



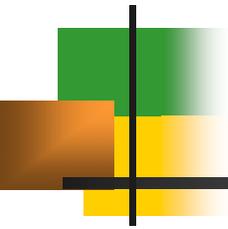
Bringing the Web to Fermilab

David J. Ritchie
Fermilab

Commemorating the Tenth Anniversary
of the First U.S. Web Site At SLAC

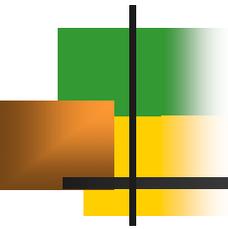
SLAC Symposium, December 3-4, 2001

CD-doc-3159, version 2



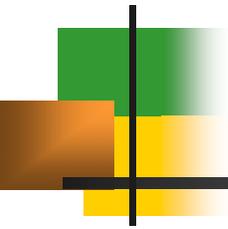
How to View the History?

- Through recollections, interviews, and selected original documents
- Through a classic study...
 - Thomas S. Kuhn, *The Structure of Scientific Revolutions*, (Chicago: The University of Chicago Press, 1996)
- Perhaps a bit of a force fit – useful to consider. Kuhn's **terms** highlighted.



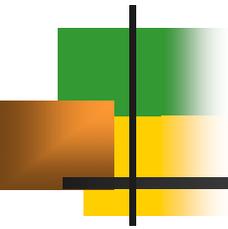
... → HEP in the 1980's → ...

- Doing **normal science** using disparate and incompatible computing apparatus
- **Puzzle-solving** to successfully massage the information (remember this dance?)
 - DEC, IBM, Amdahl, Mac, PC
 - PDP, VAX, 3090, big endian, little endian...
 - Online, offline, draft, preprint, publication



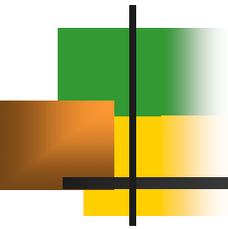
1989 → February 1992

- **Awareness of anomalies**—the difficulty of access to information. Paradigm? (“info. sci. is *supposed* to make this easy”)
- **Crisis and the Emergence of ~~scientific theories~~** solutions proposed to eliminate the anomalies
 - Archie, Gopher, Hypertext, HyperCard, CD-Interactive, U.S. Gov. OSTI Plan (8/92)



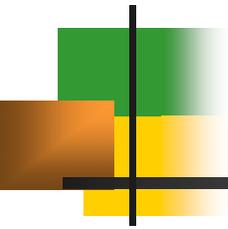
Exhibits—Anomalies, Solutions

- Fermilab Library Directions (5/90)
- Information Management as an aspect of an Experimental Facility (7/90)
- Equipment Diversity, CD/OLS (10/30/91)
- Easy for Users (CERN, 5/7/92)
- Elec. Exch. Of Sci. & Tech. Info (8/92)



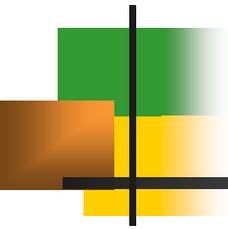
1989 → February 1992 (Cont.)

- The destruction of the old paradigm, the search for and construction of the new.
 - “In early 1992, Ruth Pordes and Jonathan Streets ... were considering the problem of providing information to high energy physics experimenters. Seeing the WWW presentation to Artificial Intelligence in High Energy Physics (IHEP’92) at La Londe, France in February 1992, Streets recommended WWW as being ‘the best thing around,’ and OLS decided to adopt it.”
 - J. Streets, private communication in P. Garrett and D. Ritchie, *Collaborating Over the Web: Libraries and Laboratories*, March 1995, Fermilab-Conf-95/056, p. 2.



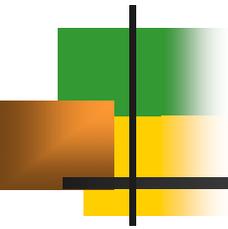
February 1992 → July 1992

- A period of pronounced professional insecurity
- Heard about WWW as people learned of it: "Pie in the sky," "it may be too gimmicky," "a toy," "Users will hate it: Arbitrary info, dead links, no filters. Don't get involved with it!"



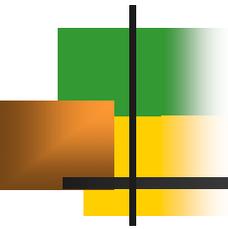
July 1992 → January 1994

- Paradigm adoption. In October 1992:
 - WWW Project Preliminary Report and Proposal, World-Wide Web: WWW Guide, Consultant's Guide to Computing Division Supported WWW Servers
- "Picking up the other end of the stick"
 - "handling the same bundle of data as before but giving them a different framework." (Kuhn, p. 85)



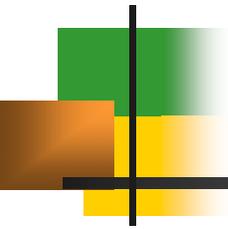
Exhibits—Early Web Pages

- Organization Site
 - Fermilab Computing Division
- Document Server
 - Online, Equipment Support (docdb) and Offline Documents (lib)
- Experiments
 - E781 – VAX Notes 3/93 → WWW 6/93



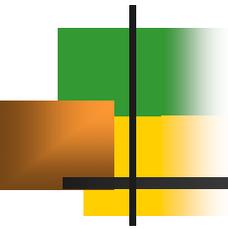
January 1994 → April 1994

- Working Group to Design a Fermilab Home Page established (1/94) by Computing Division Head Joel Butler
 - Judy Jackson (Directorate/Public Affairs)
 - Liz Quigg (CD)
 - David Ritchie (CD), chair.
- Joel -> David: "I want a brisk pace."



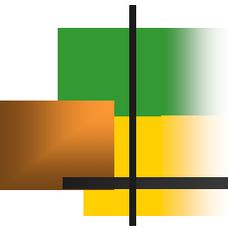
Exhibit—Working Group Docs

- Charge (2/23/94)
- Note about “work in progress” aspect
- Memo conveying Deputy Director’s blessing (3/16/94)
- Draft status and page (3/21/94)
- Launch
 - April 11, 1994
 - April 27, 1994 – 12,000 hits - (top quark)



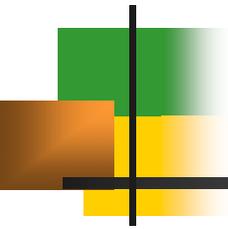
April 1994 → December 1994

- Conveying the new paradigm of www as the way to provide information by teaching:
 - Industrialists, government bureaucrats, etc...
- Addressing worries with newly crafted policies
 - Command and Control
 - Funding Agency Sign-Off on Publications
 - Would being on www imply prior publication?
 - Education and Empowerment
 - Anyone could put up a server and publish



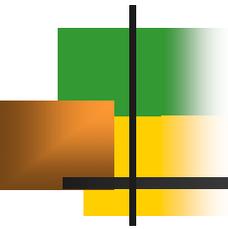
Exhibits—Conveying WWW

- Didn't get it – They had *their* answers
 - Oracle DOE Executive Conference (3/94)
- Did get it – Fermilab Education Effort
 - Electronic Education Outreach (3/94)
- Hopefully, got it – Industrial Outreach
 - Fermilab Industrial Affiliates (9/94)
- Policies – Webmaster Line Management
 - Collaborating Over the Web (3/95)



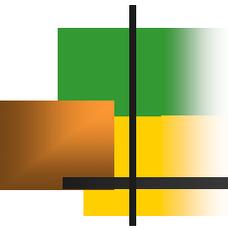
December 1994 → ...

- Implementation by Experiments Went on to Teach Other Colleagues. Only room for one example – many others.
 - E687/E831 – 1995 run –
 - Extensive online use (live displays)
 - Offline (cvs code browser)
 - Administrative – shift schedules
 - Others learned the techniques



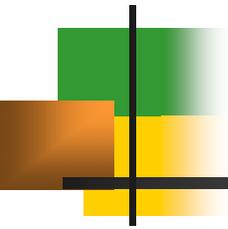
What About Kuhn?

- T. Kuhn on Scientific Revolutions...
 - ✓ Change in World View
 - ✓ Invisibility – the old paradigm is forgotten
 - Non-computer types at Fermilab report...
 - Can remember when there wasn't www
 - Know now that there is
 - Can't remember the in-between



What About Kuhn? (Cont'd)

- T. Kuhn on Scientific Revolutions...
 - ✓ Resolution of the Paradigm Crises:
 - Convert everyone to the new paradigm
 - Implement and make progress based upon it
 - Little memory of the old approaches.
 - Anyone seen many stateful forms applications?



What About Kuhn? (Cont'd)

- Aspects concerning progress as Kuhn applies it to the scientific exploration of the physical world do not seem to fit.
- Whether a match to Kuhn or not, it's clearly a revolution in the sharing of information, nonetheless.