-supported search engine Yottalook with a fraction of the budget
- **Lessons Learned**
  - Easy to do on your own using the cloud
  - Did initial prototype (AskRadiographics.com) in 2002 by transforming RSNA's Radiographics journal of review articles into a point-of-care decision support tool using ht://dig search engine ~ RSNA declined to develop it + missed the future, years later came up with myRSNA which no one uses

# Case Study

## SearchingRadiology.com - 2006-Present

### Digital Library as decision support tool



[www.searchingradiology.com](http://www.searchingradiology.com)

# Social Web

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# Case Study

## Naval Open Source Intelligence - 2000-Present

### Digital Library organized around time / Digital library as news source

---

- **Design**
  - **Planning**
    - Mission - Curate a digital library of world naval operational news from open source intelligence ~ Initially coast watching, subsequently operational naval news, ultimately war studies curriculum
    - Audience - Those interested in naval / military affairs
    - Educational construct - Curriculum unfolds in practice
    - Metrics for success - Own the keywords "naval intelligence" + "naval education" + "naval news" + "navy news" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Dynamic Web site (Blog) - EditThisPage / Manila -> WordPress ~ Thousands of pages in size
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level ~ Tagging
  - **Information Architecture**
    - Organized by time and by category
  - **Tools to Gather Data**
    - Stats - HitBox -> SiteMeter, Google Analytics -> WordPress
    - Communication - By email -> By Facebook, Twitter and email
    - Search engine - Atomz.com -> Google Custom Search Engine -> WordPress search engine
- **Curation**
  - **Content creation strategy**
    - Initially - Daily automated curation using intelligent agents (news search agents) to find any stories
    - From 2000-2002 used Excite NewsTracker, Moreover, NewsHub, NewsIndex, QuickBrowse ~ Replaced them all with Google Alerts in 2003
    - Currently - Daily manual curation from select list of excellent news sources acquired over time using browsing / RSS reader / Twitter to find best stories
    - Content syndicated to RSS / Facebook / Twitter ~ Cross-platform syndication + integration is non-standards based and ugly
    - Publish Naval Year in Review in January to summarize last 12 months operational naval news

# Case Study

## Naval Open Source Intelligence - 2000-Present

Digital Library organized around time / Digital library as news source

---

- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self funded at \$150 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 137,000 users read 254,000 pages per year ~ Today: 121,000 users read 142,000 pages per year; 84 email subscribers; unknown number of RSS subscribers; 70,614 post views and 39,264 unique users per year and 824 fans on Facebook; 51,000 impressions per year and 164 followers on Twitter
    - **Reviews**
      - "This blog calls itself a 'a digital library of world naval operational news...from open source intelligence'" - Washington Post, 2003
      - "A resource providing news on world naval operations gathered from open source intelligence" - International Institute for Strategic Studies, 2004
      - "For defence I dip into the intriguing Naval Open Source Intelligence, which is mostly second-hand news and no views, but that's fine for me." - Flight International, 2007
      - "Excellent website Naval Open Source Intelligence." - War is Boring, 2009
    - **Awards** - "Site of the Week" - StrategyPage.com, 2002
  - **Outcome**
    - Over time a curriculum unfolded in practice ~ Open source intelligence can be an excellent form of naval education + continuing military education

# Case Study

## Naval Open Source Intelligence - 2000-Present

Digital Library organized around time / Digital library as news source

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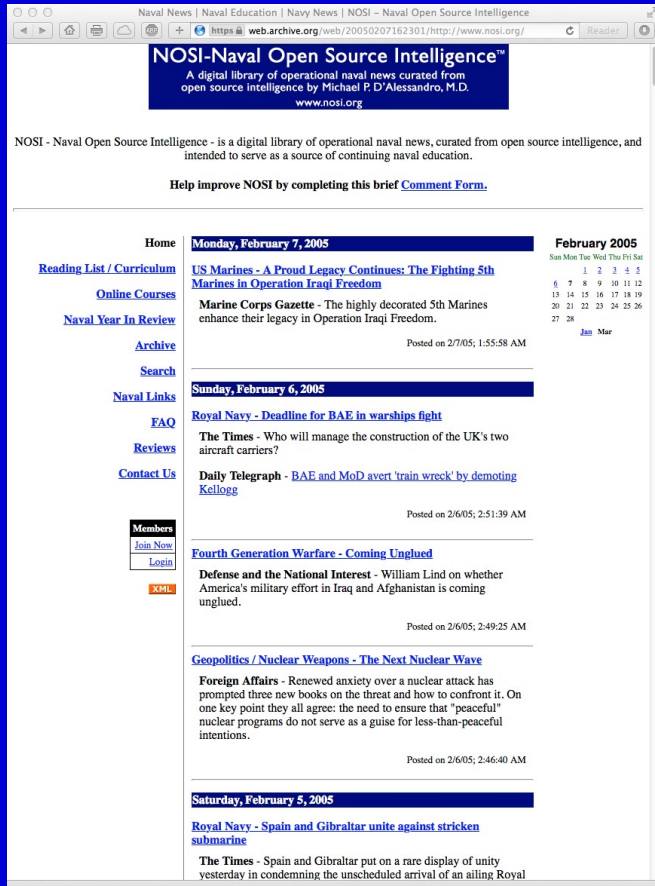
- **Lessons Learned**

- Software agents + digital libraries can bring order to chaos of Internet + allow open source intelligence in form of news stories to be used for continuing professional development
- Technique is generalizable to others fields + disciplines
- When blog is focused on topic that author has knowledge in + passion for, the learning experience can be electrifying for teacher + student
- Knitting together non-classified information can lead to classified conclusion through synthesis
- Done by Pro-Am but regularly used + valued by professionals

# Case Study

## Naval Open Source Intelligence - 2000-Present

### Digital Library organized around time / Digital library as news source



The screenshot shows the NOSI homepage with a navigation menu on the left and a main content area. The main content area features a calendar for February 2005, with articles for Monday, February 7, 2005, and Sunday, February 6, 2005. The articles include 'US Marines - A Proud Legacy Continues: The Fighting 5th Marines in Operation Iraqi Freedom' and 'Royal Navy - Deadline for BAE in warships fight'.

Naval News | Naval Education | Navy News | NOSI - Naval Open Source Intelligence

<https://web.archive.org/web/20050207162301/http://www.nosi.org/>

### NOSI-Naval Open Source Intelligence™

A digital library of operational naval news curated from open source intelligence by Michael P. D'Alessandro, M.D.  
[www.nosi.org](http://www.nosi.org)

NOSI - Naval Open Source Intelligence - is a digital library of operational naval news, curated from open source intelligence, and intended to serve as a source of continuing naval education.

Help improve NOSI by completing this brief [Comment Form](#).

**Home**  
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**Monday, February 7, 2005**  
**US Marines - A Proud Legacy Continues: The Fighting 5th Marines in Operation Iraqi Freedom**  
Marine Corps Gazette - The highly decorated 5th Marines enhance their legacy in Operation Iraqi Freedom.  
Posted on 2/7/05; 1:55:58 AM

**Sunday, February 6, 2005**  
**Royal Navy - Deadline for BAE in warships fight**  
The Times - Who will manage the construction of the UK's two aircraft carriers?  
**Daily Telegraph - BAE and MoD avert 'train wreck' by demoting Kellogg**  
Posted on 2/6/05; 2:51:39 AM

**Fourth Generation Warfare - Coming Unglued**  
Defense and the National Interest - William Lind on whether America's military effort in Iraq and Afghanistan is coming unglued.  
Posted on 2/6/05; 2:49:25 AM

**Geopolitics / Nuclear Weapons - The Next Nuclear Wave**  
Foreign Affairs - Renewed anxiety over a nuclear attack has prompted three new books on the threat and how to confront it. On one key point they all agree: the need to ensure that "peaceful" nuclear programs do not serve as a guise for less-than-peaceful intentions.  
Posted on 2/6/05; 2:46:40 AM

**Saturday, February 5, 2005**  
**Royal Navy - Spain and Gibraltar unite against stricken submarine**  
The Times - Spain and Gibraltar put on a rare display of unity yesterday in condemning the unscheduled arrival of an ailing Royal



The screenshot shows the NOSI Archive page. It features a navigation menu on the left and a main content area. The main content area includes a description of the archive, a list of articles, and a topic archive.

[web.archive.org/web/20050204122332/http://www.nosi.org/archive](https://web.archive.org/web/20050204122332/http://www.nosi.org/archive)

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### Archive

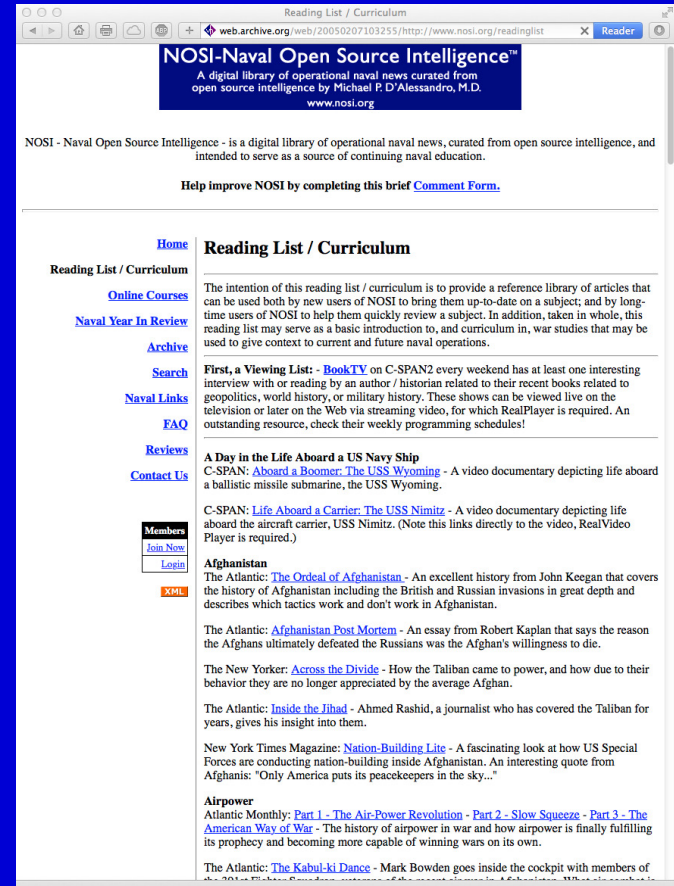
Here is a complete archive of NOSI, separated into 6 month time spans. Each file is quite long, and will take a while to load.

Many of the articles linked to in the archive will be gone from their respective Web sites, for a number of reasons. To attempt to retrieve these articles, you have three options:

- Go to the [Internet Archive](#) and type the Web address (URL) of the article into its WayBack Machine search engine and see if it has an archived copy.
- Go to [Google](#) and type the title of the article, in quotes, into its Web search engine. Someone may have placed a copy of the original article onto their personal Web site.
- Finally, go to the newspaper's Web site and search through its archive. You must likely will have to pay to retrieve the article.

**Topic Archive** beginning July 1, 2004. Each topic is displayed in reverse chronological order.

- Canadian Navy
- Chinese Navy
- Disarmament
- Editorial Note
- Fourth Generation Warfare
- Geopolitics
- Greek Navy
- History
- Indian Navy
- Indonesian Navy
- Information Warfare
- Intelligence
- Iraq
- Israeli Navy
- Italian Navy
- Japanese Maritime Self Defense Force
- Military Sealift Command
- Miscellaneous
- Nigerian Navy
- Nonlethal Weapons
- North Korean Navy
- Norwegian Navy
- Pakistani Navy
- Piracy
- Royal Australian Navy
- Royal Marines
- Royal Navy



The screenshot shows the NOSI Reading List / Curriculum page. It features a navigation menu on the left and a main content area. The main content area includes a description of the reading list, a list of articles, and a topic archive.

[web.archive.org/web/20050207103255/http://www.nosi.org/readinglist](https://web.archive.org/web/20050207103255/http://www.nosi.org/readinglist)

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**Members**  
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### Reading List / Curriculum

The intention of this reading list / curriculum is to provide a reference library of articles that can be used both by new users of NOSI to bring them up-to-date on a subject, and by long-time users of NOSI to help them quickly review a subject. In addition, taken in whole, this reading list may serve as a basic introduction to, and curriculum in, war studies that may be used to give context to current and future naval operations.

**First, a Viewing List - BookTV** on C-SPAN2 every weekend has at least one interesting interview with or reading by an author / historian related to their recent books related to geopolitics, world history, or military history. These shows can be viewed live on the television or later on the Web via streaming video, for which RealPlayer is required. An outstanding resource, check their weekly programming schedules!

**A Day in the Life Aboard a US Navy Ship**  
C-SPAN: [Aboard a Boomer: The USS Wyoming](#) - A video documentary depicting life aboard a ballistic missile submarine, the USS Wyoming.

C-SPAN: [Life Aboard a Carrier: The USS Nimitz](#) - A video documentary depicting life aboard the aircraft carrier, USS Nimitz. (Note this links directly to the video, RealVideo Player is required.)

**Afghanistan**  
The Atlantic: [The Ordeal of Afghanistan](#) - An excellent history from John Keegan that covers the history of Afghanistan including the British and Russian invasions in great depth and describes which tactics work and don't work in Afghanistan.

The Atlantic: [Afghanistan Post Mortem](#) - An essay from Robert Kaplan that says the reason the Afghans ultimately defeated the Russians was the Afghan's willingness to die.

The New Yorker: [Across the Divide](#) - How the Taliban came to power, and how due to their behavior they are no longer appreciated by the average Afghan.

The Atlantic: [Inside the Jihad](#) - Ahmed Rashid, a journalist who has covered the Taliban for years, gives his insight into them.

New York Times Magazine: [Nation-Building Lite](#) - A fascinating look at how US Special Forces are conducting nation-building inside Afghanistan. An interesting quote from Afghans: "Only America puts its peacekeepers in the sky..."

**Airpower**  
Atlantic Monthly: [Part 1 - The Air-Power Revolution](#) [Part 2 - Slow Squeeze](#) [Part 3 - The American Way of War](#) - The history of airpower in war and how airpower is finally fulfilling its prophecy and becoming more capable of winning wars on its own.

The Atlantic: [The Kabul-ki Dance](#) - Mark Bowden goes inside the cockpit with members of

# Case Study

## Naval Open Source Intelligence - 2000-Present

### Digital Library organized around time / Digital library as news source

Naval Year In Review

**NOSI-Naval Open Source Intelligence™**  
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**Naval Year In Review**

**2003**

**World Naval Operational News Highlights**

Overall, it is fascinating to reflect on just how correct open source intelligence stories were in 2003 in regards to what has subsequently transpired in Iraq. The stories NOSI covered described precisely the buildup of forces and logistics in theater, the evolution of the war plan, and accurately predicted the challenges the U.S. would face in a post-Saddam Iraq.

- Several recurring themes were identified throughout this year's naval news stories, many of which persist from last year:
  - Yet another navy running out of operating funds. The Canadian Navy will effectively take 2004 off, to rest and recuperate from the high level of operations it has been conducting in the Persian Gulf.
  - Continuing piracy on the high seas, particularly in the South China Sea.
  - The tension in the Taiwanese Straits between Taiwan and China, with China continuing to probe Taiwanese territorial waters with spy ships.
  - The growing Chinese naval presence in the Indian Ocean.
  - Territorial disputes over islands in the South China Sea, such as the Spratly Islands.
  - Territorial disputes in the Caspian Sea, based upon oil drilling rights to the vast oil riches in the region.
  - The threats terrorists pose to ships.
  - The dangerous nature of submarine operations, evidenced this year by the mysterious loss of the Ming-class Chinese submarine's crew, but not the submarine off of China and the loss of the decommissioned Russian November-class submarine while being towed for scrapping.
  - Concern over the damaging effect that low frequency active sonar has on marine mammals.
  - Concern that the decaying former Soviet Navy nuclear submarine force tied up at dock is having a damaging effect on the marine environment.
- Significant naval operations this year included:
  - Coalition naval operations in support of Operation Iraqi Freedom

facebook

231 NOSI - Naval Open Source Intelligence

Non-Profit Organization · Edit Info

Wall

NOSI - Naval Open Source Intelligence · Everyone (Most Recent)

Share: Status Photo Link Video Question

Write something...

NOSI - Naval Open Source Intelligence

- Royal Navy - Britain could send military reinforcements to Gulf [ <http://divi.it/16xzh8> ] - Daily Telegraph - Britain could send military reinforcements to the Gulf if the dispute with Iran escalates, according to Philip Hammond, the Defence Secretary.
- NOSI - Naval Open Source Intelligence
- Royal Navy - Hunting pirates on board the RFA Fort Victoria [ <http://divi.it/16y0Y> ] - Daily Telegraph - Holly Watt reports from the RFA Fort Victoria in the Indian Ocean as a raid by the Royal Navy on a fishing boat leads to the arrest of 14 suspected pirates.
- Omar Siddique Interesting. I think a big difference between today's anti-piracy fight and how pirates were treated in the past is they're being treated as common criminals. Their treatment would have been a lot harsher in the past.
- NOSI - Naval Open Source Intelligence
- US Navy - Battle for Control of Asia's Seas Goes Underwater [ <http://divi.it/16fKnc> ] - AP - It's getting a bit more crowded under the sea in Asia, where Andrew Peterson commands one of the world's mightiest weapons, a \$2 billion nuclear submarine with unrivaled stealth and missiles that can devastate targets hundreds of miles (kilometers) away.
- NOSI - Naval Open Source Intelligence
- Iran - Iran gets the message from Washington [ <http://divi.it/16VBF8> ] - Washington Post - According to David Ignatius, the Iran nuclear crisis is far from over, but Tehran appears to have made a subtle blink - backing away from its threat a few weeks ago to close the Strait of Hormuz in response to escalating U.S. sanctions.
- NOSI - Naval Open Source Intelligence
- US Navy - Battle for Control of Asia's Seas Goes Underwater [ <http://divi.it/16fKnc> ] - AP - It's getting a bit more crowded under the sea in Asia, where Andrew Peterson commands one of the world's mightiest weapons, a \$2 billion nuclear submarine with unrivaled stealth and missiles that can devastate targets hundreds of miles (kilometers) away.
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NOSI (@nosintel) | Twitter

Naval Open Source Intelligence - operational naval news curated from open source intelligence, intended to serve as a source of continuing naval education

[www.nosi.org](http://www.nosi.org)

Tweet to NOSI

Who to follow · Refresh · View all

- MedEdPORTAL @MedEdP... Follow
- Mick Beige-Brown @aussie... Follow
- ONC @ONC\_HealthIT Follow

Trends · Change

- #ChristmasEve 14.5K Tweets
- #Festive 76.8K Tweets
- #gingerbreadman 24.5K Tweets
- #HappyBirthdayLouis 472K Tweets

Tweets · Tweets & replies

NOSI (@nosintel) · 22h

Military to Military [nosi.org/2015/12/23/mil](http://www.nosi.org/2015/12/23/mil)

NOSI (@nosintel) · Dec 22

Port Visits Resume for Nuclear-Armed Navy Subs [nosi.org/2015/12/22/por...](http://www.nosi.org/2015/12/22/por...)

NOSI (@nosintel) · Dec 20

German-made submarine heads to Israel for delivery [nosi.org/2015/12/21/ger...](http://www.nosi.org/2015/12/21/ger...)

NOSI (@nosintel) · Dec 20

The Russian Navy Report You Missed (But Need to Read, Now) [nosi.org/2015/12/20/the...](http://www.nosi.org/2015/12/20/the...)

NOSI (@nosintel) · Dec 19

Making Sense of the Latest Taiwan Arms Deal [nosi.org/2015/12/20/mak...](http://www.nosi.org/2015/12/20/mak...)

NOSI (@nosintel) · Dec 18

Carter's Rebuke of Navy Budget Proposal Points to Split Between Service, DoD Priorities [nosi.org/2015/12/19/car...](http://www.nosi.org/2015/12/19/car...)

NOSI (@nosintel) · Dec 17

[www.nosi.org](http://www.nosi.org) ~ [www.facebook.com/nosint](https://www.facebook.com/nosint) ~ [www.twitter.com/nosintel](https://www.twitter.com/nosintel)

# Case Study

## BiodefenseEducation.org - 2004-2009

### Digital Library as curriculum unfolding in practice

---

- **Design**

- **Planning**

- Mission - Address challenges of how to continuously educate about biodefense / how to develop a sense of community in biodefense / how to manage biodefense information explosion ~ Serve as a source of continuing education on biodefense affairs - News Library serves as source of daily biodefense education + continuing professional development, Collaboratory to discuss news stories or other biodefense topics, Reference Library is biodefense knowledge management system
    - Audience - Current + next generation of biodefense investigators + trainees, medical personnel, first responders
    - Educational construct - Curriculum unfolds in practice
    - Metrics for success - Own the keyword "biodefense" and get a top 10 ranking for it in search engines

- **Creation**

- **Technology**

- Dynamic Web site (Blog) - EditThisPage / Manila ~ Hundreds of pages in size

- **Page Style**

- Stanford Guidelines with minimalist graphics

- **Metadata Style**

- Search engine optimization at site level ~ Tagging

- **Information Architecture**

- Organized by time and by category

- **Tools to Gather Data**

- Stats - SiteMeter
    - Communication - By email
    - Search engine - Google Custom Search Engine for site, [ht://dig](http://dig) for biodefense textbooks

# Case Study

## BiodefenseEducation.org - 2004-2009

### Digital Library as curriculum unfolding in practice

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- **Curation**

- **Content creation strategy**

- News Library - Daily - intelligent agents (Google Alerts) searching world news for 10 terms (Category A agents + biodefense + bioterrorism + biological warfare + bioweapon) to find unclassified biodefense news stories ~ Content syndicated to RSS
    - Collaboratory - User-generated content
    - Reference Library - Knowledge management system that indexed key biodefense textbooks + made them searchable via scoped search using ht://dig, automated MEDLINE search to keep researchers abreast of current literature, curated reading list of articles to bring new researcher up to speed in biodefense issues
    - Publish Biodefense Year in Review in January to summarize last 12 months biodefense news

- **Operation**

- **Publicity and Marketing**

- Standard guerilla marketing on Web ~ Emails to biodefense centers + investigators ~ Described in articles in journals, performed demos + distributed flyers at meetings

- **Regular Maintenance**

- Daily - Yearly link check with Big Brother + archive
    - Business model - Funded by National Institutes of Health

# Case Study

## BiodefenseEducation.org - 2004-2009

### Digital Library as curriculum unfolding in practice

---

- **Evaluation**

- **Evaluation and Continuous Quality Improvement**

- Usage - At peak: 15,000 users read 32,000 pages per year
    - Reviews - "In the fast moving modern world, biodefense is becoming a new specialty that we may all have to know more about. So check out BiodefenseEducation.org and its library of information on this topic." - British Medical Journal, 2004
    - Awards - None

- **Outcome**

- News Library - Serves as mentor who on daily basis suggests to its users concise readings related to current events in biodefense, allowing situated learning to occur + thus an unstructured curriculum unfolds in practice
    - - Over two years, 678 news stories from 178 news sources covered all categories in the required + elective biodefense graduate program courses
    - Collaboratory - Unused, was failure ~ Reference Library - Little used

- **Lessons Learned**

- **Strengths** - Addresses content preferences of health care professionals for Web-based biodefense news stories over Web-based textbooks or courses, broad number of authors + news sources used for stories which are of high accuracy, key role played by curators with expertise in library science / medical informatics / medicine / education which allows them to select best stories + function as "trailblazers" (Bush) or members of "Hypercorps" (Nelson)
  - **Limitations** - Use only English-language news stories, short half-life of free news stories, news stories may not be free in future, providing the stories does not guarantee that they are read or understood + learning does not necessarily result
  - **Successfully addressed challenges** on how to continuously educate individuals about biodefense + how to manage biodefense information explosion but failed to address challenge of creating sense of community amongst individuals
  - **Surfing the Internet** likened to taking drink from a fire hose. If one plugs into Internet's fire hose of data, filters the data to news stories, filters the data once again to biodefense news stories, and presents the stories in an organized chronological fashion, then an unstructured biodefense educational curriculum can be demonstrated to unfold in practice, becoming an educational resource that is ultimately well regarded and that may be efficient to use.
  - **There is need for initial + continuing education** on biodefense for medical providers; challenge is how to deliver biodefense continuing education to an already busy + information-saturated workforce. A biodefense digital library (BDL) based on theories of adult learning and situated learning, in form of biodefense news stories, over time develops into a high-quality unstructured curriculum on biodefense that unfolds in practice and that closely parallels the structured curriculum of a formal biodefense graduate program. BDL provides alternative + complementary learning technique for motivated individuals who do not have time, inclination, or ability to attend a structured course of study on biodefense affairs.

# Case Study

## BiodefenseEducation.org - 2004-2009

### Digital Library as curriculum unfolding in practice

Biodefense | Bioterrorism | Biological Warfare: BiodefenseEducation.org

<https://web.archive.org/web/20050206073600/http://www.biodefense.org>

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Participate in the [Learning Collaboratory / Discussions](#) --- Seek answers in the [Reference Library](#)

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---

**Home** **Friday, February 4, 2005** **February 2005**

[Learning Collaboratory / Discussions](#) [Reference Library](#) [Reading List / Curriculum](#) [Online Courses](#) [Year in Review](#) [Archive](#) [Search](#) [FAQ](#) [Reviews](#) [Contact Us](#)

**Terrorism - Al Qaeda's New Front**

**Frontline** - An investigation into the threat radical jihadists pose to Western Europe and its allies - including the U.S. Read the [Transcript](#), and the [Interviews](#), [Special Reports](#), and [essay on Al Qaeda Today](#).

Posted on 2/4/05; 4:00:50 AM

---

**Thursday, February 3, 2005**

**Smallpox - Cancer drugs may fight smallpox**

**Journal of Clinical Investigation** - Cancer drugs have unexpectedly led to an entirely new way to beat viral infections - and particularly smallpox - a new study suggests.

Posted on 2/3/05; 4:55:00 AM

---

**Wednesday, February 2, 2005**

**Anthrax - Pentagon Boosts Plan For Anthrax Inoculations**

**Washington Post** - The Pentagon has taken a major step toward reviving its controversial program of giving anthrax vaccine to service members, invoking emergency provisions of the Project BioShield Act that allow use of unapproved drugs and vaccines.

Posted on 2/2/05; 4:57:06 PM

---

**Monday, January 31, 2005**

**Simulation - Facing up to the bioterror threat**

**New York Times** - Analysis of the Atlantic Storm

Reference Library

<https://web.archive.org/web/20050118032227/http://www.biodefense.org>

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**Textbooks**

- Field Management of Chemical Casualties Handbook - Biological Agents
- Defense Against Toxin Weapons
- Medical Management of Biological Casualties
- Medical Products for Supporting Military Readiness Vaccines and Drugs (Go Book)
- Textbook of Military Medicine: Medical Aspects of Chemical and Biological Warfare
- Treatment of Biological Warfare Agent Casualties

**Search Textbooks**

Search:  Search

Match:  All words  Description:  Long Format  Sort by:  Relevancy

**Journals**

- Search through the last 3 months of MEDLINE for articles with the following MESH terms: [Biological Warfare](#), [Bioterrorism](#), [Bacillus Anthracis](#), [Anthrax](#), [Smallpox](#), [Yersinia Pestis](#), [Botulism](#), [Clostridium Botulinum](#), [Tularemia](#), [Francisella Tularensis](#), [Hemorrhagic Fevers](#), [Viral](#)
- [Biosecurity and Bioterrorism](#)
- [Emerging Infectious Diseases](#)
- [JAMA Bioterrorism](#)

**News**

- [News Archive](#) organized by topic, in reverse chronological order.

**References**

- AFIP Hot Topics
- American College of Physicians
- CDC Bioterrorism Preparedness and Response
- CDC Health Alert Network
- CDC Public Health Information Network
- Clinician's Biodefense Network
- Infectious Diseases Society of America
- National Library of Medicine Biological Warfare
- National Library of Medicine MedlinePlus Biodefense
- ProMED - Program for Monitoring Emerging Diseases
- Virtual Naval Hospital - Information for Providers

Discussion Group

<https://web.archive.org/web/20050118032227/http://www.biodefense.org>

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---

**Discussion Group**

Note: As of 2/17/05, the Learning Collaboratory is temporarily suspended due to comment spam. We hope to be operational again soon.

You may participate in our Learning Collaboratory in two ways:

- Comments** - Click on the "Comment" link after each news story to read the comments related to each story. To post a comment fill out the form at the bottom of the Comments page, and then click on the "Submit" button and your comment will be posted automatically to the site. While registration is not required to read and post comments, we ask that you clearly identify yourself when posting a comment.
- Discussions** - Click on any Discussion Group Topic to read it. To start your own discussion on any topic related to Biodefense that interests you, please fill out a [Registration Form](#). Membership is open to all. Then click on the [Create a New Topic](#) link at the bottom of the page to create a new Discussion Group Topic.

Please Note: Comments related to each news story also appear on Discussion Group Topics.

| Topic  | Originator              | Topic | Replies | Chronological View     |
|--|-------------------------|-------|---------|------------------------|
| <a href="#">Editorial Note - BiodefenseEducation.org on Long Term Break</a>      | Michael P. D'Alessandro | 1     | 3848    | 1/2/2006; 3:34:19 AM   |
| <a href="#">Editorial Note - 2005 Biodefense Year in Review</a>                  | Michael P. D'Alessandro | 1     | 3815    | 1/2/2006; 3:52:17 AM   |
| <a href="#">Vaccines - New Technique Promises To Safely, More Efficiently...</a> | Michael P. D'Alessandro | 1     | 3851    | 12/31/2005; 5:27:11 AM |
| <a href="#">Research - Scientists Inhibit U.S. Response For Biological...</a>    | Michael P. D'Alessandro | 1     | 3918    | 12/29/2005; 3:51:58 AM |
| <a href="#">Simulation - The Battle in New York City</a>                         | Michael P. D'Alessandro | 1     | 3917    | 12/29/2005; 3:28:01 AM |
| <a href="#">Public Policy - President's Justice, Liability Shield Could...</a>   | Michael P. D'Alessandro | 1     | 3914    | 12/29/2005; 4:26:14 AM |
| <a href="#">Research - A Building Is Too Safe For Jobs</a>                       | Michael P. D'Alessandro | 1     | 3944    | 12/29/2005; 4:24:29 AM |
| <a href="#">Research - Gaps in antibiotic resistance for level 4 bio...</a>      | Michael P. D'Alessandro | 1     | 3969    | 12/29/2005; 4:01:50 AM |
| <a href="#">Public Policy - Suez of Biodefense</a>                               | Michael P. D'Alessandro | 1     | 3901    | 12/27/2005; 3:07:58 AM |
| <a href="#">Research - Experts Say Canada Is Becoming Biodefense...</a>          | Michael P. D'Alessandro | 1     | 3963    | 12/27/2005; 4:05:54 AM |
| <a href="#">Decontamination - Testing Children Exposed To Chemical...</a>        | Michael P. D'Alessandro | 1     | 3933    | 12/27/2005; 4:03:01 AM |
| <a href="#">History - An Interview with Charles C. Mann</a>                      | Michael P. D'Alessandro | 1     | 3959    | 12/26/2005; 2:44:41 AM |
| <a href="#">News - US Army Soldiers admit they train them in secret</a>          | Michael P. D'Alessandro | 1     | 3949    | 12/25/2005; 1:48:57 AM |
| <a href="#">News - What Mrs. Anthony Did Not Know</a>                            | Michael P. D'Alessandro | 1     | 3978    | 12/23/2005; 3:48:43 AM |
| <a href="#">Anthrax - Mandatory anthrax inoculations should resume,...</a>       | Michael P. D'Alessandro | 1     | 4071    | 12/23/2005; 3:46:24 AM |

www.biodefenseeducation.org (via Internet Archive)

# Case Study

## PediatricEducation.org - 2004-Present

### Digital Library as learning portfolio

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- **Design**
  - **Planning**
    - Mission - Serve as a source of continuing pediatric education with a goal of building a pediatric virtual learning community
    - Audience - Health care providers at all levels of training practicing pediatrics
    - Educational construct - Curriculum unfolds in practice, Case-based learning
    - Metrics for success - Own the keywords "pediatric education" + "paediatric education" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Dynamic Web site (Blog) - EditThisPage / Manila -> WordPress ~ Hundreds of pages in size
    - Mirrored to developing world via Widernet
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level ~ Tagging
  - **Information Architecture**
    - Organized by time and by category
  - **Tools to Gather Data**
    - Stats - SiteMeter, Google Analytics -> WordPress
    - Communication - By email and monthly email newsletter
    - Search engine - Google Custom Search Engine -> WordPress search engine
- **Curation**
  - **Content creation strategy**
    - Case Library - Author publishes 1 case / week from their Learning Portfolio
    - Content syndicated to RSS / Facebook / Twitter ~ Cross-platform syndication + integration is non-standards based and ugly
    - Learning Collaboratory - User-generated content
    - Reference Library - Pediatric knowledge management system

# Case Study

## PediatricEducation.org - 2004-Present

### Digital Library as learning portfolio

---

- **Operation**

- **Publicity and Marketing**

- Standard guerilla marketing on Web

- **Regular Maintenance**

- Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self-funded at \$150 / year

- **Evaluation**

- **Evaluation and Continuous Quality Improvement**

- Usage- At peak: 536,000 users read 630,000 pages per year at peak ~ Today: 364,000 users read 427,000 pages per year; 129 email subscribers; unknown number of RSS subscribers; 1,400 post views and 633 unique users per year and 108 fans on Facebook; 143,000 impressions per year and 266 followers on Twitter

- **Reviews**

- "Learning by case history is always instructive and interesting - after all, case histories form the core of our day to day clinical work. If paediatrics is your interest, look at <http://www.pediatriceducation.org>." - British Medical Journal, 2005
      - "Have identified PediatricEducation.org as being particularly influential within the pediatric community." - Great Ormond Street Hospital, 2012
      - "PediatricEducation.org is recognized as a leading resource on a number of health topics." - U.S. Agency for Healthcare Research and Quality (AHRQ), 2012

- Awards - Web Excellence Award for Healthcare Professionals Portal for Outstanding Content, Medicine on the Net, 2006

- **Outcome**

- Case Library - Over 5 years an unstructured curriculum unfolds in practice - covers 100% of age ranges, 100% of specialties, 98% of symptoms, 55% of disease, 90% of topics in 3 national pediatric curricula

- Collaboratory little used ~ Reference Library replaced by SearchingPediatrics.com

# **Case Study**

## **PediatricEducation.org - 2004-Present**

### **Digital Library as learning portfolio**

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- **Lessons Learned**
  - "My reading is now focused on my patients"
  - Example of learner taking control of + assuming responsibility for their own learning
  - Learning portfolio documents what you have learned, assessment by examination documents what you don't know
  - Case archive is a database of pediatric cases that can be used to demonstrate spectrum of a disease, multiple etiologies of a symptom, key concepts to master within a discipline, variety of diseases within different age groups

# Case Study

## PediatricEducation.org - 2004-Present

### Digital Library as learning portfolio

Pediatrics | Paediatrics | Pediatric Education | Paediatric Education - PediatricEducation.org

web.archive.org/web/20090503092202/http://www.ped Reader

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A pediatric digital library and learning collaboratory  
Curated by Donna M. D'Alessandro, M.D. and Michael P. D'Alessandro, M.D.

PediatricEducation.org is a Pediatric Digital Library and Learning Collaboratory intended to serve as a source of continuing pediatric education

Additional pediatric resources: [SearchingPediatrics.com](#) | [PediatricCommons.org](#) | [GeneralPediatrics.com](#)

#### Should I Consider PFAPA?

April 27th, 2009

**Patient Presentation**  
A 5-year-old female came to second opinion clinic with a 1 year history of intermittent fevers. The fevers occurred every 6 weeks for 48-72 hours with documented fevers to 102-103.8deg F. Over the year, the fevers increased in frequency to every 3-4 weeks. She had fatigue during the fevers and mild sore throat. The patient was seen for most of these episodes. The primary care physician and an otolaryngologist documented anterior cervical adenopathy of 1.0 cm or more, and ulcerations in the mouth in most of the episodes. She was taking no medication other than acetaminophen. Review of the medical records and diaries from the family showed laboratory studies for strep pharyngitis positive one time, but all other testing for streptococcal pharyngitis were negative. Complete blood counts were normal during and between episodes, except for occasional elevated platelets, or mild leukocytosis (not at the same time) and showed no cyclicity. She also sometimes had a mildly elevated C-reactive protein. Testing for histoplasmosis and other fungal diseases were negative. She had undergone a tonsillectomy and adenoidectomy approximately 2 months ago. She had no fever for 6 weeks afterwards and then had another episode.

The past medical history showed a hospitalization for respiratory syncytial virus as an infant, and 2-3 episodes of otitis media.

The family history revealed that the family was Caucasian of northern European descent. There were no genetic abnormalities, connective tissue diseases, immunodeficiencies or children that died early in life. The younger and older siblings were healthy as were the parents.

The social history showed that the family lived on a grain farm without animals. The drinking water had been tested for infectious diseases and toxins and was negative. She had missed school because of the fevers per the school policy and fatigue but made up all her work quickly and returned to school as soon as possible. She was a good student. There was no history of travel, or exposure to persons who had traveled outside the United States or were in the military. She had two outside dogs who were healthy.

The review of systems showed no nausea/emesis, cough, normal stooling and voiding, no sweating, chills, or rashes. She had been gaining weight and height appropriately over the year.

The pertinent physical exam showed an alert female in no distress. She was afebrile with growth parameters in the 10-50%. HEENT examination showed normal mouth examination and bilateral anterior cervical lymph nodes at the angle of the mandible which were both less than 0.5 centimeters. She had some shoddy groin nodes but no other adenopathy. The rest of her examination was negative.

The laboratory evaluation included electrolytes, urinalysis, erythrocyte sedimentation rate, C-reactive protein, rheumatoid factor, immunoglobulin D and E levels, and titres for cytomegalovirus and Epstein Barr virus. All were negative. The radiologic evaluation of chest and abdominal radiographs were also negative.

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| May 2009 |    |    |    |    |    |    |
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« Apr

Pediatrics | Paediatrics | Pediatric Education | Paediatric Education - PediatricEducation.org

web.archive.org/web/20090427085629/http://www.pediatricedu Reader

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PediatricEducation.org is a Pediatric Digital Library and Learning Collaboratory intended to serve as a source of continuing pediatric education

Additional pediatric resources: [SearchingPediatrics.com](#) | [PediatricCommons.org](#) | [GeneralPediatrics.com](#)

#### Learning Collaboratory

If you are a Resident, Fellow, or Attending Physician practicing pediatrics - or if you are a Health Care Provider practicing pediatrics - you may participate in the Learning Collaboratory. Send us your comments or questions about specific cases posted on PediatricEducation.org by filling out the Question Form.

Answers to comments or questions about specific cases on PediatricEducation.org are posted here, in reverse chronological order.

**Monday December 31, 2007 - How Long Does Immunity Last After Routine Childhood Immunization with Pertussis Vaccine?**

**Comment**  
N.C. from Egypt writes:  
"The points you discussed on pertussis are very important, as nowadays we usually ignore it in our differential diagnosis in a child presenting with cough, unless there is a history of contact."

**Answer**  
I agree!

**Monday October 15, 2007 - What Causes Heart Failure?**

**Question**  
G.L. a pediatric cardiologist makes two comments:  
1. "Congestive heart failure [CHF] may have ??? a myocarditis or dilated cardiomyopathy phase and supraventricular tachycardia [SVT] despite the biopsy being negative."  
2. "Beta Blockers are not used for CHF in [pediatrics] but are in adults because cardiac output is more rate dependant in kids and especially infants."

**Answer**  
1. It is possible that with this patient there was a component of myocarditis which caused an atrial ectopic tachycardia, and that myocarditis was not found on the biopsy.  
2. The cardiologist is correct about the beta blocker in general but they are used in certain pediatric cases. Children with CHF are usually treated with a digoxin/furoxemide combination or an inotropic agent/ diuretic regimen.  
These points have been clarified in the case.

**Monday September 3, 2007 - What Should I Order for An Immune Workup?**

**Question**  
M.B., a family physician from the United States asks: "Did this child have history of pneumococcal immunizations?"

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| 27         | 28 | 29 | 30 |    |    |    |

« Mar

Pediatrics | Paediatrics | Pediatric Education | Paediatric Education - PediatricEducation.org

web.archive.org/web/20090501034800/http://www.ped Reader

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Additional pediatric resources: [SearchingPediatrics.com](#) | [PediatricCommons.org](#) | [GeneralPediatrics.com](#)

#### Reference Library

Pediatric Textbooks | Pediatric Digital Libraries

**Search Internet:**  
[SearchingPediatrics.com](#) | [Google Image Search - Pediatric Images](#)

#### Pediatric Textbooks

**Adolescent Medicine**  
AMA - Guidelines for Adolescent Preventive Services - GAPS | Brookside Press - OB-GYN 101 | eMedicine - Obstetrics and Gynecology | US Navy - Operative Obstetrics and Gynecology

**Cardiology**  
eMedicine - Pediatric Cardiology

**Critical Care**  
Dalhousie University - Pediatric Pain Source Book | eMedicine - Pediatric Critical Care

**Dermatology**  
Dermis - Atlas of Pediatric Dermatology | eMedicine - Dermatology - Pediatric | Johns Hopkins - Dermatology Image Atlas

**Emergency Medicine**  
Cork University - Emergency Medicine Handbook | eMedicine - Emergency Medicine - Pediatric

**General**  
CDC - Health Topics | DHHS - Guide to Clinical Preventive Services | eMedicine - General Pediatrics | eMedicine - Pediatric Developmental and Behavioral | HHS - A Coordinated Response to Child Abuse and Neglect | Medical College of Georgia - Continuity Clinic Handbook | Merck Manual - Pediatrics | NCEMCH - Bright Futures | Royal Children's Hospital - Clinical Practice Guidelines | University of Hawaii - Case Based Pediatrics | US Air Force - Pediatric Emergency Manual and Its Preface | Virtual Pediatric Hospital - Pediatric Common Questions Quick Answers | WHO - Health Topics and Policies

**Genetics**  
eMedicine - Genetics and Metabolic Diseases | Geneva Foundation for Medical Education and Research - Developmental and Genetic Diseases | NCBI - Online Mendelian Inheritance of Man

**Humanitarian Emergencies**  
CDC - Famine-Affected, Refugee, and Displaced Populations: Recommendations for Public Health Issues | Medecins Sans Frontieres - Clinical Guidelines Diagnostic and Treatment Manual | [Medicine Case Examples - Respiratory Disease - LRI/RSV - Pediatric Medicine](#)

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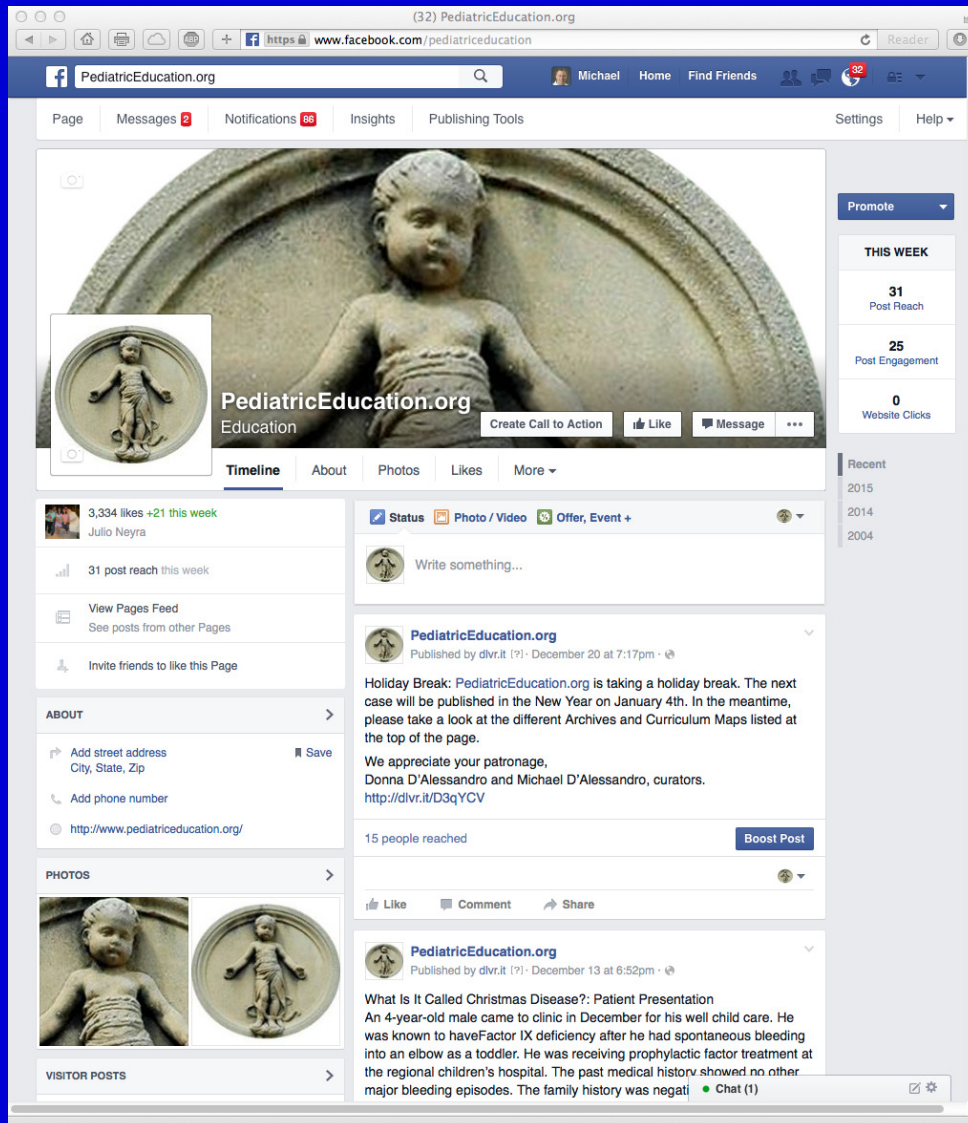
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| 25       | 26 | 27 | 28 | 29 | 30 | 31 |

« Apr

# Case Study

## PediatricEducation.org - 2004-Present

### Digital Library as learning portfolio



The screenshot shows the Facebook page for PediatricEducation.org. The page features a cover photo of a classical statue of a child. The profile picture is a circular logo with a similar statue. The page has 3,334 likes and 21 posts this week. The timeline shows a post from December 20, 2015, announcing a holiday break and a post from December 13, 2015, titled "What Is It Called Christmas Disease?: Patient Presentation".

**PediatricEducation.org**  
Education

3,334 likes +21 this week  
Julio Neyra

31 post reach this week

View Pages Feed  
See posts from other Pages

Invite friends to like this Page

**ABOUT**

Add street address  
City, State, Zip

Add phone number

http://www.pediatriceducation.org/

**PHOTOS**

**VISITOR POSTS**

**Timeline** About Photos Likes More

**THIS WEEK**

31 Post Reach

25 Post Engagement

0 Website Clicks

**Status** Photo / Video Offer, Event +

Write something...

**PediatricEducation.org**  
Published by dlvr.it (?) · December 20 at 7:17pm ·

Holiday Break: PediatricEducation.org is taking a holiday break. The next case will be published in the New Year on January 4th. In the meantime, please take a look at the different Archives and Curriculum Maps listed at the top of the page.

We appreciate your patronage,  
Donna D'Alessandro and Michael D'Alessandro, curators.  
<http://dlvr.it/D3qYCV>

15 people reached

**PediatricEducation.org**  
Published by dlvr.it (?) · December 13 at 6:52pm ·

What Is It Called Christmas Disease?: Patient Presentation

An 4-year-old male came to clinic in December for his well child care. He was known to have Factor IX deficiency after he had spontaneous bleeding into an elbow as a toddler. He was receiving prophylactic factor treatment at the regional children's hospital. The past medical history showed no other major bleeding episodes. The family history was negative.



The screenshot shows the Twitter profile of Donna D'Alessandro (@pedseducation). The profile includes a bio, location (United States), website (pediatriceducation.org), and a list of tweets. The tweets mention various pediatric topics, including mobile farmers market launches, child abuse cases, and teaching articles.

**Donna D'Alessandro**  
@pedseducation

General pediatrician at University of Iowa Children's Hospital, Professor of Pediatrics at University of Iowa, Educational Informatician. Opinions are my own.

United States

[pediatriceducation.org](http://pediatriceducation.org)

352 TWEETS 88 FOLLOWING 266 FOLLOWERS 7 LIKES

**Tweets** Tweets & replies Photos & videos

Donna D'Alessandro Retweeted  
**Matt Broom, MD** @MattBroomMD · 9h  
Mobile farmers market launches trial run in St. Louis food deserts  
[tinyurl.com/zzewaoh](http://tinyurl.com/zzewaoh)  
Great job by @cardinalgiannon doc @SingingDrJosh!

**Donna D'Alessandro** @pedseducation · 9h  
13 Pediatric Child Abuse & Neglect Cases  
[pediatriceducation.org/casesbyspecial...](http://pediatriceducation.org/casesbyspecial...) ChildAbuse #FOAMed #FOAMPed #MedEd #pediatrics #childabuse #childneglect

**Donna D'Alessandro** @pedseducation · Dec 22  
Pediatric Differential Diagnosis Limp  
[pediatriceducation.org/2006/04/24/#FO...](http://pediatriceducation.org/2006/04/24/#FO...) #FOAMed #MedEd #pediatrics #paediatrics #DDx #DiffDx #limp

**Donna D'Alessandro** @pedseducation · Dec 21  
Teaching articles you may have missed this year.  
[facultyfocus.com/articles/teach...](http://facultyfocus.com/articles/teach...)  
#FOAMed #FOAMPed #MedEd #pediatrics

**Donna D'Alessandro** @pedseducation · Dec 17  
Top #pediatrics educators #FF #FOAMPed @rodrican @ndanmontero @MedPedsDoctor @TessaRDavis @nlafferty @MedPedsDoctor @Damian\_Roland - Others?

[www.pediatriceducation.org](http://www.pediatriceducation.org) ~ [www.facebook.com/pediatriceducation](http://www.facebook.com/pediatriceducation) ~ [www.twitter.com/pedseducation](http://www.twitter.com/pedseducation)

# Case Study

## Pediatric Commons - 2009-2014

### Digital Library as community of practice

---

- **Design**
  - **Planning**
    - Mission - Build a pediatric learning community around content, conversation and connections for the purpose of improving children's health ~ Educational social network of pediatric health care providers
    - Audience - Limited to verified physicians
    - Educational construct - Case-based learning
    - Metrics for success - Own the keywords "pediatric education" + "paediatric education" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Dynamic Web site (Social network) - Ning ~ Thousands of pages in size
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level ~ Tagging
  - **Information Architecture**
    - Organized by time and by category
  - **Tools to Gather Data**
    - Stats - SiteMeter, Google Analytics
    - Communication - By blogs, discussion forums, monthly email newsletter
    - Search engine - Ning search engine
- **Curation**
  - **Content creation strategy**
    - Learning Portfolio: User-generated content of Learning Portfolio entries which are posted on an irregular basis
    - Content syndicated to RSS / Facebook / Twitter ~ Cross-platform syndication + integration is non-standards based and ugly
    - Community of Practice: User-generated content

# Case Study

## Pediatric Commons - 2009-2014

### Digital Library as community of practice

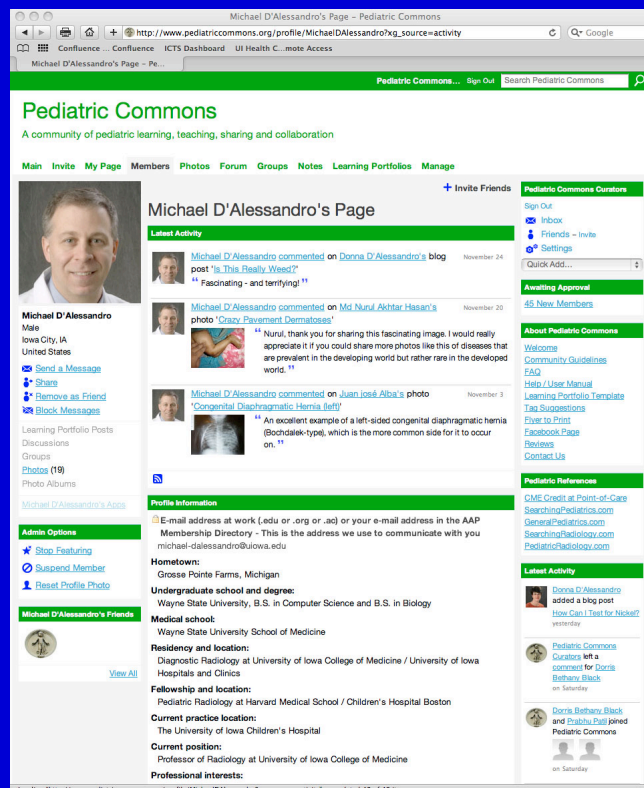
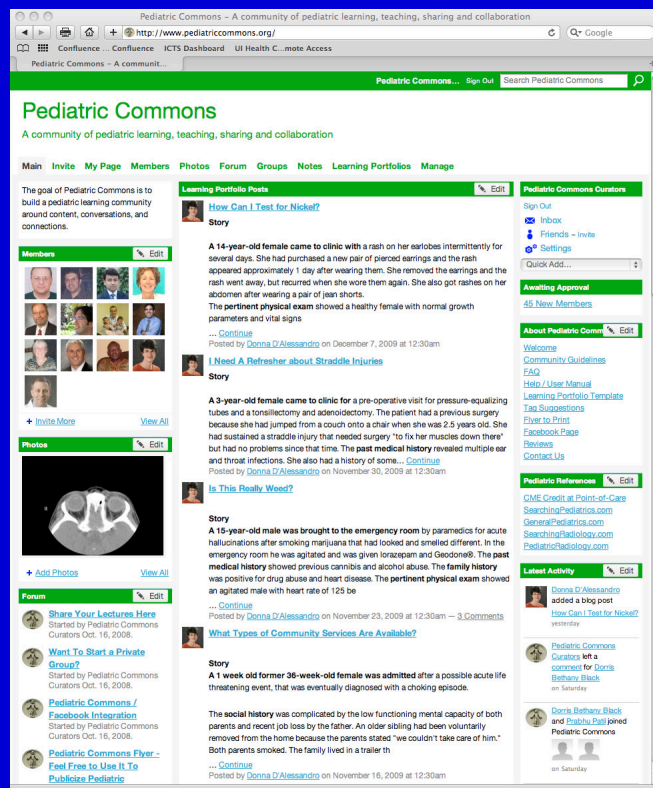
---

- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web ~ Emails to 250 pediatric residency programs ~ Publicized to 298 Facebook groups + pages with 20,000 fans relating to pediatrics + received 106 members for conversion rate of 0.5%
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother + archive
    - Business model - Self-funded at \$300 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 14,000 users read 45,000 pages per year with 520 members on Ning site ~ At peak 30,000 users reached reading 60,000 posts with 3,900 members on Facebook ~ At peak 294 followers on Twitter
    - Reviews
      - "Pediatric Commons gives all pediatric providers, including pediatric radiologists, a virtual place to meet, discuss complicated cases, and learn from others." - Diagnostic Imaging, 2011
      - "The educational social network for pediatricians and pediatric radiologists has opened up a whole new world of information sharing - cases, photos, videos, ideas - for clinicians from across the globe who might not otherwise have ever interacted." - RSNA News, 2010
    - Awards - Blue Skies Award for RCollaboration, predecessor of Pediatric Commons - Royal College of Radiologists, 2008
  - **Outcome**
    - Ning: 757 members posted 319 cases in Learning Portfolio with 337 comments, 49 Forum Discussions with 143 comments, 189 photos with 191 comments, 1 video, 12 lectures
    - Facebook: Very few cases posted, very few comments made
    - Twitter: Very few Tweets + retweets about cases
- **Lessons Learned**
  - Physicians do not want to join yet another social network for the sole purpose of discussing their profession

# Case Study

## Pediatric Commons - 2009-2014

### Digital Library as community of practice



www.pediatriccommons.org (via Internet Archive)

# Case Study

## Pediatric Commons - 2009-2014

### Digital Library as community of practice

The image displays three screenshots of the Pediatric Commons website and its Facebook page, illustrating its role as a digital library and community of practice for pediatricians.

**Left Screenshot: Pediatric Commons Website - Case Study**

The website shows a post titled "What caused this petechial rash?" by Michael D'Alessandro. The post includes a photograph of a child's arm with a petechial rash and a detailed medical history. The child is a 5-year-old girl with a rash, mostly on her lower extremities. She had been ill for 1 week, reporting no other complaints, though her mother mentioned that earlier that week she had stayed home from school because of a belly ache, and mom had thought she felt warm. Vital signs: T 38.0°C, BP 126/84, P 88. The remainder of the exam, other than her skin, was unremarkable. In particular, she had normal pulses and heart exam, a non-tender abdomen, and no lymphadenopathy. Skin exam revealed petechial and purpuric lesions, mostly on her legs, with some on her buttocks. The purpura felt hard, or solid, and was not tender. There were a few spots on her feet and soles. A urinalysis revealed positive blood, and subsequent microscopic exam showed about 200 cells per HPF.

**Middle Screenshot: Pediatric Commons Website - Medical Images**

This screenshot shows a grid of medical images, including CT scans and MRI scans, labeled with anatomical terms such as "DermoidSkull101CTAxial", "DermoidSkull101CTAxial", "MalrotationMidgutVolv", "PhenothiazideAdenoma", "PhenothiazideAdenoma", "OsteoidOsteomaFam", "OsteoidOsteomaFam", "OsteoidOsteomaFam", "OsteoidOsteomaFam", "DESO1AXR", "MalrotationMidgutVolv", "MalrotationMidgutVolv", "MalrotationMidgutVolv", "MalrotationMidgutVolv", "LumbarTumArterioven", "GonadalCyst01USCor", "GonadalCyst01USCor", "CervumYelumInterposit", "CervumYelumInterposit".

**Right Screenshot: Facebook Page - Pediatric Commons**

The Facebook page shows the community's profile, including a cover photo of a child and a post titled "What's on your mind?". The post discusses the risks of infertility after pelvic inflammatory disease (PID) and includes a list of questions for further discussion. The page also features a section for "Pediatric Commons - A Learning Community For Pediatrics" with a list of members and a "Get More Fans" button.

[www.pediatriccommons.org](http://www.pediatriccommons.org) (via Internet Archive)

# Case Study

## P-8 Poseidon God of the Sea - 2009-Present

### Digital Library as community of practice

---

- **Design**
  - **Planning**
    - Mission - Create a community of practice around P-8 maritime patrol aircraft to learn about the aircraft, its crews, its mission ~ Aid development of proposed television series
    - Audience - Anyone interested in maritime patrol aircraft but especially past + present air crew + ground crew
    - Educational construct - Curriculum unfolds in practice
    - Metrics for success - Own the keywords "p-8 poseidon" + "p-8" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Started with Facebook Page + static Web site placeholder -> After 4 years changed to dynamic Web site (WordPress blog) that syndicates to Facebook + Twitter ~ Hundreds of pages in size
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level ~ Tagging ~ What qualifies as metadata on Facebook for search engine optimization outside + inside of Facebook walled garden?
  - **Information Architecture**
    - Organized by time and by category
  - **Tools to Gather Data**
    - Stats - SiteMeter, Google Analytics -> WordPress + Facebook Insights + Twitter Analytics
    - Communication - By email, Facebook, Twitter
    - Search engine - WordPress search engine
- **Curation**
  - **Content creation strategy**
    - Daily - Open source intelligence - intelligent agents (Google Alerts) search news coupled with my daily surf of excellent Web sites acquired over time
    - Content syndicated to RSS / Facebook / Twitter ~ Cross-platform syndication + integration is non-standards based and ugly
    - On Facebook page encouraged user-generated comments + photos as past + present maritime air crew were proud of their service + eager to share

# Case Study

## P-8 Poseidon God of the Sea - 2009-Present

### Digital Library as community of practice

---

- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web ~ Publicized to 84 Facebook groups + pages with 28,000 fans relating to maritime patrol aircraft + received 248 members for conversion rate of 0.9%
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self-funded at \$150 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 6,000 users read 8,000 pages per year ~ Today: 6,000 users read 8,000 pages per year; 8 email subscribers; unknown number of RSS subscribers; 168,000 post views and 633 unique users per year and 3,400 fans on Facebook; 11,000 impressions per year and 61 followers on Twitter
    - Reviews - None
    - Awards - None
  - **Outcome**
    - Started as Facebook page because "All my P-3 friends are already on Facebook" ~ When Facebook stopped displaying 90% of page posts to page followers + stopped page followers from posting on page it changed to WordPress blog
    - At start, when Facebook pages facilitated collaboration it was a vibrant community of practice but when Facebook page became one-way broadcast mechanism the collaboration dried up ~ Would now be better as a Facebook Group but that would require too much effort to feed + moderate
- **Lessons Learned**
  - Making your digital library project dependent on a walled garden's tools puts your digital library at their mercy
  - Beware of operation security issues - NCIS mistaken investigation over VPU-2 Facebook page

# Case Study

## P-8 Poseidon God of the Sea - 2009-Present

### Digital Library as community of practice

Facebook | P-8 Poseidon God of the Sea

http://www.facebook.com/p8poseidon

Facebook | P-8 Poseidon God of the Sea

Home Profile Friends Inbox 6 Michael D'Alessandro Settings Logout Search

**P-8 Poseidon God of the Sea**

Wall Info Discussions Poem Boxes Notes >> +

What's on your mind?

Attach: [Image] [Video] [Link] [App] [Share]

**P-8 Poseidon God of the Sea - Navy Planes Fail to Get US Sensor** - The planned delivery of eight refurbished U.S. P-3C maritime patrol aircraft to the South Korean Navy has been delayed again, due to U.S. export restrictions on key electronic warfare equipment.

**[Exclusive] Navy Planes Fail to Get US Sensor**  
www.koreatimes.co.kr  
An Influential English Daily in South Korea  
about an hour ago · Comment · Like · Share

**Anthony Rotundo**  
NAS Jacksonville To See \$37 Million Training Facility For New Multi-Mission Aircraft  
www.navy.mil  
Naval Facilities Engineering Command (NAVFAC) Southeast awarded a \$37 million design-build construction contract July 1  
Sat at 12:26pm · Comment · Unlike · Share · Report

**P-8 Poseidon God of the Sea - Lockheed Martin Delivers First Two Upgraded P-3C Maritime Surveillance Aircraft for Pakistan** - Lockheed Martin recently delivered two of seven upgraded P-3C maritime surveillance aircraft for the Islamic Republic of Pakistan under the U.S. Government's Foreign Military Sales program.

**Lockheed Martin Delivers First Two Upgraded P-3C Maritime Surveillance Aircraft for Pakistan** | SYS-C  
ca.sys-con.com  
michaelinlink wrote: Great article Brian - I agree with most of your article and think as more people start looking into endpoint virtualization they will see these benefits. At Virtual Computer we can see a number of these with our client hypervisor.  
January 15 at 6:54am · Comment · Like · Share

**Celia Mesquita Rocha** likes this.

**Kevin Davidson** After fixing the P-3s and building the B-1 and now the C-17 I know the Navy will really like this P-8. When Can I get a ride?  
January 14 at 8:10pm · Comment · Like · Report

**P-8 Poseidon God of the Sea - How the U.S. Military Will Help Haiti** - The U.S. response began with a Navy P-3 Orion based at Comalapa, El Salvador, which flew over the Haitian capital gathering photographic and other intelligence on the extent of the damage.

**Fans**  
6 of 741 fans See All  
Bryan Snuffer Thomas Cuddy Jim Choi

Applications Chat (3)

Loading "http://www.facebook.com/p8poseidon", completed 9 of 10 items

P-8 Poseidon God of the Sea™ | An observatory on the P-8 Poseidon... using the P-3 Orion, curated by Michael P. D'Alessandro M.D.

p8poseidongodofthesea.org

My Sites Reader

**P-8 Poseidon God of the Sea™**

An observatory on the P-8 Poseidon in specific and maritime patrol aircraft in general including the P-3 Orion, curated by Michael P. D'Alessandro M.D.

Home Links Poem Reviews

**Accord on Spy Plane Deepens US-Singapore Ties, Analysts Say**

Posted on December 10, 2015

- VOA - Singapore's agreement this month to host a spy plane for the United States marked a step forward in a decades-old alliance between the two countries, analysts say.

**SHARE THIS:**  
Twitter Facebook Google+ LinkedIn Reddit Press This

Posted in Uncategorized | Tagged P-8 Poseidon

**Indian Navy's P-8I recce aircraft key factor in India's new maritime strategy**

Posted on December 10, 2015

- Economic Times - The Indian Navy released a new maritime doctrine in October envisaging an expanded footprint in the Indian Ocean and, besides aircraft carriers and nuclear-powered and nuclear attack submarines, there is appropriate emphasis on offensive naval aviation.

Operational naval news and discussion on the P-8 Poseidon in specific and VP / maritime patrol aircraft in general including the B-1150 Atlantique, CP-140 Aurora, IL-38 May, MQ-4C Triton, P-1, P-3 Orion, Tu-142, and Y-BX.

Discuss our stories on Facebook and Twitter

**FOLLOW P-8 POSEIDON VIA EMAIL**  
Click to follow this blog and receive notifications of new posts by email.

Join 77 other followers

**TAGS**  
B-52 Stratofortress B-12 Br.1150 Atlantique C-235 C-295 CP-140 Aurora IL-38 May MQ-4C Triton MSA Nimrod P-1 P-3 Orion P-8 Poseidon

Customize

# Case Study

## P-8 Poseidon God of the Sea - 2009-Present

### Digital Library as community of practice

The screenshot shows the Facebook page for "P-8 Poseidon God of the Sea". The page has a cover photo of a P-8 Poseidon aircraft in flight. The page name is "P-8 Poseidon God of the Sea" and the URL is "https://www.facebook.com/p8poseidon". The page has 3,530 likes and 573 post reach this week. The page is categorized as "Education". The page has a "Timeline" tab selected, showing a post from December 19, 2015, titled "Accord on Spy Plane Deepens US-Singapore Ties, Analysts Say". The post is published by "divr.it" and has 466 people reached. The post content mentions "VOA - Singapore's agreement this month to host a spy plane for the United States marked a step forward in a decades-old alliance between the two countries, analysts say." The post has 2 likes and 1 comment. The page also has a "PHOTOS" tab showing a grid of images of P-8 Poseidon aircraft.

The screenshot shows the Twitter profile for "P-8 Poseidon (@p8poseidon)". The profile has 280 tweets, 10 following, and 61 followers. The bio states: "An observatory on the P-8 Poseidon in specific and maritime patrol aircraft in general including the P-3 Orion, curated by Michael P. D'Alessandro M.D." The profile has a "P-8 Poseidon" header image. The "Tweets" tab is selected, showing a list of tweets. The first tweet is from December 19, 2015, titled "Accord on Spy Plane Deepens US-Singapore Ties, Analysts Say". The tweet is retweeted 1 time and has 1 like. The second tweet is from December 19, 2015, titled "Indian Navy's P-8I recce aircraft key factor in India's new maritime strategy". The tweet is retweeted 1 time and has 1 like. The third tweet is from December 16, 2015, titled "No modification for UK P-8". The tweet is retweeted 1 time and has 1 like. The fourth tweet is from December 15, 2015, titled "Australia conducting 'freedom of navigation' flights in South China Sea". The tweet is retweeted 1 time and has 1 like. The fifth tweet is from December 12, 2015, titled "Fallon to Discuss Maritime Surveillance options, Including P-8 Acceleration, with Carter". The tweet is retweeted 1 time and has 1 like. The sixth tweet is from December 10, 2015, titled "China military paying 'close attention' to U.S. plane deployment". The tweet is retweeted 1 time and has 1 like. The seventh tweet is from December 8, 2015, titled "P-8 Poseidon". The tweet is retweeted 1 time and has 1 like. The "Who to follow" section shows "MedEdPORTAL @MedEdP...", "RADPac Shakur @RADPac...", and "Mick Beige-Brown @aussic...". The "Trends" section shows "#ChristmasEveEve", "#HappyBirthdayLouis", "#Festivities", "#BlackXmas2", and "#NHS4XmasNo1".

[www.p8poseidongodofthesea.org](http://www.p8poseidongodofthesea.org) ~ [www.facebook.com/p8poseidon](https://www.facebook.com/p8poseidon) ~ [www.twitter.com/p8poseidon](https://www.twitter.com/p8poseidon)

# Case Study

## Pediatric Research - 2009-Present

### Digital Library as intranet

---

- **Design**
  - **Planning**
    - Mission - Build digital core facility forming a collaboratory for Clinical and Translational Science that will facilitate education + conversations between all of the constituencies (patients + families, researchers, physicians, administration, marketing, etc.) involved in research ~ Make everyone a partner in the research conversation at UI Health Care
    - Audience - Initially was everyone involved in research ~ Eventually was just researchers + administrators in the Department of Pediatrics
    - Educational construct - None
    - Metrics for success - Fulfill the premise of The Cluetrain Manifesto - "Markets are conversations"
- **Creation**
  - **Technology**
    - Dynamic Web site (Wiki) - Confluence - Hundreds of pages in size
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Tagging
  - **Information Architecture**
    - Organized by category and by time ~ Managed centrally
  - **Tools to Gather Data**
    - Stats - Confluence Analytics
    - Communication - By blog, Wiki, email, comments
    - Search engine - Confluence search engine
- **Curation**
  - **Content creation strategy**
    - Digital press for research units of UI Health Care ~ User-generated content managed locally ~ Theme is educate others about your research
    - Wiki information types - news, profiles for researchers, profiles for labs, profiles for shared instruments, private pages for labs
    - Blogs - Encourage individuals + labs to blog about their research to create research conversations (crucial!)
    - Content syndicated to RSS

# Case Study

## Pediatric Research - 2009-Present

### Digital Library as intranet

---

- **Operation**
  - **Publicity and Marketing**
    - To Department of Pediatrics via flyers + presentations
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Funded by NIH Clinical and Translation Science Awards
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: unknown number of users read 8,300 pages per year ~ Today: unknown number of users read 1,600 pages per year
    - Reviews - None
    - Awards - None
  - **Outcome**
    - Desire was to build a public + private collaboratory but tool chosen only allowed for private intranet so only very small fraction of initial vision could be implemented
    - Tension over what information should be public + private on intranet ~ Little used
- **Lessons Learned**
  - To overcome the high activation energy required to engender collaboration, institutional leadership must evangelize for, incent, and reward collaboration
  - Unified informatics leadership is required to provide access to, support for, and training in Web 2.0 tools.
  - First decide what you want your intranet to do + choose best tool to do it; don't try to shoe-horn your intranet into a pre-chosen tool
  - Collaboration hard to encourage amongst researchers ~ Even harder to encourage when collaboration tool is not part of their daily workflow

# Case Study

## Pediatric Research - 2009-Present

### Digital Library as intranet

This screenshot shows the 'Child Health' page on a Confluence intranet. The page header includes navigation links for Pages, Spaces, People, and a 'Create' button. The main content area features a title 'Child Health' with a subtitle 'Enhancing Communication and Collaboration in Pediatric Research'. Below this is a 'WIKI HELP AND TUTORIALS' section with a link to a demo introduction. The page is organized into three main columns: 'The Commons' (containing a 'Bulletin Board' with various announcements and a 'Grants & Research Administration' section), 'News & Blog Posts' (featuring a 'Blog Posts' section with a nomination announcement), and 'Tag Cloud / Themes' (displaying a list of tags like 'administration', 'animal', 'area board', etc.). A 'RSS Feed / Latest Activity' section is also present at the bottom.

This screenshot displays the 'Donna D'Alessandro Research Group' page. The page header shows the group's name and a subtitle 'Donna D'Alessandro's Laboratory Profile'. The main content area is divided into several sections: 'Laboratory Goal' (describing the group's mission to improve patient care), 'Laboratory Description' (detailing the group's focus on educational informatics), 'Laboratory Website' (listing the group's website), 'Research Interests and Expertise' (listing various research areas), and 'Current Projects' (listing ongoing projects). The page also includes a 'RSS Feed' section for the group's updates.

This screenshot shows the 'Donna D'Alessandro' researcher profile page. The page header includes the researcher's name and a subtitle 'Donna D'Alessandro, M.D.'. The main content area features a large portrait photo of Donna D'Alessandro. Below the photo are several sections: 'Degrees' (listing her educational background), 'Current Position/Institution/Department' (listing her current roles), 'Contact Information' (providing contact details), 'Personal Web page' (linking to her personal website), and 'Laboratory Web page' (linking to her laboratory website). The page also includes a 'Research Interests and Expertise' section.

Private and not accessible

# Case Study

## War Studies Primer - 2008-Present

### Digital Library as course

---

- **Design**
  - **Planning**
    - Mission - Provide introductory course on war studies + intellectual toolkit to allow students to learn more on their own on war
    - Audience - Anyone
    - Educational construct - Introductory course for student ~ Situated learning for the creator
    - Metrics for success - Own the keywords "war studies" and get a top 10 ranking for it in search engines
- **Creation**
  - **Technology**
    - Static Web site ~ 4 pages in size ~ Hosted at Register4Less ~ Course content in PowerPoint + PDF formats
    - Mirroring on SlideShare
  - **Page Style**
    - Stanford Guidelines with minimalist graphics
  - **Metadata Style**
    - Search engine optimization at site level
  - **Information Architecture**
    - Organized by category
  - **Tools to Gather Data**
    - Stats - SiteMeter + Google Analytics
    - Communication - By email, Facebook page
    - Search engine - None
- **Curation**
  - **Content creation strategy**
    - Daily reading for Naval Open Source Intelligence (NOSI) results occasionally in articles and books being abstracted for use in War Studies Primer ~ New version published yearly
    - Course is lecture curriculum at university level consisting of 28 topics and 2,000 slides and is intended for use in classroom or by individuals for self-study
    - Content licensed under Creative Commons Attribution-Noncommercial-Share Alike License

# Case Study

## War Studies Primer - 2008-Present

### Digital Library as course

---

- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web ~ Publicized to Open Education Resources (OER) content repositories ~ Publicized to 86 Facebook groups + pages with 51,000 fans relating to war studies + received 15 members for conversion rate of 0.03%
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self-funded at \$50 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 3,000 users read 4,500 pages and downloaded the course 1,7000 times per year ~ Today: 1,600 users read 2,100 pages and download the course 400 times per year today
    - Reviews - None
    - Awards - None
  - **Outcome**
    - Successfully taught as a course in 2011
- **Lessons Learned**
  - Through NOSI, a curriculum that unfolds in practice can be organized into a course and taught by a Pro-Am

# Case Study

## War Studies Primer - 2008-Present

### Digital Library as course

War Studies Primer: An introductory course on the study of war and military history  
www.warstudiesprimer.org

## War Studies Primer™

An introductory course on the study of war - Curated by Michael P. D'Alessandro, M.D.

War Studies Primer is an introductory course on the study of war and military history: 28 lectures and over 1,800 slides

Download the War Studies Primer Ebook: [PDF](#) or [PowerPoint](#) or [PDF formatted for printing \(6 slides per page\)](#)

View War Studies Primer online: [SlideShare](#)

[About](#) | [To Learn More](#) | [Links](#) | [Reviews](#) | [Comments](#) | [Discuss on our Facebook Page](#)

For daily operational military news see [NOSI](#)

Fall 2011 Course: [Syllabus](#) and [Essays](#) and [Simulation Instructions](#)

War Studies Primer is made available under a [Creative Commons Attribution-Noncommercial-Share Alike 3.0 Unported License](#)  
Curated by [Michael P. D'Alessandro, M.D.](#) and © 2004-2015 and Powered by [Menehune Mining](#)

War Studies Primer: An introductory course on the study of war and military history  
www.warstudiesprimer.org/ToLearnMore.html

## War Studies Primer™

An introductory course on the study of war - Curated by Michael P. D'Alessandro, M.D.

### To Learn More

One of the goals of this course is to equip you with an intellectual toolkit for the multi-disciplinary study of war that will allow you to embark upon a course of lifelong learning regarding war and its role in society. Here are some recommended resources for your toolkit:

The [Canadian Forces College Spotlight on Military News and International Affairs](#) is a military news aggregator site that is updated daily and serves as an open source version of the Pentagon's Early Bird. The best one-stop shop to find out what is going on in the world today, military-wise.

Here are two excellent news Web sites:

- [StrategyPage](#) is the best dedicated military news site. Edited by James F. Dunnigan, the king of open-source-intelligence, it covers conflicts around the world as well as the weapons, technology and logistics of land, naval, air, space and cyberwarfare. Updated daily.
- Thomas Ricks was an award-winning defense correspondent for the Wall Street Journal and then the Washington Post. He is now a military history author. He blogs daily at [Best Defense](#) with terrific insights into the US military.

Here are two excellent podcasts:

- [StrategyTalk](#) is from the StrategyPage Web site. Their tag line is "We report news as history" and they choose 1 topic from the headlines each week and discuss it.
- [Kings College London Department of War Studies](#) is the best known and most highly regarded war studies department. They talk to faculty, graduate students and visiting lecturers about current topics of interest each week.

Here are two excellent radio programs available as podcasts:

- [In Our Time](#) is a weekly BBC show in which 3 professors, guided by host Melvyn Bragg, discuss a single topic for 43 minutes. Many of the topics are historically related and the entire archive is online.
- [Pritzker Military Library](#) does a weekly hour long program on a recently published military history book, with the book's author either giving a talk based on the book or being interviewed about the book, followed by a question and answer segment.
- [From Our Own Correspondent](#) - a twice a week BBC show in which their foreign correspondents take the time to tell you the stories behind the headlines. Many of the stories revolve around ongoing wars around the world.

Here are four excellent magazines with excellent foreign correspondents who report in-depth from the field that can help keep you current on geopolitical affairs:

- [Atlantic](#)
- [New Yorker](#)
- [New York Times Magazine](#)
- [Economist](#)

Here are four excellent television programs that cover military history and geopolitics very well:

- [PBS Frontline](#) - the best documentary series on television, with a fair number of shows devoted to current military affairs / wars and geopolitics.
- [C-SPAN BookTV](#) - On C-SPAN2 all day Saturday and Sunday, talks by and interviews with authors of recently published non-fiction, including military history and geopolitics. Always at least 1 good show each weekend.
- [C-SPAN American HistoryTV](#) - On C-SPAN3 all day Saturday and Sunday, lectures and interviews by professors and historians on American history, including military history and geopolitics. Always at least 1 good show each weekend.

War Studies Primer: An introductory course on the study of war and military history  
www.warstudiesprimer.org/Links.html

## War Studies Primer™

An introductory course on the study of war - Curated by Michael P. D'Alessandro, M.D.

### Links to War Studies Resources

#### Guides to the Internet

- [New York Military Affairs Symposium - Guides to Military History on the Web](#)
- [Society for Military History - Military History Links](#)
- [US Air Force - Air War College Gateway to the Internet](#)
- [US Navy Naval Postgraduate School - Research Guides](#)

#### Maps

- [Library of Congress - American Revolution and Its Era: Maps and Charts of North America and the West Indies, 1750-1789](#)
- [Library of Congress - Civil War Maps](#)
- [Library of Congress - Hotchkiss Map Collection - Confederate Army Maps](#)
- [Library of Congress - Rochambeau Map Collection - American Revolution](#)
- [US Military Academy - Department of History Campaign Atlases](#)

#### Military News

- [Aviation Week - Ares](#)
- [Canadian Forces College - Spotlight on Military News and International Affairs](#)
- [John Robb - Global Guerrillas](#)
- [Kings College London - Kings of War](#)
- [Michael P. D'Alessandro - Naval Open Source Intelligence](#)
- [StrategyWorld - StrategyPage](#)
- [Thomas Ricks - The Best Defense](#)

#### Philosophers

- [Christopher Bassford - Clausewitz.com](#)
- [Sonshi - Sun Tzu The Art of War](#)

#### Reference Libraries

- [British Library - World War One](#)
- [George Washington University - National Security Archive](#)
- [GlobalSecurity.org - GlobalSecurity.org](#)
- [History of War - Military History Encyclopedia on the Web](#)
- [US Air Force - Air Force Publishing](#)
- [US Air Force - Historical Research Agency](#)
- [US Army - Center of Military History](#)
- [US Army - Command and General Staff College Combined Arms Research Library](#)
- [US Army - Heritage and Education Center](#)
- [US Army - War College Strategic Studies Institute](#)
- [US Marines - History Division](#)
- [US Marines - Small Wars Journal](#)
- [US Navy - Naval Historical Center](#)

#### War Colleges

- [British Army - Royal Military Academy Sandhurst](#)
- [Canada - Canadian Forces College](#)
- [US Air Force - Air War College](#)
- [US Army - Army War College](#)

www.warstudiesprimer.org

# Post Web / Mobile

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# Case Study

## RadiologyEbooks - 2013-Present

Digital Library as compensation for uncured mess of app store

---

- **Design**

- **Planning**

- Mission - Embrace mobile Internet by indexing in one place all free educational radiology eBooks + apps, highlighting author's work + encouraging creation of further free resources
    - Audience - Radiologists
    - Educational construct - None
    - Metrics for success - Own the keywords "radiology ebooks" + "radiology apps" + "radiology education" and get a top 10 ranking for it in search engines

- **Creation**

- **Technology**

- Static Web site ~ 1 page in size ~ Hosted at Register4Less

- **Page Style**

- Stanford Guidelines with minimalist graphics

- **Metadata Style**

- Search engine optimization at site level

- **Information Architecture**

- Organized by category

- **Tools to Gather Data**

- Stats - SiteMeter + Google Analytics
    - Communication - By email, monthly mailing list, Twitter
    - Search engine - None

# Case Study

## RadiologyEbooks - 2013-Present

### Digital Library as compensation for uncurated mess of app store

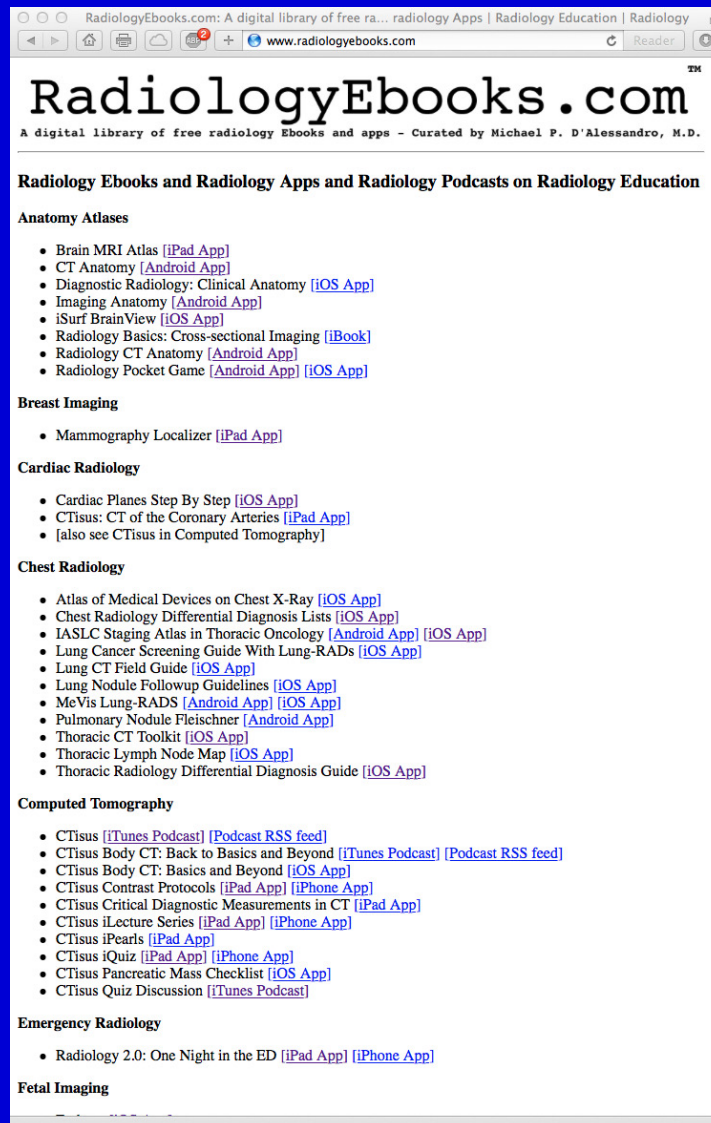
---

- **Curation**
  - **Content creation strategy**
    - Yearly - Go through Google Play, iTunes, Kindle, Microsoft app + eBook stores using the term "radiology" to search for new eBooks + apps + podcasts
    - Daily - Learn of new eBooks + apps + podcasts from Google Alerts, Twitter, physicians I work with
- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web
  - **Regular Maintenance**
    - Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self-funded at \$50 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - At peak: 16,000 users read 22,000 pages per year ~ Today: 16,000 users read 22,000 pages per year
    - Reviews - None
    - Awards - None
  - **Outcome**
    - There are fewer free eBooks + apps + podcasts than there are Web sites but the number is increasing from 13 in 2013 to 85 in 2015
- **Lessons Learned**
  - The old medium can be used to make sense of the new medium

# Case Study

## RadiologyEbooks - 2013-Present

Digital Library as compensation for uncensored mess of app store



www.radiologyebooks.com

# Case Study

## @pedsimaging - 2014-Present

### Digital Library as curator of social media

---

- **Design**
  - **Planning**
    - Mission - Provide a curated stream of pediatric imaging information, provide notification of new radiology education resources, provide thoughts on pediatric imaging + radiology education
    - Audience - Physicians at all levels of training practicing pediatric imaging + interested in radiology education
    - Educational construct - Curriculum unfolds in practice
    - Metrics for success - 1,000 followers on Twitter ~ Own the keywords "pediatric imaging" + "pediatric radiology" and get a top 10 ranking for it in Twitter search engine ~ Be a Top 10 Influencer on Symplur for #PedsRad + #FOAMRad
  - **Creation**
    - **Technology**
      - Dynamic Web site (Twitter microblog) ~ 1 page in size
    - **Page Style**
      - Stanford Guidelines (hard to do in 160 character profile)
    - **Metadata Style**
      - Symplur Healthcare Hashtag Ontology for radiology (#FOAMRad #PedsRad #radiology #RadRes) and #FOAMed #FOAMPed #MedEd #pediatrics #paediatrics
    - **Information Architecture**
      - Organized by time
    - **Tools to Gather Data**
      - Stats - Twitter analytics
      - Communication - By Twitter
      - Search engine - Twitter search engine
  - **Curation**
    - **Content creation strategy**
      - Daily - A curated stream of pediatric imaging information tweets + retweets after I finish viewing 24 hours worth of tweets
      - Weekly - Post case from my learning portfolio

# Case Study

## @pedsimaging - 2014-Present

### Digital Library as curator of social media

---

- **Operation**

- **Publicity and Marketing**

- Standard guerilla marketing on Web tough to do with Twitter ~ Linked to it from my digital libraries + emailed users who had praised my digital libraries in past ~ Use relevant hashtags, weekly #FF (follow Friday) posts ~ Post good content + pray for retweets

- **Regular Maintenance**

- Daily - Yearly link check with Big Brother / W3C Link Checker + archive
    - Business model - Self-funded at \$0 / year ~ Will be part of marketing + communications side of D'Alessandro's Pediatric Imaging eBook

- **Evaluation**

- **Evaluation and Continuous Quality Improvement**

- Usage - At peak: 130,000 impressions per year and 300 followers on Twitter ~ Today: 130,000 impressions per year and 300 followers on Twitter
    - Reviews - None
    - Awards - None

- **Outcome**

- Several tweets + retweets / day, 4 Twitter lists, tweets + retweets viewed ~ 10,000 times / month, community of practice has arisen, Top 10 influencer for #FOAMRad + PedsRad + #RadRes

- **Lessons Learned**

- Another example of a curriculum unfolding in practice ~ Facilitates microlearning

# Case Study

## @pedsimaging - 2014-Present

### Digital Library as curator of social media

This screenshot shows the Twitter profile of Michael D'Alessandro (@pedsimaging). The profile includes a header with the name and handle, a bio describing him as a pediatric radiologist and professor, and statistics for tweets (1,405), following (48), followers (306), and lists (4). The main content area displays a tweet from Michael D'Alessandro about a 4-year-old girl with a lump, followed by a tweet from ACR Radiology. Below the tweets, there is a section for 'Your Tweet activity' showing a bar chart of impressions over the last week, and a 'Who to follow' section with a recommendation for Sumir Patel.

This screenshot shows the Twitter Notifications page for the @pedsimaging account. The page is divided into two main sections: 'Notifications' and 'Trends'. The 'Notifications' section lists various interactions, including mentions, retweets, and likes, with a focus on the 'Radiology Education Twitter list'. The 'Trends' section shows a list of trending topics, including #ChristmasEveEve, #Festivus, and #gingerbreadman.

[www.twitter.com/pedsimaging](http://www.twitter.com/pedsimaging)

# Case Study

## D'Alessandro's Pediatric Imaging - Real Soon Now-Present Digital Library as eBook ~ Digital Library in your pocket ~ Digital Library as simulator

---

- **Design**

- **Planning**

- Mission - Provide a pocket pediatric imaging point-of-care reference for decision support ~ Provide a pediatric imaging simulator
    - Audience - Physicians at all levels of training practicing pediatric imaging
    - Educational construct - Learning situated in practice + Learning through practice
    - Metrics for success - Own keywords "pediatric imaging" + "pediatric radiology" + "paediatric imaging" + "paediatric radiology" in app stores

- **Creation**

- **Technology**

- Digital book - EPUB3 standard

- **Page Style**

- Stanford Guidelines

- **Metadata Style**

- App store optimization

- **Information Architecture**

- Organized by category

- **Tools to Gather Data**

- Stats - App store analytics, SiteMeter, Google Analytics
    - Communication - By email, Twitter
    - Search engine - EPUB reader app search engine

- **Curation**

- **Content creation strategy**

- Distill my professional experience from my learning portfolio into a practical guide to pediatric imaging
    - La Biblioteca Infinita di Pediatria (with apologies to Jorge Luis Borges)

# Case Study

**D'Alessandro's Pediatric Imaging - Real Soon Now-Present**  
**Digital Library as eBook ~ Digital Library in your pocket ~ Digital Library as simulator**

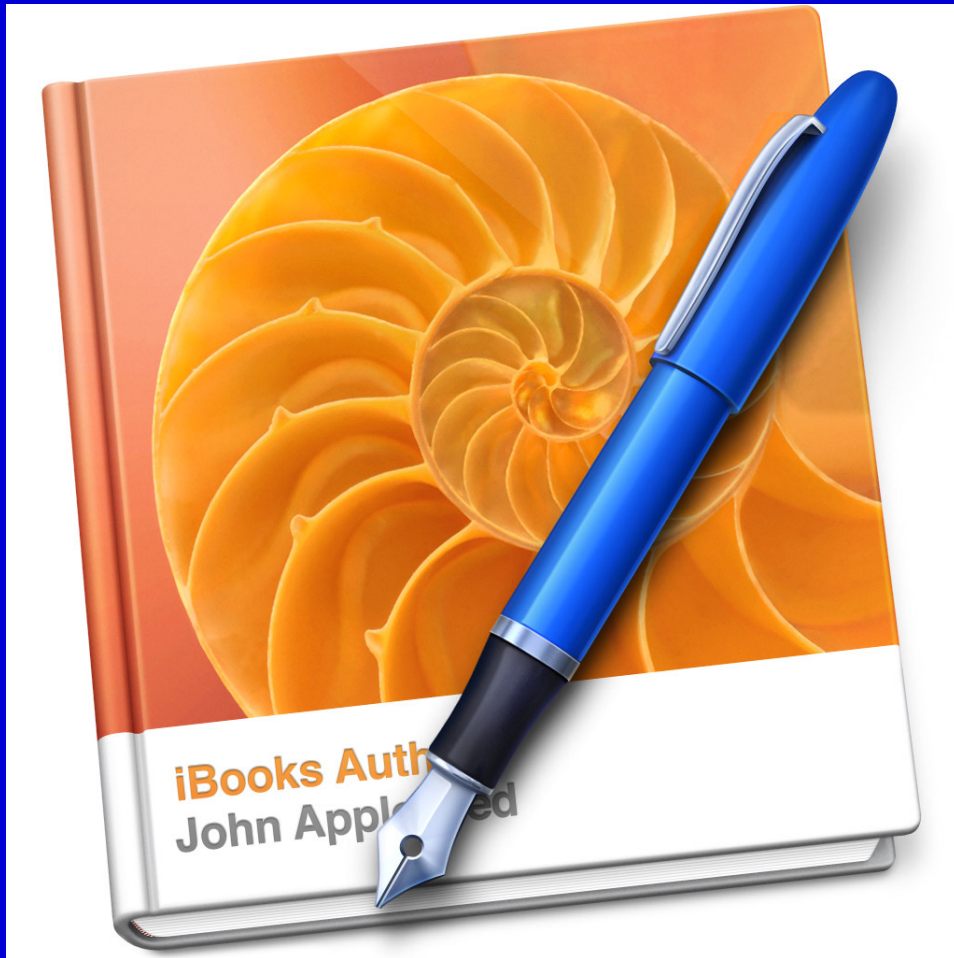
---

- **Operation**
  - **Publicity and Marketing**
    - Standard guerilla marketing on Web
  - **Regular Maintenance**
    - Daily - Update daily and publish yearly versions
    - Business model - Self funded at \$0 / year ~ Sell yearly ads to radiology vendors in yearly updates
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - None
    - Reviews - None
    - Awards - None
  - **Outcome**
    - Pending
- **Lessons Learned**
  - Pending

# Case Study

## D'Alessandro's Pediatric Imaging - 2017-Present

Digital Library as eBook ~ Digital Library in your pocket ~ Digital Library as simulator



[www.pediatricimaging.org](http://www.pediatricimaging.org) (In development)

# Case Study

## Learning Portfolio - N/A - 1993-Present

Digital Library as personal experience library / personal knowledge management system

---

- **Design**
  - **Planning**
    - Mission - Capture, organize, make retrievable an individual's professional experience
    - Audience - The individual
    - Educational construct - Case-based learning
    - Metrics for success - Professional competence
- **Creation**
  - **Technology**
    - Wearable technology allows for minimalist, elegant, mobile solution
    - Microsoft Excel + Apple iPhoto
  - **Page Style**
    - N/A
  - **Metadata Style**
    - None
  - **Information Architecture**
    - Organized by time
  - **Tools to Gather Data**
    - Stats - None
    - Communication - None
    - Search engine - Search engine in Excel + iPhoto
- **Curation**
  - **Content creation strategy**
    - Done on irregular basis - Capture / Organize / Make retrievable / Learn from / Share cases
    - For each case: Question / Story / Image / Answer / Impact on Practice / Resources Used

# Case Study

## Learning Portfolio - N/A - 1993-Present

Digital Library as personal experience library / personal knowledge management system

---

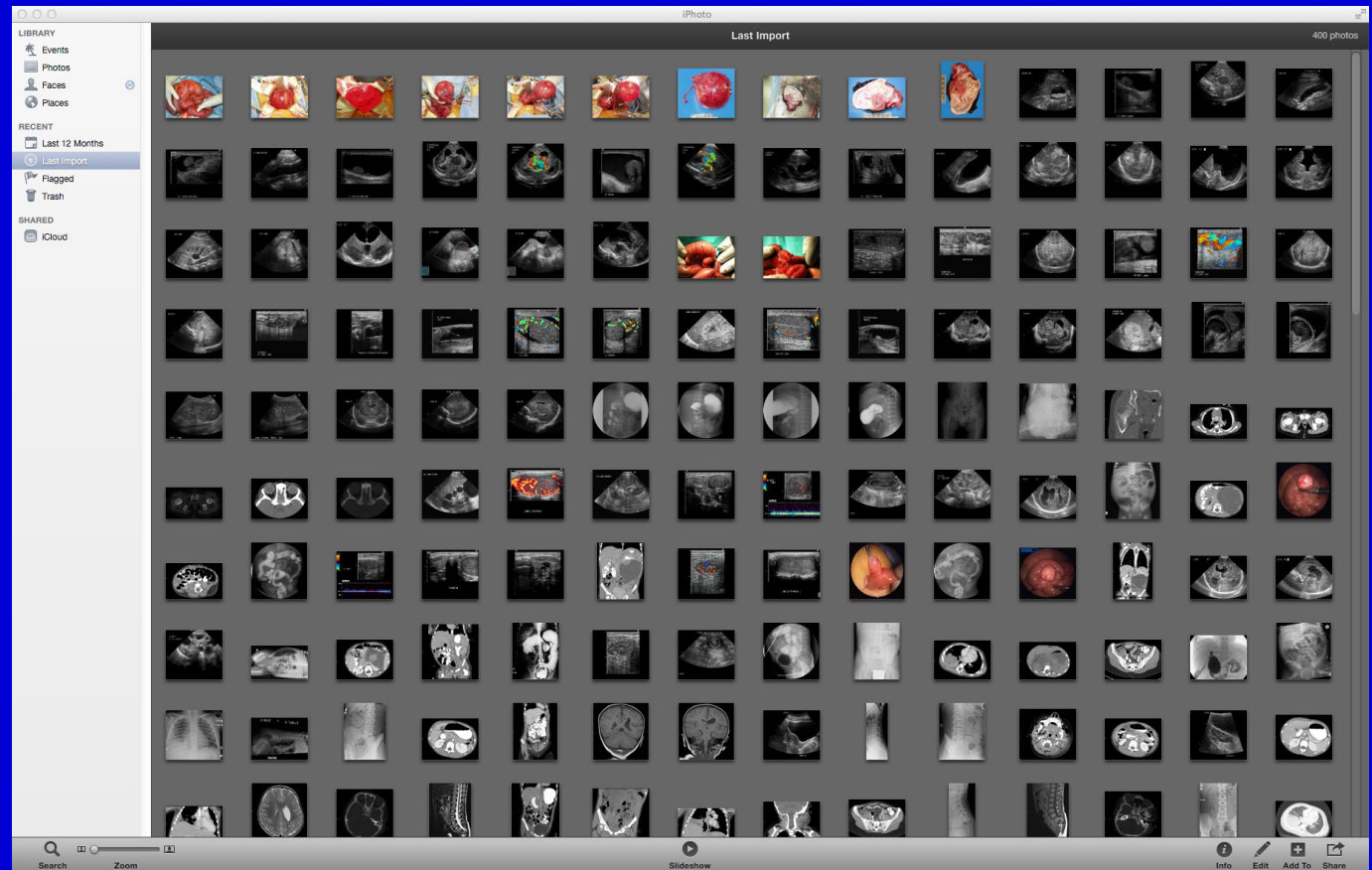
- **Operation**
  - **Publicity and Marketing**
    - Text - None
  - **Regular Maintenance**
    - Daily - None
    - Business model - Self funded at \$0 / year
- **Evaluation**
  - **Evaluation and Continuous Quality Improvement**
    - Usage - Used irregularly for reference
    - Reviews - N/A
    - Awards - N/A
  - **Outcome**
    - Over 20 years have 100 cases + 400 images ~ Use them in D'Alessandro's Pediatric Imaging eBook ~ Share them on Pediatric Commons + @pedsimaging on Twitter
- **Lessons Learned**
  - It is hard to overcome always-increasing universal entropy

# Case Study

## Learning Portfolio - N/A - 1993-Present

Digital Library as personal experience library / personal knowledge management system

| Question (Problem)   | Story  | Image  | Answer   | Impact on Practice (What I Learned)                            | Resources Used (Resource - Title - URL)  |
|--|--|--|--|--|--|
| What are the components of OEIS syndrome?  | Newborn female with suspected OEIS syndrome - do they have it?   |  |  | Learned the components of OEIS syndrome                        | AJR - Cloacal exstrophy: radiologic findings in 13 patients - <a href="http://www.ajronline.org/cgi/content/abstract/155/6/1267">http://www.ajronline.org/cgi/content/abstract/155/6/1267</a>  |
| What is the normal post op appearance of malrotation after a Ladd's procedure for malrotation?     | 9 day old female had malrotation + midgut volvulus repaired 2 days ago, now with bilious vomiting again. Upper GI looks like just like preoperative study with a corkscrew appearance.                                     |  | Could not answer question. Patient taken back to OR for reexploration and found not to have revolvulized   |  | Could not find any   |
| What is the differential diagnosis for cysts lateral to the lateral ventricles on head ultrasound? | Former 32 week premature infant whose screening head ultrasound at 1 week of life demonstrated cysts lateral to lateral ventricles. The clinical concern was whether these cysts represented periventricular leukomalacia. | Coronal and left and right sagittal images from a head ultrasound exam demonstrate multiple cystic structures lateral to the anterior horns of the lateral ventricles, more prominent on the left than on the right. | The cysts are connatal cysts which are also known as coarctation of the lateral ventricles. They represent a normal variant. On coronal images, the key landmark is the superolateral angles of the frontal horns of the lateral ventricles: connatal cysts are located at the angle, subependymal cysts are located below the angle and periventricular leukomalacia is located above | I reviewed a differential commonly encountered in my practice. | Radiographics - Differential Diagnosis of Intracranial Cystic Lesions at Head US: Correlation with CT and MR Imaging - <a href="http://radiographics.rsnajnl.org/cgi/content/full/26/11/173">http://radiographics.rsnajnl.org/cgi/content/full/26/11/173</a> |
| How do you differentiate an osteoid osteoma from CRMO?   | 10 year old male diagnosed with right hip arthritis on the outside - they  |  |  | Learned common locations of osteoid osteoma,                   | Georges Y. El-Khoury, M.D. and Radiology - Chronic   |



N/A

# Preventing Intellectual Property Theft is Nearly Impossible

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- Virtual Hospital stolen by Argentina, Brazil, Croatia, Egypt, Turkey
- Virtual Naval Hospital stolen by China
- MedicalStudent.com stolen by too numerous to count
- Perhaps the best solution is to license liberally?
  - Virtual Hospital mirrors to Universities
  - Mirrors of Anatomy Atlases / Pediatric Education / Virtual Pediatric Hospital to Widernet
  - Mirrors of Anatomy Atlases / Virtual Pediatric Hospital to Internet.org

# Summary

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- **The Ten Step Approach is a generalizable method that can be used to create a wide variety of successful digital libraries**
- **Individuals creating digital libraries can be rewarded in many ways for their work**

# Questions for Further Discussion

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- Which case study surprised you the most?
- Which case study interested you the most?
- What lessons did you learn from these case studies?

# Reading Assignments

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- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

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- **Non-fiction**
- **Fiction**
- **Movies**

# Conclusion

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**"It is not the critic who counts nor the man who points out how the strong men stumbled, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood, who strives valiantly, who errs and comes short again and again, who knows the great enthusiasm, the great devotions and spends himself in a worthy cause; who, at the best, knows in the end the triumph of high achievement; and who, at the worst, if fails, at least fails while daring greatly so that his place shall never be with those cold and timid souls who know neither victory or defeat."**

**- President Theodore Roosevelt**

# Conclusion

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**"Far better it is to dare mighty things, to win glorious triumphs, even though checkered by failure, than to rank with those poor spirits who neither enjoy nor suffer much, because they live in the gray twilight that knows not victory nor defeat."**

**- President Theodore Roosevelt**

# Topic 7

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## **Reasons for Our Success** **(In Big Digital Libraries)**

# Thematic Quote

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**"People, Ideas, and Hardware. In that order!"**

**- John Boyd, Colonel, US Air Force**

# The Painting

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**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

---

- **Name**
  - Virtual Naval Hospital Hat
- **Year**
  - 1998
- **Story**
  - Represents the role of the key intermediary

# The Question

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**How to succeed in business without really trying?**

# Entrepreneurship

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# Reasons For Our Success - Entrepreneurship

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**"You are entrepreneurs!"**

**- Elisabeth Buntz, medical librarian**

- We functioned as a startup within the University + lived our lives as if we were in a start up**

# Reasons For Our Success - Entrepreneurship

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- Leaders should cultivate and reward small, enterprising teams that are task obsessed and out for themselves
  - Hot groups are a state of mind
    - Contagious single-mindedness + all-out dedication to doing something important
    - Are not appointed - they happen
    - Biggest thing is to recognize + support them
    - Most organizations stamp them out because they don't conform to bureaucracy or org chart
- Jean Lipman-Blumen and Harold Leavitt, Hot Groups

# Reasons For Our Success - Adaptability

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**"No plan of operation extends with any certainty beyond first contact with the main hostile force"**

**(No plan survives first contact with the enemy)**

**- Count Helmuth von Moltke (the Elder), Prussian general**

# **Reasons For Our Success - Adaptability**

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**"It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change."**

**- Charles Darwin, biologist**

- One of the reasons we survived is that we constantly adapted to change**
  - Tried to fulfill our users changing needs**
  - Tried to fulfill our institutions changing needs**

# Reasons For Our Success - Intelligence Gathering

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- The gathering of intelligence on your competition by looking at what they are doing so you can learn from them
- The gathering of intelligence on new technology so that you can use the new technology to solve old problems
  - Cobalt Qube for mirroring
  - My interest in NewHoo / Open Directory / DMOZ paid off - we were listed early in it, it lead to a big rise in traffic
  - Interest in social media sites leads to them driving traffic to digital libraries

# Reasons For Our Success - Persistence

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**"80 percent of success is showing up"**

**- Woody Allen**

- In our case it was "just keep serving up the pages" - no one could deny the job we were doing**

# Reasons For Our Success - Ingenuity

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- **You can do a lot with a lot of resources**
  - **You can do a lot with a few resources**
    - **Prototypes can be funded with bottle return money**
    - **Can be most interesting work because you need to be so creative to get things done on a tight budget**

# Reasons For Our Success - No Fear of Failure

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"I didn't see it then, but getting fired from Apple was the best thing that could have ever happened to me. The heaviness of being successful was replaced by the lightness of being a beginner again. It freed me to enter one of the most creative periods of my life."

- Steve Jobs

"Can learn more from failure than you can from success"

- Richard Saul Wurman, information architect

## Take risks

"For of all sad words of tongue or pen,  
The saddest are these: it might have been!"

- John Greenleaf Whittier

"If you can accept the worst possible outcome of a situation, you have nothing to fear"

- Patricia D'Alessandro

# Key Intermediary

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# **Reasons For Our Success - Key Intermediary**

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- **Individual with multidisciplinary background**
  - **Interact with the different constituencies involved in a digital library project, bring them together + gain their respect**
  - **Translate and negotiate between constituencies to overcome obstacles and keep project on course and moving forward**

# Your People

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# Reasons For Our Success - The Lab

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**"I don't know what effect these men will have upon the enemy, but, by God, they terrify me."**

**- Duke of Wellington, general, about the British Army**

**"Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity."**

**- George S. Patton, Jr., general**

**"Machines don't fight wars. People do, and they use their minds. "**

**- John Boyd, Colonel, USAF**

**"Encourage and cultivate eccentricity"**

**- Admiral Sandy Woodward**

# Reasons For Our Success - Project a Positive Image

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- **Live by the Golden Rule**
- **Under-promise and over deliver**
- **Accentuate the positive side of a situation**
  - **Learn the value of a good attitude**

# Reasons For Our Success - Customer-centric Focus

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- **First step - identify the customer**
- **At every other step - listen to the customer**
- **It can be painful to hear what they say but they are usually right**

# Reasons For Our Success - Customer-centric focus

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- **User-centered design**
  - **Perform a formal needs analysis before you design the digital library**

# Technology

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# Reasons For Our Success - Technology

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**The single most important principle of  
engineering:**

**"Use the lowest tech that will work"**

**- Burt Rutan, engineer, Scaled Composites**

**(translation: Keep It Simple Stupid)**

# Reasons For Our Success - Technology

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**"Amateurs talk tactics, generals talk logistics"**

**- Anonymous**

- Our logistics were in our simplicity and redundancy**
- Just as an army fights on its stomach, a Web site relies on its technology which must be reliable**
- Mechanical web site - there is nothing digital that can break (think plug-ins)**

# Reasons For Our Success - Technology

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- In the end, it was not the Royal Navy's technology that allowed it to prevail over the French Navy in the 18<sup>th</sup> and 19<sup>th</sup> century
- Instead it was the Royal Navy's superior training, leadership and logistical infrastructure that made the difference
- The same is true for the Virtual Hospital + Virtual Naval Hospital

# Leadership

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# Reasons For Our Success - Management

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- **The HP Way**

**"'The HP Way.' The essence of the idea, radical at the time, was that employees' brainpower was the company's most important resource."**

**- Peter Burrows, BusinessWeek**

- **Management by Walking Around**

# Reasons For Our Success - Decision Making

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- **Winston Churchill and how he ran the United Kingdom in World War II was an inspiration**
  - **Not having information, not having clarity, high stakes**

**"You don't have to get it right all the time. You just have to get it right 51% of the time, and that will carry you through."**

**- Winston Churchill**

**"Better a good job today than a perfect job tomorrow"**

**- William E. Erkonen, M.D.**

**"Better is the enemy of good enough"**

**- Russian proverb**

# Reasons For Our Success - To Do Rather Than To Be

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"...one day you will come to a fork in the road and you're going to have to make a decision about which direction you want to go. If you go that way you can be somebody. You will have to make compromises and you will have to turn your back on your friends. But you will be a member of the club and you will get promoted and you will get good assignments.

Or you can go that way and you can do something - something for your country and for your Air Force and for yourself. If you decide you want to do something, you may not get promoted and you may not get the good assignments and you will certainly not be a favorite of your superiors. But you won't have to compromise yourself. You will be true to your friends and to yourself. And your work might make a difference....

...To be somebody or to do something. In Life there is often a roll call. That's when you will have to make a decision. To be or to do? Which way will you go?"

- Colonel John Boyd, US Air Force

# Reasons For Our Success - Leadership

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**"We all know truth is stranger than fiction. Michael Wolff proves it again with his latest book, "Burn Rate," a guided tour of the online world that resembles a zoo gone mad -- except that the creatures aren't caged."**

**...**

**"The rules in Wolff's World are foreign to those of us who function in the more boring real world. Wolff's World is one where it is acceptable to lose money; at times, the more you lose the more you win, at least in the short run. It's a world where your vision is more valuable than your business plan. It's a world of constant misrepresentation, fabrication and outright deceit."**

**Or, as Wolff says, "In the cyber business, it seemed that no one ever told the truth. Sometimes it seemed that there was no truth." And it's a world in which most transactions involve someone taking advantage of someone else in the ultimate con game."**

**- Michael Waller, Wolff's 'Burn Rate': Making it Work on the Internet, Baltimore Sun, July 5, 1998**

# Reasons For Our Success - Leadership

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"The paperback edition of my book *Burn Rate* (written in late 1997) will be published this week. The book has already outlived most of the companies, many of the business models and a number of the careers that it chronicles. Indeed, in the past year, almost all of the 20 or so companies discussed in the book have been merged, acquired, divested, restructured, shut down or otherwise transformed.

As an entrepreneur-turned chronicler, I find the process of change in this business to be almost as interesting as the money. The reinventions, the metamorphoses and the spin: "We're totally different from what we were, but that's exactly the way we planned it." It's the drama of the changing faces in the platoon after a battle. It's the comedy of before and after."

- Michael Wolff, *The Industry Standard*, July 5-12, 1999

# Reasons For Our Success - Leadership

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- We survived the chaos and "Wild West" nature of the early Web / first Dot Com bubble
- Virtual Hospital was the 250th Web site, it was probably the last one of those 250 with the same leaders and same mission
- Keep your eye on the prize and keep the big picture in view

**"One of the keys to success is selection and maintenance of aim"**

**- Admiral Sandy Woodward**

# **Personal Case Study - .Nuts Height of Dot Com Insanity**

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- **Role - Eating lunch at Ikea on Saturday afternoon in fall 1999 during height of .com bubble chatting about our research**
- **Story**
  - **Approached by two women sitting near us who complimented us on our cute baby and then out of the blue asked us if we wanted to invest in and help them start an Internet company focused on travel**
  - **You know the bubble is about to burst when your average Ikea shopper is trying to cash in on it...**

# Reasons For Our Success - Love What You Do

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**"You've got to find what you love...Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to love what you do."**

**- Steve Jobs** <http://news.stanford.edu/news/2005/june15/jobs-061505.html>

# Reasons For Our Success - Trust

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**"Connecting the dots...You can't connect the dots looking forward; you can only connect them looking backwards. So you have to trust that the dots will somehow connect in your future. You have to trust in something - your gut, destiny, life, karma, whatever."**

**- Steve Jobs** <http://news.stanford.edu/news/2005/june15/jobs-061505.html>

- **From Heron Island to Pediatric Commons**
- **From Kauai to @pedsimaging**

# Politics

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# Reasons For Our Success - Politics / Change is Hard

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"There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in success, than to take the lead in the introduction of a new order of things...Innovation makes enemies of all those who prospered under the old regime, and only lukewarm support is forthcoming from those who would prosper under the new"

- Niccolo Machiavelli

"The pioneer is the guy with the arrows in his back"

"All truth passes through three stages.

First, it is ridiculed.

Second, it is violently opposed.

Third, it is accepted as being self-evident."

- Arthur Schopenhauer

"First they ignore you, then they laugh at you, then they fight you, then you win."

- Mahatma Gandhi

"Academic politics are so vicious precisely because the stakes are so small"

- Henry Kissinger

- Build network of friends locally / nationally / globally
  - "Keep your powder dry" / Route around obstructions



# Reasons For Our Success - How to Handle Political Problems

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- **Get inside their OODA Loop**
  - **Observe**
  - **Orient**
  - **Decide**
  - **Act**
- **Colonel John Boyd, US Air Force**

# **Reasons For Our Success - Route Around Obstructions**

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**"Non Vi Sed Arte"**

**(Not by strength but by guile)**

**- Motto of the Long Range Desert Group in World War II**

# Reasons For Our Success - Politics

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- "Networking is everything"
- Multigenerational approach

# Reasons For Our Success - Teamwork

---

- **How Virtual Hospital was kept alive**
  - **Princess Leia**
    - Teresa
  - **Luke**
    - Michael
  - **Han**
    - Jeff
  - **Obi Wan**
    - Bill
- **Worked on different aspects of the problem**
- **Worked at different levels politically**
- **Once I was the only one left project collapsed**

# Reasons For Our Success - Teamwork

---

- **How Virtual Naval Hospital was kept alive**
  - **Princess Leia**
    - Mary
  - **Luke**
    - Michael
  - **Han**
    - Richard
  - **Obi Wan**
    - Admiral
- **Worked on different aspects of the problem**
- **Worked at different levels politically**
- **Once I was the only one left project collapsed**

# Reasons For Our Success - Virtual Hospital

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- **Founders**
  - Had strong grounding in informatics + clinical care and could function as key intermediaries in bringing them together
  - Represented 3 generations of physicians, each well respected by their age-appropriate peer groups
  - Understood structure + politics of institution + applied talents + energies to engender collaboration among faculty authors
    - Authors recruited one at a time through hands-on demos
- Together these resulted in ability to cross traditional departmental + collegiate boundaries

# Summing Up

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- **Digital library projects have an increased chance of success if they are**
  - **Run in an entrepreneurial manner**
  - **Led by a key intermediary**
  - **Operate with a customer-centric mentality**
  - **Practice maintenance of aim**
  - **Utilize the lowest common denominator technology**

# Sizing it All Up

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# Measure of Our Success

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- **Over time Virtual Hospital became more used than the print medical library on campus, even though it had a miniscule fraction of its content + budget**
  - **In 1994-1995 the print library had a gate count of 297,000 patrons who took 355,000 volumes off the shelves and checked out 76,000 books**
  - **In 1998-1999 the print library had a gate count of 329,000 patrons who took 492,000 volumes off the shelves and checked out 68,000 books**
  - **In 1994 the digital library had 62,000 visitors who read 445,000 pages of information**
  - **In 1999 the digital library had 7 million visitors who read 28 million pages of information**

# Measure of Our Success - Amplification

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**"In doing the Macintosh, for example, there was a core group of less than a hundred people, and yet Apple shipped over ten million of them. Of course everybody's copied it and it's hundreds of millions now. That's pretty large amplification, a million to one. It's not often in your life that you get that opportunity to amplify your values a hundred to one, let alone a million to one. That's really what we were doing."**

**- Steve Jobs, Smithsonian Institution Oral History Interview, Apr. 20, 1995**

- That's what we did with Virtual Hospital and Virtual Naval Hospital**

## **In the End...**

---

**"I know of no finer joy than that of designing and building some great work. An engineer then becomes a creator, and cannot be denied a humble place among the ranks of artists. He has the privilege and the delight, if he is a man of understanding, of creating something which is not only beautiful but useful and since he is usually a plain rugged sort of fellow, his works should be informed with a natural simplicity and candour. He passes through the same alternations of hope and fear, of anxiety and confidence, of despair and exaltation, as the creative artist, and on the completion of his work he has the added agonizing experience of the test of his bridge or dam by the use to which it is put."**

**- Victor Bayley, Engineer, the Khyber Railway**

# **In the End...**

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**"A prophet is not without honour, but in his own country, and among his own kin, and in his own house."**

**- Jesus Christ, King James Bible**

**(A prophet is never recognized in their own country)**

# Questions for Further Discussion

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- What do you think are the most important reasons for success in digital library projects?

# Reading Assignments

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- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

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- **Non-fiction**
- **Fiction**
- **Movies**

# **Conclusion In The End...**

---

**"We had done our duty**

**We had made a difference and left our legacy**

**It was time to move on to other challenges**

**The deployment was over"**

**(in regards to a 6 month around the world cruise on  
the aircraft carrier USS Nimitz)**

**- William R. Bravery, Five Fleets: Around the World With the  
Nimitz, US Naval Institute Proceedings, Feb. 1999**

# Topic 8

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## Capstone Project

# Thematic Quote

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**"Tell me, I'll forget. Show me, I may remember. But involve me and I'll understand."**

**- Chinese proverb**

# The Painting

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**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

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- **Name**
  - **Chip with a microscope**
- **Year**
  - **Early 1970's**
- **Story**

# The Question

---

**"I hear you say "Why?" Always "Why?" You see things; and you say "Why?" But I dream things that never were; and I say "Why not?""**

**- George Bernard Shaw, playwright**

# From Theory....

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- ...To Practice

# Capstone Project

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- This is the course project and final exam
- Find a subject you are passionate about and create a digital library for it using the 10 Step Approach
  - Choose your passion
  - Think about how you will do it
  - Fill out 1 page outline of the Ten Step Approach
  - Present your ideas to class for discussion / feedback
  - Then do it
  - Make final presentation to class on what you did and what you learned

# **Examples of Projects Involving Professional Librarians + Amateur Librarians to Curate Small Digital Libraries**

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- **Digital Public Library of America**
  - **Digital Curation project + Public Library Partnerships project (<http://dp.la/exhibitions>)**
    - Engage library science students + public librarians in curating + writing exhibits using content in DPLA + open source tool Omeka ([www.omeka.net](http://www.omeka.net))
    - Curriculum at <http://dp.la/info/about/projects/public-library-partnerships/>
  - **Primary Source Sets (<http://dp.la/primary-source-sets>)**
    - Help students develop critical thinking skills by exploring topics through primary sources
    - Developed by teachers

# **Examples of Projects Involving Professional Librarians + Amateur Librarians to Curate Small Digital Libraries**

---

- **Internet Archive**
  - **Building Libraries Together**
    - Building toolset + interface that allows communities outside Internet Archive to save, manage, share cultural treasures
    - Citizen-archivists can build collections, enhance metadata, join like-minded communities
    - What Wikimedia did for encyclopedia articles, Internet Archive hopes to do for collections of media: give people tools to build library collections together + make them accessible to everyone

# Examples of Projects Involving Professional Librarians + Amateur Librarians to Curate Small Digital Libraries

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- **River of News**

- A river of news is a curated RSS aggregator, often on a certain subject
  - Example rivers at <http://radio3.io/rivers/>

"News isn't just a product, it's a community, and news organizations should take advantage of what's happening around them" - Dave Winer

# **Examples of Projects Involving Professional Librarians + Amateur Librarians to Curate Small Digital Libraries**

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- **Greenstone Digital Library Software**
  - Suite of open source software for building and distributing digital library collections from the New Zealand Digital Library Project at the University of Waikato
    - [www.greenstone.org](http://www.greenstone.org)

# The Ten Step Approach

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- **Design**
  - Planning
- **Creation**
  - Choose a Technology
  - Define Page Style
  - Define Metadata Style
  - Define Information Architecture
  - Install Tools to Gather Data
- **Curation**
  - Create Content in a Disciplined Manner
- **Operation**
  - Publicity and Marketing
  - Regular Maintenance
- **Evaluation**
  - Evaluation and Continuous Quality Improvement

# Naval Open Source Intelligence (NOSI) Case Study 1999 - Present

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- **Planning**
  - As a child Jane's Fighting Ships at Grosse Pointe Public Library was my Holy Grail
  - During a hike in Kauai watching warship sail past a cliff and dreaming of World War II coast watchers - Could I build a ship tracking Web site?
  - Mission - Gather operational naval news (1999) using open source intelligence as US Navy in humanitarian operation every other month, when they do so I want to reach out + assist them in my work as digital librarian for Virtual Naval Hospital -> Aid my teaching of war studies (2015)
  - Name = NOSI (Naval open source intelligence)
- **Choose a Technology**
  - Domain name nosi.org registered at networksolutions.com (1999) -> register4less.com (2006), currently \$16 / year
  - Manila - pioneer database-driven dynamic blogging tool (1999) -> WordPress (since 2008), currently \$99 / year
- **Define Page Style**
  - Adhered to Stanford Page Style Guidelines
- **Define Metadata Style**
  - Search engine optimization rather than Dublin Core
- **Define Information Architecture**
  - Organized primarily by time, secondarily by categories / tags
- **Install Tools to Gather Data**
  - Hitbox.com (1999) -> SiteMeter (2004) -> Google Analytics (2006) -> WordPress (2013)
  - Install a Search Engine - Atomz.com (1999) -> Google Custom Search (2001) -> None (2013)

# Naval Open Source Intelligence (NOSI) Case Study 1999- Present

---

- **Create Content in a Disciplined Manner**
  - Use open source content ~ Spend 15 minutes / day on site
  - Initially -> Read local newspapers + develop correspondents at major ports to learn of ship arrivals / departures, but was too much reading + too much doubt over correspondent reliability + ultimately did not tell you what ships were doing
  - Then -> Use intelligent agents / newsbots (Google News) to search newsfeeds for naval news
  - Ultimately -> As Web grew, read the best naval news feeds myself and curate best stories
  - Content is Story Title / News Source / Abstract / (Commentary)
  - Content syndicated via RSS (1999), Facebook (2010), Twitter (2014), others have offered to pay for it (military.com)
- **Publicity and Marketing**
  - Guerilla marketing to search engines (Web / RSS / Blog), Web sites including military libraries + Wikipedia, newsgroups + Yahoo Groups
- **Regular Maintenance**
  - Infrequent technology tweaks
- **Evaluation and Continuous Quality Improvement (CQI)**
  - Daily CQI, yearly evaluation of site and naval analysis (Naval Year in Review)
  - After 9/11 start blogging more broadly on war studies, by 2004 realized a curriculum in war studies has unfolded in practice so created War Studies Primer course (2008-present)
  - Curriculum unfolding in practice through blogging then used on BiodefenseEducation.org (2004-2005) where it was proven through evaluation and then on PediatricEducation.org (2004-present) where it was proven through evaluation + also became a knowledge management tool, @pedsimaging is next

# From Open Source Intelligence to War Studies

## NOSI-Naval Open Source Intelligence™

A digital library of world naval operational news curated from open source intelligence by Michael P. D'Alessandro, M.D.  
[nosi.edithispage.com](http://nosi.edithispage.com)

NOSI - Naval Open Source Intelligence is a digital library of world naval operational news curated from open source intelligence by [Michael P. D'Alessandro, M.D.](#)

[Home](#)  
[Naval Links](#)  
[Naval Year In Review](#)  
[FAQ](#)  
[Feedback](#)  
[Search](#)  
[Members](#)  
[Sign Out](#)

**Monday, December 31, 2001**  
**Bahrain Navy** - Bahrain will send a frigate to join the coalition forces in the Arabian Sea. The frigate is the Bans Sabha, an Oliver Hazard Perry class ship.

- CNN: [Bahrain contributes troops for U.S. war on terrorism](#)

**Royal Navy** - An excellent overview of the choices facing the Royal Navy as it plans for its future naval aviation force.

- Naval War College Review: [Future Carrier Aviation Options - A British Perspective](#)

[Edit this Page](#)

**December 2001**

|     |     |     |     |     |     |     |
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| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
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[New](#) [Jan](#)  
[Flip Home Page](#)

**Sunday, December 30, 2001**  
**US Navy** - William Arkin on the importance of troop rotation in what will be a long war against terrorism.

- Los Angeles Times: [Troops Gear Up for Phase 2 of War](#)

**US Navy** - How forces and scenarios are designed to be tested in the US Navy's annual Global War Game run at the Naval War College.

- Sea Power: [Innovation Consultants For the Fleet of the Future](#)

**Saturday, December 29, 2001**  
**Japanese Coast Guard** - The sinking of a suspected North Korean spy brawler remains controversial in Japan.

- Washington Post: [Sinking Renews Debate on Japan's Military](#)

**US Navy** - Life aboard the USS Kitty Hawk, which just returned to port.

- Los Angeles Times: [Kitty Hawk Savors Homecoming](#)

**US Navy** - The stress of life at sea for 100 days straight aboard the USS Theodore Roosevelt.

- Associated Press: [After 100 days at sea, U.S. sailors cope with depression, stress](#)

**Royal Navy** - The firm which made Nelson's signal flags at Trafalgar has just gone out of business.

1999

## WarStudiesPrimer.org™

An introductory course on the study of war and military history  
Curated by Michael P. D'Alessandro, M.D.

Download the War Studies Primer Ebook: [PDF](#) or [PowerPoint](#) or [PDF formatted for printing \(6 slides per page\)](#)

View the War Studies Primer online: [SlideShare](#)

War Studies Primer is an introductory course on the study of war and military history: 28 lectures and over 1,800 slides

It is made available under a [Creative Commons Attribution-NonCommercial-Share Alike 3.0 Unported License](#)

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For daily operational military news see [NOSI](#)

Fall 2011 Course: [Syllabus](#) and [Essays](#) and [Simulation Instructions](#)

Curated by [Michael P. D'Alessandro, M.D.](#) ([Google+](#) [Profile](#)) and © 2004-2014 and Powered by [Menehune Mining](#)



2008

## NOSI – Naval Open Source Intelligence™

A digital library of operational naval news curated from open source intelligence, intended to serve as a source of continuing naval education by Michael P. D'Alessandro M.D.



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[Naval Year In Review](#) [Reviews](#)

## Stupid Move: Navy Will Buy V-22 Ospreys To Replace Its C-2 Greyhounds

Posted on [January 21, 2015](#)

- Foxtrot Alpha – In what is a highly controversial move, the US Navy has announced that it will procure tilt-rotor V-22 Ospreys to replace its venerable C-2A Greyhound Carrier On-board Delivery (COD) aircraft. Here's why it's such a terribly bad idea.

SHARE THIS:

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Posted in [USNavy](#)

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**New Surface Leaders Pitch More Lethal**

2015

# Closing the Loop From Passion to Profession

## BiodefenseEducation.org™

A biodefense digital library and learning collaboratory

Curated by Donna M. D'Alessandro, M.D. and Michael P. D'Alessandro, M.D.

BiodefenseEducation.org is a Biodefense Digital Library and Learning Collaboratory intended to serve as a source of continuing education on biodefense affairs.

Participate in the [Learning Collaboratory / Discussions](#) --- Seek answers in the [Reference Library](#)

Help improve BiodefenseEducation.org by completing this brief [Comment Form](#).

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[Online Courses](#)

[Year in Review](#)

[Archive](#)

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[Reviews](#)

[Contact Us](#)

**Tuesday, December 28, 2004**

[Agroterrorism - Agro-terror alert](#)

Washington Times - Why agroterrorism needs to be taken more seriously.

Posted on 12/28/04; 3:48:21 AM [Comment \[0\]](#)

**Wednesday, December 22, 2004**

[Public Health - Experts Fear Slowing Momentum on Bioterror](#)

Associated Press - Biological weapons experts, including the scientist who played a big role in eradicating smallpox experts laud the increased spending government lavished on combatting biological threats in 2004, they sense momentum slowing as public attention and political will wane.

Posted on 12/22/04; 4:29:00 AM [Comment \[0\]](#)

**Friday, December 17, 2004**

[Disease Surveillance - Health agency hires IBM to develop system to detect disease, bioterrorism](#)

The Lancet - The emergence of bioterrorism as a threat is creating new responsibilities for the medical community and, for the first time in history, is putting physicians at the forefront of managing disaster.

Posted on 12/17/04; 5:29:54 AM [Comment \[0\]](#)

[Anthrax - Pentagon Wants Anthrax Vaccine Authorized](#)

Associated Press - The Pentagon is seeking emergency authority to resume administering the anthrax vaccine,

December 2004

|     |     |     |     |     |     |     |
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| 19  | 20  | 21  | 22  | 23  | 24  | 25  |
| 26  | 27  | 28  | 29  | 30  | 31  |     |

Sat Jan

2004

## PediatricEducation.org™

A Pediatric Digital Library and Learning Collaboratory intended to serve as a source of continuing pediatric education, curated by Donna M. D'Alessandro M.D. and Michael P. D'Alessandro M.D.

Home About Cases by Age Cases by Date Cases by Disease / Problem

Cases by Specialty Cases by Symptom / Presentation Curriculum Maps

Educational Uses FAQ Learning Collaboratory Pediatric Differential Diagnoses

Contact Us Links Reviews

### How Do You Treat Pinworms?

Posted on January 13, 2014

**Patient Presentation**

**A 5-year-old male came to clinic with a history of constipation and anal itching.** The anal itching had been occurring for over 1 month and was worse at night. He would wake his mother because of the itching and scratching. His mother said he had scratches on his bottom that then became so sore that the patient began to retain his bowel movements because of the irritation and soreness. This had been happening for about 2 weeks. "His cousin had pinworms a few months back, so I tried that pinworm medicine from the store, but it didn't seem to help," she noted. The **past medical history** was non-contributory. The **pertinent physical exam** showed a small but healthy appearing male with normal vital signs and growth parameter in the 10-25%. His perianal area had multiple excoriations. The **diagnosis** of presumed pinworm infection and secondary constipation was made. Because the cousin and several other extended family members frequently visited the home for extensive time periods, the patient and all the household and extended family members were treated with mebendazole. Hand hygiene and environmental control measures were discussed with the family. The **clinical course** 3 months later showed that although he was not reinfected, a female cousin had also developed pinworms. Everyone had been retreated and no one else had developed pinworms since.

**Discussion**

2004

Michael D'Alessandro (@pedsimaging) | Twitter

902 TWEETS 53 FOLLOWING 196 FOLLOWERS 4 FAVORITES 1 LISTS

**Michael D'Alessandro**  
@pedsimaging

A curated stream of pediatric imaging information. Pediatric radiologist / Professor of Radiology at U of Iowa, Educational Informatician. Opinions are my own.

United States  
pediatricimaging.com

49 Photos and videos

**Tweets** Tweets & replies Photos & videos

Michael D'Alessandro retweeted  
**Dr Jenny Hoang** @JennyHoang · 23h  
Infant. Diagnosis? What is the inheritance? ANSWER: [goo.gl/iUZRS1](#)  
#Radres #Neurorad

Michael D'Alessandro retweeted  
**WFFM** @WFFMradio · 3h  
Missed our pediatric Cases of the Week? No pbm - here they all are, contributors cited [ow.ly/NebMX](#)

Michael D'Alessandro retweeted  
**Cliny Kids Radiology** @ClinyKidsRad · 22h  
#ACR2015 #FOAMRad  
Sagittal CT of the brain shows extension of the cerebellar tonsils below...

2014

# Questions for Further Discussion

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- **What will be the barriers you will have to overcome to implement your digital library project?**
- **What do you need in order to make your digital library project successful?**

# Reading Assignments

---

- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

---

- **Non-fiction**
- **Fiction**
- **Movies**

# **Conclusion**

## **Our Philosophy**

---

**"Life can be much broader once you discover one simple fact: Everything around you that you call life was made up by people that were no smarter than you and you can change it, you can influence it, you can build your own things that other people can use.**

**Once you learn that, you'll never be the same again."**

**- Steve Jobs**

# Topic 9

---

**One More Thing...**

**E-Memory / Lifelogging / Personal Digital Archiving**

**and**

**Personal Learning Environments / Personal Learning  
Networks**

**or**

**The personalized digital library**

# Thematic Quote

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**"Don't you forget about me..."**

**- Simple Minds**

# The Painting

---

**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

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- **Name**
  - iPhone 1<sup>st</sup> generation
- **Year**
  - 2007
- **Story**
  - Where mobile *\*really\** begins

# The Question

---

**How does an elephant never forget?**

# Gordon Bell



From Wikimedia Commons

# Person - Gordon Bell / Bell's Law

---

- **Significance**

- Bell's Law (1972) - "Roughly every decade a new, lower priced computer class forms based on a new programming platform, network, and interface resulting in new usage and the establishment of a new industry."
  - Technology enables two evolutionary paths - constant performance with decreasing cost, or constant price with increasing performance

- **Profession**

- Computer engineer

- **Places worked**

- DEC, NSF, Microsoft Research

- **Years of work**

- 1960 - Present

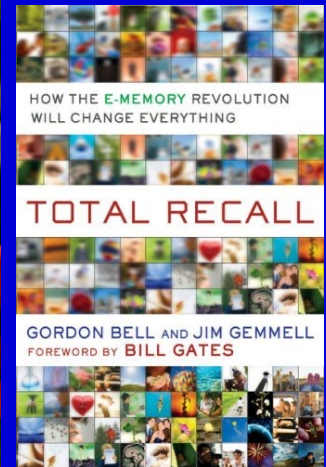
- **Things worked on**

- PDP-1, PDP-11, VAX, The Computer Museum, MyLifeBits

# E-Memory System

- A digital archive of your life
  - "Lifelogging"
- Made possible / inevitable by
  - Most memories are digital
  - Near-infinite space to store them
  - Ever-improving technology to recall them
- Captures, stores, organizes and makes retrievable your experience + reflected wisdom
- You become the librarian, archivist, cartographer and curator of your professional life

- Gordon Bell and Jim Gemell, Total Recall (2<sup>nd</sup> Ed. Is Your Life Uploaded)



From Microsoft



# Personal Digital Archiving Issues

---

- People are lazy + busy + would rather create new digital objects than curate old ones
  - Is sharing on social media the real reason for personal digital archives?
  - Archival hardware + software tools are difficult to use + family IT person is not family archivist
  - People need to be trained in archival techniques with simple instructions - perhaps this is the job of local public libraries: librarians as digital information specialists serving their communities
  - Individuals need to create personal digital archives, libraries need to manage collections of personal digital archives
  - Average person as well as the extraordinary person needs to be archived
  - How can individuals best manage their own digital materials?
  - How can digital information be preserved over time as apps die and file formats change?
  - Preservation vs. access: How can these personal digital archives be used to explore memories / analyze the past?
  - Who will provide the funding for all this?
- Michael Ashenfelder, The Signal: Digital Preservation (from Library of Congress), multiple blog posts 2012-2015

# My Approach to Personal Digital Archiving

---

- **Lectures**
  - Presentations printed on paper 6:1 when given
  - Aldus Persuasion files can't be opened ~ Older PowerPoint files can't be opened
- **Papers**
  - Printed on paper when published ~ PDF saved when published
  - Older Word files can't be opened
- **Web Sites**
  - All created as text + JPEGs + .mov + .au files
    - All kept on live media + archived monthly
  - Archived at Internet.org from 1996 -> present
  - Printed color copy + HTML archive every year
- **eBooks**
  - Newton Digital Book source archived as text file but tool to turn into book no longer runs
  - I own few - Only purchase Kindle book or iBook if they are free or not available in print ~ own about 10
  - Any PDFs I use are printed out
- **Notes**
  - All in text files
- **Images**
  - 35mm slides -> TIFFs -> JPEGs
  - From digital camera -> JPEGs at highest resolution
- **Video**
  - Hi8 tapes
- **Summary**
  - I archive in paper to minimize the effect on me when it all comes crashing down on us
  - I see the future before you do, but that doesn't mean I have to like it, and I resist it as long as possible

# Learning is an Apprenticeship

---

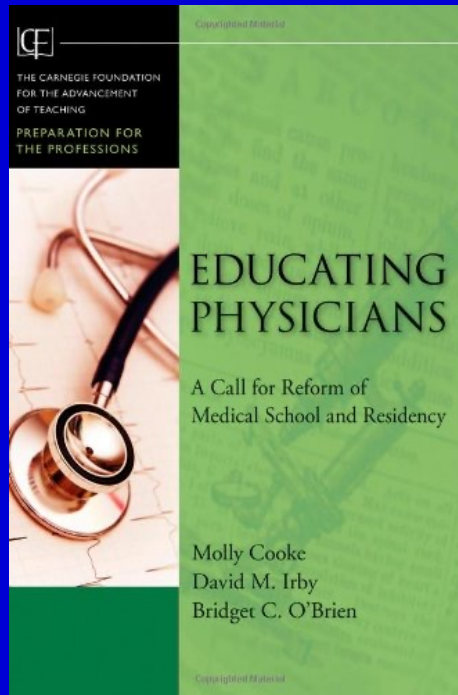
**"In what may be called the natural method of teaching, the student begins with the patient, continues with the patient, and ends his studies with the patient using books and lectures as tools, as means to an end."**

**- Sir William Osler, 1903**



# Future of Medical Education

## Lifelong Apprenticeship



**Best way to change physicians' knowledge, attitude, and behaviors  
And thus positively influence patients' care, outcomes, and lives  
Is to connect education to practice + shift learning to the point-of-care**

- ACCME, CME as a Bridge to Quality, 2006
- Josiah Macy Foundation, Continuing Education in the Health Professions, 2008
- IOM, Redesigning Continuing Education in the Health Professions, 2009
- Molly Cooke, David M. Irby, Bridget C. O'Brien. Educating Physicians: A Call For Reform of Medical School and Residency, Jossey-Bass, 2010

# **Apprenticeship and Active Learning**

---

**"Activities and understandings do not exist in isolation;**

**they are part of a broader system of relations in which they have meaning."**

**"Learning is an improvised practice:**

**A learning curriculum unfolds in opportunities for engagement in practice."**

**- Lave and Wenger: Situated Learning - Legitimate Peripheral Participation**

# How the Medical Apprentice Learns

---

- **Diagnosis**

- Clinical skills related to experience
- When seeing a new case you encapsulate it in an "illness script" which you pattern match to previous cases "illness scripts" in order to diagnose
  - Case-based reasoning / Storytelling
- Expert is the person who can best capture, organize, and retrieve their experience (cases)

- **Treatment**

- Work up driven by medical knowledge

- Schmidt HG, Norman GR, Boshuizen HPA. A Cognitive Perspective on Medical Expertise: Theory and Implications. Acad Med 1990 Oct;65(10):611-21.

# Learning Portfolio

## A Framework to Hang Your Learning On

### Capturing + Organizing + Retrieving Your Experience / Cases



Evernote (Android+iOS+Win)



OneNote (Android+iOS+Win)



Excel (Android+iOS+Win)

- For each case
  - Image annotated with: Question ~ Story ~ Answer ~ Impact on Practice (Reflection) ~ Resources Used
- Diary of your learning ~ Archive of your medical educational life + experience
  - Is a knowledge management system
- Educational construct
  - Adult learning theory = Learning situated in practice
    - Schon's theory of clinical problem solving / model of reflective practice / learning cycle
  - Case-Based Learning
    - Constructionism ~ Learning by doing / Learning artifacts
  - Portfolio-based learning
- Why?
  - To situate learning in practice - questions are starting point for learning ~ Point-of-care CME
  - For sharing - individuals in person, groups in conferences / lectures, globally on Internet

| Case   | Question  | Story  | Answer   | Impact on Practice   | Resources Used  |
|--|---|--|--|--|---|
| 1. A 65-year-old male with a long history of hypertension and hyperlipidemia presented to the emergency department with a sudden onset of severe, crushing chest pain. The pain was associated with diaphoresis and nausea. The patient's vital signs were stable, and his oxygen saturation was 98% on room air. The ECG showed ST-segment depression in leads II, III, and aVF, and ST-segment elevation in leads V1, V2, and V3. The patient was given aspirin, nitroglycerin, and morphine, and was transferred to the cardiac catheterization laboratory for percutaneous coronary intervention (PCI). The procedure was successful, and the patient was discharged on aspirin, statins, and beta-blockers. | What is the pathophysiology of acute coronary syndrome (ACS)? | The patient's symptoms and ECG findings are consistent with a diagnosis of ACS. The most likely mechanism is atherosclerotic plaque rupture, leading to partial or complete occlusion of the coronary artery. This results in myocardial ischemia and infarction.                                    | The patient was treated with aspirin, nitroglycerin, and morphine, and underwent successful PCI. The procedure restored blood flow to the affected area of the heart, preventing further damage. | The patient's condition was stabilized, and he was discharged on appropriate medications. The case highlights the importance of recognizing ACS symptoms and initiating prompt treatment.                | UpToDate, Medscape, American Heart Association guidelines, and the patient's medical history. |
| 2. A 45-year-old female with a long history of rheumatoid arthritis (RA) presented to the emergency department with a sudden onset of severe, tearing chest pain. The pain was associated with diaphoresis and a sense of impending doom. The patient's vital signs were stable, and her oxygen saturation was 98% on room air. The ECG showed ST-segment depression in leads II, III, and aVF, and ST-segment elevation in leads V1, V2, and V3. The patient was given aspirin, nitroglycerin, and morphine, and was transferred to the cardiac catheterization laboratory for PCI. The procedure was successful, and the patient was discharged on aspirin, statins, and beta-blockers.                        | What is the pathophysiology of aortic dissection?             | The patient's symptoms and ECG findings are consistent with a diagnosis of aortic dissection. The most likely mechanism is a tear in the intima of the aorta, leading to the entry of blood into the media of the vessel wall. This results in the formation of a false lumen and potential rupture. | The patient was treated with aspirin, nitroglycerin, and morphine, and underwent successful PCI. The procedure restored blood flow to the affected area of the heart, preventing further damage. | The patient's condition was stabilized, and she was discharged on appropriate medications. The case highlights the importance of recognizing aortic dissection symptoms and initiating prompt treatment. | UpToDate, Medscape, American Heart Association guidelines, and the patient's medical history. |
| 3. A 60-year-old male with a long history of hypertension and hyperlipidemia presented to the emergency department with a sudden onset of severe, tearing chest pain. The pain was associated with diaphoresis and a sense of impending doom. The patient's vital signs were stable, and his oxygen saturation was 98% on room air. The ECG showed ST-segment depression in leads II, III, and aVF, and ST-segment elevation in leads V1, V2, and V3. The patient was given aspirin, nitroglycerin, and morphine, and was transferred to the cardiac catheterization laboratory for PCI. The procedure was successful, and the patient was discharged on aspirin, statins, and beta-blockers.                    | What is the pathophysiology of aortic aneurysm?               | The patient's symptoms and ECG findings are consistent with a diagnosis of aortic aneurysm. The most likely mechanism is a weakening of the aortic wall, leading to the formation of a bulge. This can result in rupture and life-threatening hemorrhage.  | The patient was treated with aspirin, nitroglycerin, and morphine, and underwent successful PCI. The procedure restored blood flow to the affected area of the heart, preventing further damage. | The patient's condition was stabilized, and he was discharged on appropriate medications. The case highlights the importance of recognizing aortic aneurysm symptoms and initiating prompt treatment.    | UpToDate, Medscape, American Heart Association guidelines, and the patient's medical history. |

# Evaluation of a Learning Portfolio

- A pediatrician's clinical experiences coupled with reflection
  - 5 elements for each case
  - Evaluation shows unstructured curriculum unfolding in practice over 5 years (234 cases)
    - Covers 100% of age ranges (n=9)
    - 100% of specialties (n=42)
    - 98% of symptoms (n=127)
    - 55% of diseases (n=707 [50-60% are pediatric])
    - 90% of topics in 3 national pediatric curricula
    - 20 hours of CME / year
    - "My reading is now focused on my patients"
  - D'Alessandro DM, D'Alessandro MP. Formative Evaluation of a Pediatric Digital Library's Educational Content and Comparison to National Curricular Standards. Medical Teacher. 2008;30(9-10) 880-6.
- Learner taking control of and assuming responsibility for their own learning by tying their learning to practice + receiving CME for it
- Learning portfolio documents what you have learned
  - Assessment by examination documents what you don't know

The screenshot shows the PediatricEducation.org website. The header includes the site name and tagline "Ex infans, scientia". Below the header, there is a navigation menu with links like Home, Learning Collaboratory, Cases by Disease, etc. The main content area displays a case report titled "Oh Where, Oh Where Did That Little Foreign Body Go?" under the date "Monday, March 28, 2005". The case report includes a patient presentation of a 17-month-old female with coughing and respiratory symptoms, a review of systems, a physical exam, and a radiologic evaluation. The radiologic evaluation mentions a round radio-opaque foreign body in the antrum of the stomach. Below the text is a chest X-ray image showing a white circular object in the stomach area, labeled with an 'R' for right. To the left of the X-ray is a calendar for March 2005, with the 28th highlighted. There are also sections for Discussion, Members, and a calendar.

# The 4 C's For the 21<sup>st</sup> Century

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- **Critical thinking**
- **Communication**
- **Collaboration**
- **Creativity**

# Entrepreneurial Learner

---

**"What does it mean to be an entrepreneurial learner?"**

**It means how do you constantly look around you all the time for new ways and new resources to learn new things.**

**Entrepreneurial learners are basically fundamentally makers and tinkerers."**

**- John Seely Brown, researcher**

# Dispositions of an Entrepreneurial Learner

---

- **Curiosity**
  - Driven by awe
- **Questing**
  - Seeking, uncovering, probing...but always doing (curiosity in action)
- **Connecting**
  - Listening to others, engaging
- **Reflecting**
  - On performance with help of cohorts. Reflective practitioner

- John Seely Brown, researcher

# Personal Knowledge Mastery

---

- A lifelong learning strategy for individuals to control their professional development through continual process of
  - Seeking
    - Finding things out + keeping up to date
    - Use smart filters - in form of a network of trusted individuals - to sort out valuable information
  - Sensing
    - Personalizing information + using it
    - Includes reflection, based upon critical thinking
    - Can include blogging, tweeting, writing to contextualize + reinforce learning
  - Sharing
    - Exchanging resources, ideas, experiences with your networks + colleagues
    - Pass your knowledge forward, iterate + collectively learn
    - Build respect + trust by being relevant
  - Mastery in a digital age is only achieved if you know how to establish trust, respect + relevance in human networks
- Kenneth Mikkelsen + Harold Jarche, Developing Mastery in a Digital Age, Drucker Society Europe Blog, Oct. 12, 2015

# On Expertise

---

- **Hard work, practice, experience not enough to make an expert**
    - Expert is recognized by ability to solve non-routine problems in given domain
    - Expert's secret is willingness to work at the edge of their competence + keep reconstructing their skills at higher levels
  - **Ideal classroom culture is "knowledge-building community" which supports expert-like learning**
    - Would assist creation of "expert society" where expertise is normal rather than exceptional
  - **Expertise is an expression of uniquely human potential to go beyond competencies given us by nature**
- Carl Bereiter and Marlene Scardamalia, *Surpassing Ourselves: An Inquiry into the Nature and Implications of Expertise*

# The Power of the Personal Learning Network

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**"If individualized learning is chained to a social vision prompted by "prisoner dilemma" rationality, in which one cooperates only if it maximizes narrow self-interest, network learning is committed to a vision of the social - stressing cooperation, interactivity, mutuality, and social engagement for their own sakes and for the powerful productivity to which it more often than not leads. The power of ten working interactively almost invariably outstrip(s) the power of one looking to beat out the other nine."**

**- Cathy N. Davidson and David Theo Goldberg, The Future of Thinking, 2010**

# Personal Learning Network

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**"A personal learning network is at the same time my personally curated network of people I want to learn from and a network that learns together. It wasn't too far a leap from there to the notion of learning community."**

**- Howard Rheingold, Net Smart, 2012**

# The Personal Learning Network Cultivation Process

---

- Explore - multiple media
- Search - after you have explored enough to get some sense of the field
- Follow - candidates' activity streams
- Tune - your network by dropping people who don't seem worth spending attention on regularly
- Feed - the people who follow you by sharing value when you find or create it
- Engage - the people you follow
- Inquire - of the people you follow and those who follow you
- Respond - to inquires made of you

- Howard Rheingold, Net Smart, 2012

# Educational Social Network = Community of Practice



**"Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their understanding of this area by interacting on an ongoing basis."**

- Wenger E. et. al. Cultivating Communities of Practice: A Guide to Managing Knowledge

- **Educational construct = Interdependent Learning Theory**
  - **Teaching each other = collaborative learning = sharing the wisdom**
    - Can be easily done by sharing learning portfolios on educational social networks

# So What? Does This Work?

## Educational Effectiveness of Educational Social Networks / Social Learning



- **Types of evaluation / assessment**
  - **Formative vs. Summative**
- **Proposition: The house believes that social networking technologies will bring large [positive] changes to educational methods, in and out of the classroom.**
  - **Assessment for learning (formative assessment)**
    - Learning in the classroom built around peer support, self-assessment + questioning, peer assessment -- all coupled with learning logs - with teacher as a guide = Learning in a social network
  - Ewan McIntosh, The Economist Debate Series: Education - Social Networking, The Economist, January 2008

**"Firm evidence shows that formative assessment is an essential component of classroom work and that its development can raise standards of achievement..."**

- Paul Black and Dylan Wiliam, Inside the Black Box: Raising Standards Through Classroom Assessment, Phi Delta Kappan, November 1998

**"Teachers found that the motivation and attitudes of their students improved, and the students achieved higher scores on externally set tests and examinations"**

- Paul Black et.al., Working Inside the Black Box: Assessment for Learning in the Classroom, Phi Delta Kappan Sept 2004

**...So formative assessment improves summative assessment...**

# **Educational Effectiveness of Educational Social Networks / Communities of Practice**

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**"Physicians interact with peers and mentors to frame issues, brainstorm, validate and share information, make decisions, and create management protocols, all of which contribute to learning in practice. It is likely that working together in this way creates the best environment for learning that enhances professional practice and professional judgment."**

**- Parboosingh JT. Physician Communities of Practice: Where Learning and Practice are Inseparable. Journal of Continuing Education in the Health Professions. 2002. 22, pp. 230-230**

- Sharing among health care providers is the best environment to move towards mastery**

# The Learning Continuum

Capturing + Organizing + Retrieving, Learning From, and Sharing Your Experience / Cases

**Data**    **-> Information**    **-> Knowledge**    **-> Wisdom / Mastery**  
[acquired]    [organized]                      [reflected]                      [shared]



Learning Portfolio (LP)    ->    Personal learning environment (PLE)    ->    **Community of practice (COP)**

[focus on individual]

[focus on group]

Create cases in LP -> Learn about cases in PLE -> **Share cases with COP**

# **A Laboratory For the Future of Librarianship**

## **Distance Learning vs. Apprenticeship**

---

- **The learning models of the future**
  - **cMOOC (Connectivist MOOC)**
  - **Entrepreneurial learning**
  - **Personal knowledge mastery**
  - **Portfolio based learning**
- **....all support the model of learning is an apprenticeship**

# Questions for Further Discussion

---

- What digital library tools could be provided to help apprentice learners in the learning models of the future?

# Reading Assignments

---

- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

---

- **Non-fiction**
  - **Bell, C Gordon and Gemmell, Jim - Total Recall**
- **Fiction**
- **Movies**

# Conclusion

---

**"Do not go where the path may lead, go instead where there is no path and leave a trail"**

**- Ralph Waldo Emerson, poet**

# Topic 10

---

**Conclusion**

# Thematic Quote

---

**"That my friends is what globalization is about. A voice for anyone with something to say."**

**- Dave Winer, software developer and writer**

# The Painting

---

**Painting Name**

**- Artist's Name**

**(Location of painting)**

# Artifact

---

- **Name**
  - **HyperLung / HyperAirway CD-ROM**
- **Year**
  - **1992**
- **Story**

**"We've come a long, long way together  
Through the hard times, and the good..."**

# The Question

---

**If not me, then Who? If not now, then When?**

- Don Quixote to Sancho Panza in Man of La Mancha as to why he chases after windmills

**Can professional and amateur librarians bring order to the chaos of the Internet?**

# Themes

**What we are going to discuss / What we have discussed**  
**Everything is deeply intertwined /**

---

- **Introduction**
  - Apprenticeship is the combination of the apprentice learner, the library, and the computer
- **Learning**
  - Learning is an apprenticeship
- **History of Digital Libraries**
  - Digital libraries were always intended to support apprenticeship
- **Digital Libraries + Digital Librarianship**
  - Librarians are experts in organizing information
  - We have to democratize some aspects of librarianship to help amateurs build digital libraries to support apprentices
- **Ten Step Approach**
  - Digital libraries can be designed, created, curated, operated and evaluated using a 10 step approach
  - You can be recognized for your work
- **Case Studies**
  - 23 case studies in digital libraries built to support apprentices + lessons learned from them
- **Reasons For Our Success**
  - Entrepreneurship, key intermediary, customer-centric, maintenance of aim, low-tech
- **Capstone Project**
  - The only way to learn is by doing
- **E-Memory Systems + Personal Learning Environments / Networks**
  - Everyone needs an E-memory system and a Personal Learning Environment / Personal Learning Network

# You Can Do This

---

- **Closing the loop**
  - **From your passion to your profession**
    - **From NOSI to @pedsimaging**

# Focus

---

- On all the new people who will show up on the Internet in the next few years
- On the millions of Web sites + apps and trillions of social media atoms to come in the next few decades

# Ultimately What is the Internet About?

---

- **Letting everyone publish**
  - **Connecting people with similar interests**
  - **Formation of communities**
- Steve Steinberg, *Seek and Ye Shall Find (Maybe)*, Wired, May 1996

# Consider the Business Model

---

- **Open source model works for very valuable type of IP - software**
  - **Can this model work for Web content?**
- **Give content away for free, get paid to perform your content**
  - **Some artists do this**
  - **Could librarians do it by giving talks, consulting, selling eBooks?**
- **Or do it for the reason amateurs do it**
  - **For love**

# What is the Business Model? - 1

---

"The likely best course for content providers is to exploit that situation, to distribute intellectual property free in order to sell services and relationships.

...

Content providers should manage their businesses as if it were free, and then figure out how to set up relationships or develop ancillary products and services that cover the costs of developing content. Or players may simply try their hands at creative endeavors based on service, not content assets: filtering content, hosting online forums, rating others' (free) content, custom programming, consulting, or performing.

...

People will be rewarded for personal effort - process and services - rather than for mere ownership of assets.

...

Some aspects of intellectual property can be fixed into a specific medium and copied. But other less fungible or reproducible aspects of content cannot easily be instantiated or transferred. Their worth is realized only through human attention and interaction. Let's call it intellectual value rather than intellectual property. Intellectual value comprises content such as performances; teaching, training, and coaching; analysis of specific questions applied to specific situations, and personal attention - someone reading and responding to your e-mail, answering questions, or watching you on a video connection.

...

- Esther Dyson, Intellectual Value, Release 1.0, Dec. 1994

# What is the Business Model? - 2

---

Precisely because it is scarce and unreplicable, this unreplicable kind of content is likely to command the highest rewards in the commercial world of the future.

...

In the end, the only unfungible, unreplicable value in the new economy will be people's presence, time, and attention; to sell that presence, time, and attention outside their own community, creators will have to give away content for free. As John Perry Barlow points out in "The Economy of Ideas" (see Wired 2.03, page 84), that's exactly what the Grateful Dead do by encouraging people to tape their performances (and a performance is not just the Grateful Dead on the stage; it's all the people there with you). Enough of the people who copy and listen to Grateful Dead tapes end up paying for hats, T-shirts, and performance tickets. In the new era, the ancillary market is the market.

...

The question of what happens to intellectual property on the Net may be summed up like this: value shifts from the transformation of bits rather than bits themselves, to services, to the selection of content, to the presence of other people, and to the assurance of authenticity - reliable information about sources of bits and their future flows. In short, intellectual assets and property depreciate while intellectual processes and services appreciate."

- Esther Dyson, Intellectual Value, Release 1.0, Dec. 1994

# Challenge Proven

---

- **My message of hope + inspiration I want to share is:**
  - **You can be trained to create small digital libraries in a subject area of interest that create order in the chaos of the Internet**
  - **You can make a difference by doing so**
  - **You will feel rewarded by it**
  - **Building a digital library makes you the ultimate apprentice learner and expert in that subject area**
  - **So find your passion, start curating it and help make the future!**

# In Summary

---

- **Learning is an apprenticeship**
- **Digital libraries are crucial tools for apprentice learners**
- **Librarians today must create digital libraries for their patrons and teach their patrons to create digital libraries**
- **Practice Apprenticeship, the tying of the apprentice to the library through the computer**
- **Start a digital library today!**

# **As We May Learn - The Dark Side**

---

**"This instrument can teach, it can illuminate, and yes it can even inspire. But it can do so only to the extent that humans are determined to use it to those ends. Otherwise it's nothing but wires and lights in a box. Good night and Good luck."**

**- Edward R. Murrow, journalist**

# As We May Learn - The Bright Side

---

"We think we can build a new subculture of intellect, intellect in a new and enthusiastic style-more like the science fiction subculture than Academia.

Here is a bunch of people who are paid to sit around and make things interesting for you...

The Xanadu Hypercorps is expected to be an unusual and elite group. They will circulate among Xanadu stations transmitting skills and outlook. They will not be people who can program or repair a computer; rather, like the stewards and stewardesses of the airlines, they will know how to make users comfortable. Also how to help them be productive and enjoy themselves within their intended budget. Like good librarians the Hypercorps will have an understanding of what materials are available, but they will know how to deal with an avalanche, rather than a trickle, of ideas and information. Like good teachers they will have a sense of how to convey ideas. Like good woodsmen they will have a sense of the trails and byways of the territory to be explored. And like academics they will have a personal love for one or more topics that they will watch and study in their free time on the system."

- Theodor Holm Nelson, Literary Machines

# Questions for Further Discussion

---

- **Time for Reflection:**
  - **Take an hour and reflect back upon the Learning Objectives / Apprenticeship Frequently Asked Questions for this course found in Topic 1**
    - **What is the history of digital libraries and learning?**
    - **What is the future of digital libraries and learning?**
    - **How can we create digital libraries that help apprentice learners?**
    - **What role do professional + amateur librarians have to play in the future of digital libraries and learning?**

# Reading Assignments

---

- **Digital Libraries by William Arms**
  - <http://www.cs.cornell.edu/wya/diglib/>
  - <http://www.cs.cornell.edu/wya/papers/LibHiTech-2012.pdf>
- **TED Talks for this Topic**
  - <http://www.apprenticechip.org/ToLearnMore.html>

# Recommended Reading to Learn More

---

- **Non-fiction**
- **Fiction**
- **Movies**

# One More Thing

---

**"I'm not going to buy my kids an encyclopedia. Let them walk to school like I did."**

**- Yogi Berra, baseball legend**

# One More Thing...



From Apple

"Here's to the crazy ones. The rebels. The troublemakers. The ones who see things differently. While some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do."

# One More Thing...

---

**"The best prize that life has to offer is the chance to work hard at work worth doing."  
- President Theodore Roosevelt**

# One More Thing...

---

**"Be ashamed to die until you have won some victory for humanity"**

**- Horace Mann, educational reformer**

# Conclusion

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## Apprenticechip<sup>TM</sup>

Case studies in digital libraries - Curated by Michael P. D'Alessandro, M.D.

**"Change is the only constant"**

**- Heraclides, Greek philosopher**

**"The future never just happened. It was created."**

**- Will and Ariel Durant, historians**

**"Give me a place to stand and with a lever I will  
move the whole world."**

**- Archimedes**

# The End

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Earthrise, William Anders, Apollo 8 (NASA)

**"And from the crew of Apollo 8, we close with good night, good luck, a Merry Christmas, and God bless all of you - all of you on the good Earth."**

# Appendix

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## How I Teach This Course

## **How To Use This Course - Learning and Teaching Suggestions for Apprenticeship**

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- **If you are a student you may simply read the slides of those topics that interest you**
- **If you are a teacher you may use the slides to teach either a**
  - **1. Lecture-based course if you have a large amount of time**
    - **Teacher uses slides to cover the entire syllabus by giving 1 topic / class session, without or with student preparation / review of the slides before lecture**
  - **2. Seminar-based course if you have a small amount of time**
    - **At first class meeting, students decide which topics they want to cover and design their own syllabus - or - teacher may assign a topic to each student based upon their major**
    - **For each class session, the teacher assigns beforehand the questions from the beginning and end of the topic ("The Question" + "Questions for Further Discussion") to be discussed by the students**
    - **The students must read the topic before class, and come prepared to answer the questions using information from the topic's case studies to illustrate their answers**
    - **The teacher will lead and guide the student's discussions and offer their own insight and expertise**

# Philosophically...

---

- I see a course as a way of organizing a discussion, using readings and viewings to provide a common ground for discussion of the topics and questions in the course

# **Preparation For This Course - If You Are Taking The Whole Course**

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- **Before the first class meeting, students should prepare for this course in the following manner**
  - **Review all the slides in all of the topics**
  - **Select a subject that you have some expertise in and are passionate about**
    - **In your Capstone Project you will create a digital library focused on this subject**

# Expectations For Students

---

- I have high expectations for you as students in this course. By the end of this course I expect you to accomplish the Goals of This Course. To do so I expect you to do the following:
  - Attend every class
  - Come to class prepared to discuss the day's topic by reading the assigned topic in Apprenticeship and viewing the assigned videos before class
  - Participate in class in a challenging yet respectful manner
  - Participate online in discussions + in the Capstone Project in a challenging yet respectful manner
  - Turn in assignments on time

# What I Hope To Avoid

---

**"College is a place where a professor's lecture notes go straight to the student's lecture notes, without passing through the brains of either."**

**- Mark Twain, author**

# What I Hope To Do

---

**"The mind is not a vessel that needs filling,  
but wood that needs igniting."**

**- Plutarch, Greek historian**

# Personal Case Study - About Me

---

- **Who am I?**
  - **A physician**
  - **A professor**
  - **A researcher**
    - **Area of research interest is educational informatics ([www.educationalinformatics.org](http://www.educationalinformatics.org)) including digital textbooks, digital libraries, institutional repositories and communities of practice**
  - **An amateur librarian (amateur = love)**

# About Myself

---

- **My grounding is in 3 disciplines**
  - **Apprenticeship**
    - Initially in medicine
  - **Libraries**
    - Initially at Grosse Pointe Public Library
  - **Computers**
    - Initially with Apple II+ personal computer
- **What drives me - can these 3 disciplines be synergistically combined?**
  - **Can you take a library, put it in a computer, and use it to help apprentices in their learning and work?**

# About Myself

---

- **May you live in interesting times...**
  - **To me, libraries are cathedrals of knowledge**
    - **Sainte Chapelle - the Bible in stained glass**
  - **My first cathedral**
    - **Grosse Pointe Public Library**
  - **My journey has been from reading print books to writing digital books to running digital libraries**
  - **I was an early digital librarian**
    - **I learned how to build a digital library**
    - **Now I am learning how to curate the Internet to make it a useful reference tool for people**

# About Myself

## The Accidental Digital Librarian

---

- I am a lifelong bibliophile with a small home library
- 25 years ago it was my good fortune to connect with a group of forward-looking and free-thinking individuals who were interested in developing new techniques and tools to support lifelong learning in medicine
- Along the way we created Virtual Hospital, the first medical digital library and one of the first Web sites
- Since then I have gone on to create a number of other digital libraries which solved serendipitously posed challenges

# About Myself

---

- **First phase of my career**
  - Started at advent of Web working on large digital libraries that focused on creating content for an academic medical center + medical department of Department of Defense
  - Large budget + staff using expensive commercial + custom tools
  - These digital libraries were very successful in terms of use + well regarded + satisfying to work on + politically stressful
  - Rarely knew the users of these digital libraries
  - If the history of libraries is that they tend to get burned to the ground, both of these digital libraries were burned (deleted / turned off) when new leadership decided they were not in the education business

# About Myself

---

- **Second phase of my career**
  - **Working on small digital libraries focused on curation of content**
  - **Very small budget + staff using off-the-shelf free + low cost tools**
  - **These digital libraries are successful in terms of use + well regarded + satisfying to work on + not stressful**
  - **Know + have community of practice with my digital library users today via social media**
  - **Funded by myself so I will decide when to retire them**

# About Myself

---

- **How do I use these tools?**
  - I eat my own cooking / I drink the Kool Aid
  - **At work**
    - SearchingRadiology.com to answer questions
    - @pedsimaging for curriculum unfolding in practice
      - ...leading to D'Alessandro's Pediatric Imaging eBook
  - **At home**
    - Naval Open Source Intelligence (NOSI) for a curriculum unfolding in practice
      - ...leading to War Studies Primer course

## **Personal Case Study - About Me - Why Am I Here and Why Do I Teach This Course?**

---

- **We are all learners**
- **We learn by doing, so we are all apprentice learners**
- **We learn by creating and organizing information**
- **Therefore we are also all librarians**
- **We need to democratize librarianship**
- **We need to all turn into amateur librarians**
- **We need to strengthen the digital library skills of professional librarians**

# **Personal Case Study - About You**

## **[First Class Meeting Icebreaker - Ask Every Student]**

---

- **Who are you**
  - **Where are you from?**
- **What is your library and computing background?**
- **What is your major / what are you interested in studying?**
- **Why are you here?**
- **What is your passion?**

# First Assignment Before Leaving Class

---

- Name you prefer / where are you from?
- What is your major / What are you interested in studying?
- What is your library and computing background?
  - List 3 favorite computers you have owned or used
  - List 3 software programs you are expert at
  - List any programming languages you know
  - List 3 favorite libraries you have used or visited
- Why are you here?
  - Why did you take this course?
  - What are your expectations for the course?
  - Are there any specific library or computer topics you are interested in?
- What is your passion?
- Write three specific questions about the subject of this course that you want answered during this semester
- Write three reasons about why you enrolled in this course. Be honest

# How We Will Do This

---

- **Readings / Viewings / Artifacts / Lectures / Discussions**
  - Balance between theory and practice
  - Case studies and Capstone Project to tie it all together
- **Before class each week**
  - Read textbook, view videos
- **In class each week**
  - Capstone Project update, Artifact presentation, Tour of topic, Discussion
- **Note that although for organizational purposes the topics are presented in a linear order, they are all deeply intertwined**
- **Our common touchstones will be current library issues as we are all living through them together**
- **Curriculum at [www.apprenticechip.org](http://www.apprenticechip.org)**

# How We Will Do This

---

- **Each topic has**
  - Thematic quote
  - Painting
  - Artifact
  - (Framing) Question
  - Relationship to the Capstone Project
  - Questions for further discussion
  - Recommended readings to learn more
- **Look at digital libraries**
  - From microscopic to macroscopic levels
  - In the context of everything else

# How We Will Do This

---

- Review Capstone Project in Topic 8 so you can think about it throughout the course
- I'll do my best to teach to the test

# Assignments

---

- **Daily Readings**
  - Apprenticechip river of news (coming soon)
- **Weekly Readings for class**
  - Digital Libraries by William Y. Arms

# Assignments

---

- **Participate in a Capstone Project that stretches over the course and is followed by a hot wash-up / after action review**

# **What Are My Favorite Sources**

---

- **D-Lib Magazine**
- **Digital Public Library of America News**
- **Harvard Library Innovation Lab Blog**
- **See the Bibliography for a list of my sources**

# Course Evaluation

---

- **Be Honest!**
- **What did you like about this course?**
- **What did you dislike about this course?**
- **What was missing from this course?**
- **How would you improve this course?**

# Final Assignment Before Leaving Class

---

- What ONE thing sticks in your mind as the most valuable, significant, or enjoyable thing you learned during this course?

# Bibliography

---

# Notes on Sources

---

- **To read an original article referenced in this course:**
  - **Go to your favorite Internet search engine**
  - **Type into the search box within quotation marks the article's title, followed by, within separate quotations, the article's author or place of publication**

# Sources

---

- **Journals currently read regularly**
  - Communications of the Association for Computing Machinery, D-Lib, Economist, IEEE Computer, Journal of the American Medical Informatics Association, Journal of the Medical Library Association, Wired
- **Journals formerly read regularly**
  - N/A
- **Scientists /Journalists read regularly**
  - Stephen Downes at OLDaily, Dave Winer at Scripting.com
- **Web sites read regularly**
  - Alertbox from Nielsen / Norman Group, Digital Public Library of America, Harvard Library Innovation Laboratory, Internet Archive
- **Radio programs listened to regularly**
  - Babbage from The Economist
- **Television programs currently viewed regularly**
  - TED Talks

# Bibliography Learning

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- **Gee, James Paul - What Video Games Have to Teach Us About Learning and Literacy**
- **Holt, John - Learning All The Time**
- **Lave, Jean + Wenger, Etienne - Situated Learning: Legitimate Peripheral Participation**
- **Papert, Seymour - Mindstorms**
- **Papert, Seymour - The Children's Machine**

# **Bibliography Libraries**

---

- **Bologna, Giulia - Illuminated Manuscripts**
- **Ellis, Estelle + Seebohm, Caroline + Simon-Sykes, Christopher - At Home With Books**
- **Gambi, Lucio - The Gallery of Maps in the Vatican**
- **Lerner, Fred - The Story of Libraries: From The Invention of Writing to the Computer Age**
- **Powers, Alan - Living With Books**
- **Tufte, Edward - Envisioning Information**
- **Williams, Robin - The Non-Designers Design Book**
- **Wilson, Adrian - The Design of Books**

# **Bibliography**

## **Digital Libraries**

---

- **Arms, William - Digital Libraries**
- **Bell, C Gordon and Gemmell, Jim - Total Recall**
- **Lesk, Michael - Practical Digital Libraries: Books, Bytes and Bricks**
- **Lesk, Michael - Understanding Digital Libraries**
- **Nelson, Theodor Holm - Computer Lib / Dream Machines**
- **Nelson, Theodor Holm - Literary Machines**
- **Nelson, Theodor Holm - Possiplex**
- **Schatz, Bruce - Telesophy**
- **Witten, Ian + Bainbridge, David - How to Build a Digital Library**

# **Bibliography**

## **Digital Library Design**

---

- **Lancaster, F.W. - If You Want to Evaluate Your Library**
- **Lynch, Patrick + Horton, Sarah - Web Style Guide**
- **Nielsen, Jakob - Designing Web Usability: The Practice of Simplicity**
- **Nielsen, Jakob - Homepage Usability: 50 Web Sites Deconstructed**
- **Nielsen, Jakob + Loranger, Hoa - Prioritizing Web Usability**
- **Rosenfeld, Louis + Morville, Peter - Information Architecture for the World Wide Web**
- **Wurman, Richard Saul - Information Architects**
- **Yorke, Douglas + Margolies, John + Baker, Eric - Hitting the Road - The Art of the American Road Map**

# Bibliography Fiction

---

- J.T. Sharrah, The Book Keepers

# Movies Libraries

---

- Fahrenheit 451
- Shooting the Past

# Libraries Visited

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- **Bodleian Library**
- **British Library**
- **Countway Library of Medicine, Harvard University**
- **International Manga Museum, Kyoto**
- **Internet Archive**
- **JP Morgan Library**
- **Library of Celsus, Ephesus**
- **Library of Congress**
- **National Archives**
- **National Library of Medicine**

# Libraries Visited

---

- **Newberry Library**
- **Presidential Libraries**
  - Harry S. Truman / Herbert Hoover / John F. Kennedy / Gerald R. Ford
- **Print Room and Royal Library, Windsor Castle**
- **Pritzker Military Library**
- **Public Libraries**
  - Boston, Detroit, Grosse Pointe, Iowa City, New York City
- **Vatican Museum Map Room**
- **Widener Library Harvard University**

# MOOCs Attended

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- Japanese Culture Through Rare Books via FutureLearn
- Japanese Books: From Manuscript to Print by edX

# Museum Exhibitions

---

- **Magical Books: From the Middle Ages to Middle Earth, Bodleian Library - 2013**
- **La Biblioteca Infinita (The Infinite Library), Flavian Amphitheater / Colosseum - 2014**
- **Shakespeare's First Folio, University of Iowa Libraries, 2016**
- **Power to the Printers: The Alternative Press in Iowa City 1965 - 1985, University of Iowa Libraries, 2017**
- **Religious Changes and Print 1450-1700, Newberry Library - 2017**

# Professional Memberships

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- **Current**
  - Association for Computing Machinery
- **Past**
  - American Medical Informatics Association

**For Bibliographies Related to  
Computer History See:**

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**[www.computerhistories.org](http://www.computerhistories.org)**