
CINEMA OF THE MIND SEMINAR BOOK, June 1994

Cinema of the Mind: The Art of Software Design

or
CINEMATICS AND ABSTRACTIONS OF THE COMPUTER SCREEN
or
NEW PRINCIPLES OF DESIGN
or
PAC-MAN, THE PROTOTYPE FOR OFFICE SYSTEMS

Outline of a Year-Length Course on the Software Philosophy and Designs of
Theodor Holm Nelson

CINEMA OF THE MIND SEMINAR BOOK, June 1994

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DISCLAIMER:

THIS IS NOT AN INTRODUCTION TO SOFTWARE OR SOFTWARE DESIGN; WE ASSUME
YOU HAVE HEARD THE USUAL VIEWS ALREADY. THIS IS AN INTRODUCTION TO
IDEAS, DESIGN PHILOSOPHY AND SPECIFIC DESIGNS OF THEODOR HOLM NELSON.

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Contents of "Cinema of the Mind book 1994," by section

VS.TITLE	1 page
title page	
VS.CONTENTENTS	1 page
Contents list (this page)	
VS.AGENDA	2 pages
Agenda of seminar	
VS. INTRO	8 pages
Introduction.	
VS.PDGM	2 pages
Paradigms.	
VS..AXS	2 pages
Access Structure	
VS.MOVIES	2 pages
Movies (and software)	
VS.VIRT	8 pages
Virtuality	
VS.TX	5 pages
Thematics	
VS.CLOSING	1 page
Closing.	
TNGL	__ pages
Ted Nelson General Materials.	

----- Exercises

TEAMEX1	6 pages
Team Exercise in Movie Design	
TEAMEX2	3 pages
Team Exercise in Software Design	
Noodle Exercise	2 pages
Tolstoi Noodle exercise (True Cut & Paste)	

----- READINGS

SELECTED PAPERS	121 pages
Selected papers by TN.	
P&C Uverse	10 pages
"Publishing in the Point-and-Click Universe"	
VVWOE	16 pages
Virtual World Without End	
XUSPACE	8 pages
"Xanadu Space, 1993"	
YWO	7 pages
"You Will, Oscar, You Will."	
ORDER FORM	1 page

vs. AGENDA

second
page
missing

MAIN POINTS & EVENTS

ACTUAL AGENDA OF SEMINAR -----

DAY ONE AGENDA

Introduction: Seminar, Each Other

PARADIGMS IN GENERAL

TODAY'S NIGHTMARE COMPUTER WORLD

THE SCHOOLS OF SOFTWARE

PARC (Mac, Windows)

MIT (AI, Media Lab, Agents, "Trust Us")

"Virtual Reality"

(Oxymoron for Interactive Realism)

MYTHS OF SOFTWARE DESIGN

User-Friendliness

Metaphors

WISIWYG

"GUIs"

THE TRUTHS WE SEEK

How to design the Best Stuff

SIMPLICITY, CLARITY

COMPLICATION

BREAK

ACCESS STRUCTURE

ACCESS STRUCTURE: THE MODEL

Zero-Order Access

First-Order Access

Second-Order Access

Uncovering operations

Access Maps

"Wet hands"

Parallel Access

Two-Sided Access

Lunch Counter

Disneyland garbage

Breakout session: ACCESS STRUCTURE EXERCISES

Access Structure of your pockets

Access Structure of your Desk

Access Structure of Mac/Windows top level

Access Structure of Your Favorite Software

LUNCH

SOFTWARE IS A BRANCH OF CINEMA

Movie-Making the Best Prep

Cameraman - Programmer

MOVIELETS

Opening of "Pinocchio"

Pivot of "It's a Wonderful Life"

VS.INTRO

AUTOMATIC SHIFT QUESTION

Metastuff

THIS IS A YEAR COURSE, WE GOTTA GO FAST

34 years in 3 days

RULES FOR CLASS

Little time to argue

You're here to learn my views, some came far

Your views will be Noted & Pondered

(I've heard most views, my views NOT heard)

Don't bait me-- mo Goat is Gettable

SOFTWARE MOST CONTROVERSIAL AREA IN WORLD?

SOFTWARE IS A RELIGIOUS ISSUE

CENTRAL ISSUES AND IDEOLOGY:

Interface & Data Structure,

= Representation & Presentation

Representation, Internal Paradigm

"Interface" (Presentation, External Paradigm)

Hollywoodization of Softbiz

How can it be better? POLITICS OF CREATIVITY

(PARADIGM SECTION HERE)

Example: TN Paradigm

What I believe in: human creativity, posterity

What is wrongest: Everything

**A world controlled by the shallow, conventional, pompous and
smug**

I want to: Try to make things right

BRIEF PARADIGM INTROS AROUND ROOM

Name, place, three sentences abt yr paradigm

BRIEF INTRO TO TN

MY BG, very brief

1960 Revelation

Interactive SW

Computers and movies

Network publishing

Interactive Media

(1961 invented im. synth. pat. app. 1970)

Nobody gets my work in general

"At last you're seeing everything you've worked for"-- NOT!

"Couldn't you work with what's there?"

Cf. "Herr von Braun,

couldn't you get closer to the moon

if you stood on a chair?"

The pain and bitterness

Field has gone more and more wrong

Anger and bitterness

Greatly lessened in California

Still a problem with temper -- warning, don't bait me

We may have sudden breaks

Nothing accomplished
Great bitterness, life wasted
Did not successfully build decent tools
Others don't understand what's needed
Moronic concerns
Deluded customers
Most important things not done

1960 REVELATIONS IN BRIEF
Personal Computing
Interactive Software
Interactive Media
Distributed Network Publishing
Distributed Ownership of Compound Linked Documents
Automatic fine-grained royalty
Transclusive Copyright Method

TN'S OVERALL WORK
(Fiction, Movie scripts, occasional songs etc.)
Philosophy and the Social Sciences
General Schematics
Theory of Strategy
(foundational for psych, other topics)
General theory of Biostatus
(foundational for psych)
Gen. theory of status, territory, paradigm
(foundational for psych, sociology & anth)

Nelson SW Paradigms in Brief: Unifying abstractions
Today's Software World hopeless;
ACCESS STRUCTURE
VIRTUALITY: Concep. Strux & Feel
COLLATERAL HTEXT: VIEWING & PRESENTATION
COLLATERAL HTEXT: LINKAGE STRUCTURES
LITERARY THEORY & SYSTEMS

TN Attention Deficiency Disorder -- ideal quals
(New term coined by Regularity Chauvinists)
New term for classic professorial style
Extremely absent-minded
constantly forgetting
Losing Things
Lists, but I lose then & don't look
can't remember names or faces
don't recall incomplete tasks
either don't finish or do several times
constantly mislaying, losing things
Keys & wallet
Extreme impatience, boredom

MAKES ME ESPECIALLY GOOD SOFTWARE DESIGNER
A.D.D. THE PERFECT PREP FOR SW DESIGN
Impatient, flustered
empathy w. impatient, flustered user
knowledge of what impatient, flustered user needs

Can only remember principles

Good at designing memorable principles (see "Thematics")

SAFETY OF CREATIVE INPUT

Storing every input item on disk
print out every change immediately, as an option

I don't know anyone else who TOOK ON WHOLE BUNDLE

Unless you count Canon Cat guy, Jef Raskin
Possibly Alan Kay
Richard Stallman

I WANT ALL MY WORK VINDICATED

What I want: **SIDEWAYS OUTLINERS CONNECTED FOREVER**
SHOWING INTERCONNECTIONS OUTSIDE

If you wanted to put it in a word: I want an **N-DIM OUTLINER**
IT MATTERS WHAT YOU CALL THINGS

Nelson terminology religion

TODAY'S NIGHTMARE COMPUTER WORLD

Nobody gets what's important

ROTTEN SOFTWARE

Absurd complications
NO INSTANT USE
Lack of integration

Time people must spend
James Joyce Principle

Obedience to MSoft & Apple

COMPUTER WORLD TODAY APPALLING, MONSTROUS

Where else do you have to pay to have your time wasted endlessly?

CRAP THAT YOU'RE SUPPOSED NOT TO HAVE TO KNOW

THE NIGHTMARE WORLD OF MOST EQUIPMENT

Designed by Engineers--
"LET'S KEEP ADDING FEATURES"

Answering machines

VCRs

Fax machines

AND ON AND ON

Old "complicated" cameras

focus
shutter
aperture

New "simple" cameras

Automatic and manual focus

Shutter priority

Aperture priority

Options and Overrides up the kazoo

My New Answering Machine-- **SIMPLIFYING POKES**

Stop OGM on incoming call by hitting # (?)

Stop payout while answering by hitting * (?)

Only way I can remember:

"If it's doing something I don't like, hit one of those."

People **THINK THEY KNOW WHAT SOFTWARE IS!**
EASE OF USE WILL COME.
You haven't seen anything yet
"COMPUTER LITERACY" -- FALSE AND EVIL BASICS

HOW WRONG IT'S GONE!

Fascist PC versus MacBotch
the crime of Wizzywig
the folly of "metaphors," the delusion of "functionality"
the evil of "files"
the horror of "applications" (fanning out fractally).

Emotional issues of SW to users

A big thing is how people **FEEL** abt SW-- cf. Heart Transplants
APPLIANCE DESIGN IS DREADFUL

THE VCR
THE AUTOMOBILE
THE RADIO
THE CAMERA
VOICEMAIL is all wrong
CAMCORDERS all wrong
TELEPHONES all wrong
TAPE RECORDERS all wrong

COMPUTER DESIGN IS WORSE

Asinimities of comp. world
STANDARD SOFTWARE PARADIGM
"Applications"
GUIs (PARC Windows)-- NAME ALL WRONG

THE COMPUTER SCREEN-- No connections between windows
THE PDA

Having to name things unnecessarily
Having to name things shortly

ASSUMPS OF SW

People are infinitely patient
People don't need to understand
James Joyce Principle
"APPLICATIONS" -- disconnected uses

HATE BOTH THE MAC AND THE PC

Respectively Fascist, Artsy
Haven't been able to keep any of my Macs working

MAC HORRORS

CLIPBOARD
Dropping things while moving them
Undo one level; hit space bar accidentally
Must have "application" to open file

NOTHING HAS BEEN TRIED! THE POSSIBILITIES OF SW--

INCREDIBLY DIFFERENT THINGS POSSIBLE

Very different styles

We've **STANDARDIZED ON THE TRIVIAL & STUPID**
ANYTHING CAN BE SHOWN

time

space

multiple dimensions

neuroanatomy

complex flows and interpenetrations

Complex compound visualization has **HARDLY BEGUN!**

ANYTHING CAN BE MANIPULATED!

Complex compound manips have **HARDLY BEGUN!**

WE CAN CREATE EXTRAORDINARY WORLDS,

explorable, understandable!

This has **HARDLY BEGUN!**

SCHOOLS OF SOFTWARE: Main Interactive Churches

PARC-- disconnected windows, "metaphors," icons, clipboard?

(Mac, Windows)

MIT (AI, Media Lab, Agents, "Trust Us")

Old AI Paradigm

New Media Lab Paradigm

"Virtual Reality"

(Oxymoron for Interactive Realism)

Ted Nelson (To Be Presented)

MYTHS OF SOFTWARE DESIGN

"Intuitive"

"Oh, sure, it's always seemed to me that

Command-V meant ..." -- Margie Levine

User-Friendliness

"Hi, I'm Proggie the Program!" -- NOT

"METAPHORS"

Is 'metaphor' **ALL STRUCTURE & MEANING?**

Cheapens the word

**Terrible combinations-- garbage can to save or destroy
scraps of resemblance**

Scraps of relationships: garbage can, "desktop"
as cheap mnemonic hooks

simpleminded visualization hints

Arguable claim that WP, SSH, DB are METAPHORS

"Outliner" **NOT A METAPHOR**

WISIWYG

Using computer as 2d **PAPER SIMULATOR**

"Direct Manipulation" (Ben Schneiderman)

It's not direct, it's a **PROXY!**

"Modelessness"

Every separate program is a mode.

"INTERFACE" USUALLY NOT THE ISSUE

"Interface Design" is **USUALLY THE WRONG PROBLEM!**

Suggests that internal structure is Settled
ASSUMES FUNCTIONALITY IS GIVEN
When Interface IS the issue--
(Example where "interface" applies: CAR)
Functionality of car is Given.
"GOOD INTERFACES" shd be INVISIBLE, UNPERCEIVED
Best interface is a GLOBE
When in doubt on interface:
"How can this be made more like a globe?"
Interface should be like REACHING INTO WATER
Slight distortion, but transparent

"FUNCTIONALITY"
FUNCTIONALITY NOT ENOUGH
The Nelson Standard Clock
"Human Factors"
Implies that people are just components in the design
Suggests that the human mental structure is irrelevant
"GUIs"
People's impression that they've stabilized
Misdefined as PARC windows
-- no way to link window contents
There'll be a lot more, and VERY different

THE TRUTHS WE SEEK

How to design the Best Stuff
SIMPLICITY, CLARITY
COMPLICATION-- How avoid it, What Is It?
Memorability-- so you can remember another time
ORDERLINESS-- but there are many kind

THE REAL ISSUES OF GOOD SOFTWARE

SELF-REVEALING (Klavs Landberg)
Good software is RETROACTIVELY OBVIOUS
Prob. is making it Retroactively Obvious FAST
Nelson 10-minute rule

Should be productively used within TEN MINUTES.

PAC-MAN, THE MODEL FOR OFFICE SOFTWARE

its brilliant achievements foreshadow true office software.

Instantly learnable

Documentation slight

Short manual (originally a paragraph on the side)

PROGRESSIVELY SELF-REVEALING.

Escalating ramifications arise from basic premises

Discovery of ramifications: SHOW UP GRADUALLY.

Productively in use within TWO QUARTERS.

HIGH PRODUCTION/PERFORMANCE VALUES.

Pleasing sound and visuals

Superbly fast, smooth, even response.

Vivid.

Good sound effects.

Clean condensed virtuality (to be discussed).

COMPUTERS DEAL WITH ARBITRARY CONSTRUCTS

CONSTRUCT WORLDS; or
CONCEPTUAL STRUCTURES AND WORLDS
"Microworlds" (Papert)
"Artificial Reality" (Myron Krueger)
CONSTRUCTS & SYSTEMS OF CONSTRUCTS
POSSIBILITY WORLDS (TN)

SW design as ART OF ABSTRAX STRUX, like GAMES
THE SEARCH FOR DEEPER CONSTRUCTS (to be discussed)

Problem of CONSTRUCT WORLDS (Virtuality Part 1)
Problem of The RIGHT Construct Worlds and Feel (Virtuality Part 1)
Problem of the right PRODUCTION VALUES (Virtuality Part 2)

PRODUCTION VALUES
PERFORMANCE VALUES

Not functionality but EFFECTS are main cost.

MYTH OF PRIMITIVE SOFTWARE THREESOME

Spreadsheet, Database, WP are INVENTED
These are ARBITRARY CONSTRUCTS,
superficially plausible

We want to mix their functions

Hideous org problems with WP

Want dbase info in text

Want spreadsheet info in text

Want Wp in spreadsheet, etc.

Attempts to mix them: Framework, Symphony, etc.

It doesn't work without changing to NEW CONSTRUCTS

INTEGRATION AND "APPLICATIONS"

"APPLICATIONS" a mistake-- SEVERED ZONES OF WORK

"Integrated software" means NO APPLICATIONS

SILLY NOTIONS OF "INTEGRATION"

They think it's WP-SSH-DB somehow combined

"integrated software" unimaginable

"cuisine" analogy

"Pushing the Problem Out"--

Real probs. lie OUTSIDE the "Application"

TRULY INTEGRATED SOFTWARE (cosmic software?)

Work is a seamless whole;

Shd be SEAMLESS WHOLE OF SOFTWARE

The real design challenge:

A WORLD YOU DON'T LEAVE

SEAMLESSNESS AND INTEGRATION

Integrated Software versus "Applications"

EXTRINSIC PROBLEMS OF DESIGN

Political problems of design

Everybody thinks they're an expert

Who gets to design? --the big political issue everywhere

("Who gets to direct the movie?")

Most management thinks good design comes AFTERWARDS

If you're working for engineers, they think it's engineering

Psychosocial problems of design

**DESIGNING FOR OTHERS NOT LIKE YOURSELF
ENGINEERS DON'T UNDERSTAND WHAT'S
DIFFICULT FOR OTHERS
WRONG MODEL OF THE USER
FRANTIC IMPATIENT FORGETFUL USERS**

Designing for "the man in the street"

Removes from the customer

DESIGNING FOR YOURSELF: the only right way

EXPLANATICS

**PROBS. OF DOCUMENTATION & EXPLANATION
SW SHD BE SO SIMPLE YOU DON'T NEED IT.
walk-up, instant understanding**

"Value of card has been transferred to pump."

EXPLANATION IS EASIER IF SYSTEM IS EASIER

DIAGRAMMATICS

Most people can't read diagrams.

Most people can't read maps anymore.

NEW MEDIA

HT

HM

"Interactive Television"-- Time-Warner view

MEDIA DESIGN

Ill-chosen media choices

F.M. Towns

CD-I

COMPLICATION-- SEVERAL MODELS

Psychological Definition of COMPLICATION:

CAN'T UNDERSTAND OR REMEMBER OR VISUALIZE

COMPLICATION I: UNKNOWN OR DUMB AXS

COMPLICATION II (Thematic): INTERFERENCE WITH A PRIN

COMPLICATION III: NUMBER OF SIMUL.CONSID

Both AXS & Thematic

COMPLICATION IV: UNFOLDING MESSY RAMIFS

WHY CAN'T YOU REARRANGE SIDEWAYS?

VS.PDIGMS

PARADIGMS

**PARADIGMS, NELSON'S EXTENDED THEORY OF
KUHN**

I've gotten to know the problem well

He's given me permission for my terminological extensions

Paradigm: Idea too big to get through the door

How to know: Crazyiness of the other

Generalization of "Religion"

Everyone has a paradigm (one or more)

Religion a special case

View of virtue, morality, afterlife

"Religious Issues" a special case

Academic variant: "My paradigm subsumes your paradigm."

"Your paradigm"

finding personal paradigms

ELUCIDATING YOUR PARADIGM CAN TAKE DECADES

WHAT THINGS YOU THINK IMPORTANT

Views of Deserving, right, wrong

Heaven, hell, afterlife ("posterity" among agnostics)

HIGHLY EMOTIONAL

"EMOTIONAL ISSUES" are PARADIGMATIC

Paradigms and ANGER

Paradigms and DISDAIN

HOW TO RECOGNIZE A PARADIGM SITUATION

Mutual confusion

Mutual anger

Crazyiness of other's viewpoint

Stupidity of other's viewpoint

Incomprehensibility of other's viewpoint

Quaintness of other's viewpoint

PARADIGM EXERCISE?

(I'm designing a TWO-DAY WORKSHOP JUST TO SEE OWN
PDIGMS)

It can take years to discover your own paradigms.

Can you write out your paradigms?

SOME QUESTIONS TO GET A HANDLE ON YOURS--

People should be rewarded for--

My purpose in life is --

I truly hate it when someone --

The purpose of life is--

SOME NEW PARADIGM TERMS

Paradigm Boundary

Paradigm Warp

Refractive:

Like looikng through distorting faceplates

What you think other guy thinks

Paradigm Confrontation

When our differences are accentuated

Paradigm Lock
when you can't imagine any other view

Paradigm Polarization
(Paradigms often not defined until confronted)

Paradigm Conversion
Highly emotional event
Typically one-on-one

"pray with me"

"let me show you the True God"

"Let me show you the True Language"

'Brainwashing'

SOCIALLY FORCED PARADIGM CONVERSION

also called "deprogramming"

Kindly view of paradigm

"Community"

Hostile views of paradigms

"Cult"

"Addiction"

KEY INSIGHT ABOUT PARADIGMS:

Coordinate-Space of Status and Territory

vs. AXS

[missing, 2 paks]

VS. MOVIE

[2 pages,
missing]

VS.VIRT

THEORY OF VIRTUALITY: seeking unified designs

**The seeming of something: its conceptual structure and feel.
Unified conceptual structure is vital.**

Unified conceptual structure is vital; thus the structangular design of abstract virtuality is the fundamental process of software design.

**GOOD SOFTWARE DESIGN IS DESIGN OF ABSTRACT
CONCEPTUAL SPACES**

VIRTUALITY IN BRIEF: Concep. Strux & Feel

**Conceptual Structure: ART OF ABSTRAX STRUX, like GAMES
SOFTWARE AS FORM OF MOVIE**

Auteur theory of SW Design

"True" Virtuality

Metavirtualities

Thematics of Virtuality

MAIN TEAM EXERCISE I:

"Let's Make a Movie!"

MAIN TEAM EXERCISE II:

"Let's Design a Program!"

WHAT IS THE DIFFERENCE BETWEEN THE MOVIE & SW EXES?

ISSUES OF UNITY AND CLARITY OF CONCEPTUAL STRUCTURE

VIRTUAL, The Word

Opposite of "real."

Virtual: "Existing in essence or effect, but not in fact" (Webster, 1913)

(Damnably trademark for an interactive-realism ride)

"Imaginary"

"Illusory"

"Notional"

Thus "virtual reality" is an oxymoron.

VIRTUALITY, The Word

Long in the dictionary as a noun.

Complement of "reality"

VIRTUALITY DEFINED & EXPLAINED

Complement of reality; the SEEMING of something.

Everything has a real and a virtual aspect

EXTREME OF VIRT: THE MOVIE & FISHHOOK

Virtuality has two aspects:

CONCEPTUAL STRUCTURE

FEEL

VIRT OF CAR

Real part of car: the iron

Virtual part of car: image, look, handling, door slam

VIRT OF ARCHITECTURE

Virtuality's first constituent: CONCEPTUAL STRUCTURE

ARBITRARY CONSTRUCTS-- & THEIR INTERFIT

SYSTEMS OF CONSTRUCTS

**Ex. of ARB CONSTRUCT, NONMETAPHORICAL: "The Outliner"
NOT A "METAPHOR"**

Virtuality's second constituent: FEEL

TUNING

PRODUCTION VALUES, PERFORMANCE VALUES

Feel of a CAR

Feel of ARCHITECTURE

THE HANDLING OF A CAR

global optimization

to VIRTUALITY

VIRTUALITY DEFINED

Read definition from dictionary

VIRTUALITY VS. REALITY

MIXED CASE: THE CAR

PURE CASE: THE MOVIE

PURE CASE: THE VIDEO GAME

MIXED CASE: FUNCTIONAL SOFTWARE

to VIRTUALITY

VIRTUALITY DESIGN PROCESS

SOFTWARE DESIGN PROCESS (AUTERISM)

Unified Detailing cannot be delegated. must be in one head

Limitations of communication process

VIRTUALITY DESIGN SEQUENCE

Jingle

Converge

Assimilate

Prune

to VIRTUALITY DESIGN

Start with the Idea

Detail it

Integrate it

to VIRT

"VIRTUALITY" defined

Seeming

As-if

Imaginary or conceptual

"Notional" (Australian "notional railway")

MOVIE-MAKING AS VIRTUALITY DESIGN

Script (the Idea)
Detailing: casting, location scouting, set design,
music, photo style....

VIRTUALITY OF GAMES AND GAME DESIGN

Made-up conceptual structures
Feel is extrinsic--
the Set
room it's played in
the folks you're playing with
Everything follows from conceptual structure
GAME DESIGN IS VIRT DESIGN
"Diplomacy" nice example
Criteria of good game design:
MOTIVATION
PLAYABILITY
EXCITING ENDGAME

VIRT OF MOVIES

Movies are ALL Virtuality.
DESIGN OF VIRTUALITY IN MOVIES
Conceptual structure: **SCRIPT**
Feel:
ATMOSPHERE
CHARACTER
SUSPENSE
etc.

VIRTUALITY OF SOFTWARE

Conceptual structure:
Perceived Structure
Perceived Functionality
Feel:
Appropriateness of controls
Good visualizations
Appropriate responsiveness
Good complementarities

VIRTUALITY VERSUS METAPHOR

"METAPHOR" in software
unified, designed generality versus complexity built up from scraps.

VIRT & METAPHOR TALK OVERLAP

Often "metaphor" used to mean "structure" (very poor)

Cf. STRUCTURE OF CHESS (a Virtuality)

the metaphor is only temporary
after that, it's the rules of the game

(you don't think, "what would a true king do now?")

MANUAL AND DESCRIPTIONS partly define Virt

How you describe it is much of conceptual strux

Master diagrams

THE VIRTUALITY DESIGN PROCESSES

DESIGN OF VIRTUALITY-- THE IDEA

You get an idea, then work it out in detail
Detail it, KEEPING THE FEEL IN MIND

THE DESIGN OF VIRTUALITY-- THE SEQUENCE

Design the conceptual structure
Know what feel you want

VIRTUALITY DETAILING PROCESS

DETAILS MATTER IN ALL DESIGNS

Shakers: "God is in the details" (van der Rohe)

Detailing in movies
Detailing in software

TUNING CYCLE

TUNING & TWEAKING OF A DESIGN & RAMIFS
VIRT INVOLVES THE STUDY OF ANY AP FIELD

DOWNWARD & UPWARD METHODS

VIRTUALITY DESIGN: TOP-DOWN

The Outline

VIRTUALITY DESIGN, BOTTOM-UP

True Cut-&-Paste Exercise (Noodles)

VIRTUALITY DESIGN, Upward AND Downward

You don't make up the plot first
(then add the atmosphere)

It all evolves at once

VIRT DESIGN PROCESSES

DESIGNING CONTRACTS

DESIGNING GENERALITIES

tuning the feel

The feel (in film, atmosphere and mise-en-scene) must be designed
and perfected by the Director's many different adjustments
throughout.

WRITING. PRINCIPAL EXAMPLE OF DESIGN

(even if it's just sequential writing)

ARBITRARY STRUCTURE (sequence)

Top-down writing (outline)

Bottom-up writing (noodles)

Mixed up-&-down (classical cut & paste)

EXERCISE: WRITING SEQUENCE & TRANSITIONS

TRUE REPRESENTATION, TRUE VIRT

Controversial

Each designer thinks he captures the Essence of the Problem

Often we work on different and overlapping problems

Usually we see them in different ways

HIGHER VIRTUALITIES -- TYING THINGS TOGETHER

TYING THINGS TOGETHER; BACKBONE PARADIGMS

Seeking a Higher Virtuality

PARC-WINDOW VIRT

Apple Finder Virt

"Clipboard" Virt

Let's find a Higher Virtuality of Voicemail, Dictation, Audio Filing

METAVIRTUALITIES

Controversial

Question of WHAT CONCEPTS AT THE TOP

META VIRT DEFINED

Search for Metaphysic (highest-order abstrax)

BACKBONE PARADIGM

UNIFYING ABSTRACTION

Some people have them for All Software

SAMPLE METAVIRTS

Examples of metavirts

Metavirt: **HIERARCHICAL FILES**

the damnable Naming

WP

DB

SSH

Z.LISTS

AGENTS

Gen. Languages

Special Language, eg

string language

Lisplike language

Hierarchical Files vs Zipper Lists

Client/Server vs Docuverse

PARC Windows vs Deep-linked windows

Separated Windows vs Collateral Viewing

"The Most Fundamental Tool of Human Thought"

Metavirt: **COLLATERAL HTEXT & LINKAGE STRUCTURES**

TOMORROW'S OP. SYSTEM

Multithreading, Zips, Whichways

Zip Structure

S(L)IDEWAYS LINKING

Xanadu* Publishing

Metavirt: **LITERATURE: the Final Conglomeration.**

*The document and "literature" defined and generalized into the screen
and repository future.*

Metavirt: **LITERARY THEORY & SYSTEMS**

Nature of document

INFO PACKAGE with POINT OF VIEW

Nature of literature is & has always been

LINKED DOCUMENTS

The electronic docuverse

ELECTRONIFICATION OF LITERATURE

MANIFEST DESTINY OF LITERATURE
Hypermedia and Hypertext
COLLATERAL HM & HT
Transclusion solves copyright problem
TOWARD A UNIFIED LANDSCAPE OF DATA. The
Xanadu™ model of true representation, interconnection,
versioning, repository publishing, and copyright
simplification.

To TNSTUFF

COLLATERAL HTEXT: VIEWING & PRESENTATION

Collateral viewing & use of EVERYTHING

See the origins & sources, in context

See connected documents and comments

(in context of larger whole)

See the alternatives

See permutations and excerpts

(eg edited audiotape-- TRANSCLUDED)

NELSONIAN PARALLEL LINKAGE DATA IN VARIOUS VERSIONS

COLLATERAL HYPERTEXT (always)

ZIPPERED LISTS (1965 on)

ZIPPER LIST DESIGNS

1965 Zipper Lists

(abstract, assumed development in machine language)

1969: meanders, beds, babbling in beds

1972: Enfilade structures (secret)

1981: Datapoint Zipper Lists (closer to op.system)

Computopia Zipper Lists (in TRAC)

Z.LIST EDITING (slide sideways between versions)

ZigZag (1974-94; design largely closed 1994)

1994: ZigZag,™ Dimensia™

Metavirt: MULTITHREADING, TN's METAVIRT OF WRITING

**Metavirt: BASIC INTERNAL DESIGN OF ALL XANALOGICAL
SOFTWARE**

Great pool, plus pointers

Delta-lists (until 1981 Swarthmore Server)

Sideways viewing

Metavirt: XANALOGICAL STORAGE AND PRESENTATION.

Storage must not just hold disconnected lumps or puddings (called *files*); the storage mechanism (i.e., the operating system at some level) must keep track of the changes in a given object, so you can slice it in time as well as space-- in such a way that side-by-side visualization of any two versions or instants in the object's life may be compared in parallel (and pointed out by links between interiors of panels, not allowed by today's windowing systems). *Links* between changing objects must likewise be maintained (and of course easily shown by

the parallel display of connected objects). Generalized mechanisms for the automatic showing of sameness and distinction in such parallel exploration I have long called *thinkertoys*; I consider them *the most important tools for thought* (strangely overlooked by the rest of the field). No thinkertoy exists. This calls for a generalized mechanism of data storage and feed.

Multithreading is the ability to use arbitrary chunks in many different units. (Serious linear writing calls for multithreading organizers, none of which yet exists. Outline processors not only assume that the final product is to be sequential, but inane assume that it ought to be *kept sequential at every step along the way.*) Even a simple multithreading thinkertoy would be a great improvement over what we have today.

Transclusion means the virtual inclusion of materials across significant boundaries. The Xanadu™ 1988 model handles transclusion across documents and across accounts; later, across servers, network-wide. Its wholly generalized transclusion brings the hope of a universal literature based on wholly-generalized cross-document transclusion, with royalty on the delivered fragment, substantially clearing up the copyright problem.

VIRTUALITY AREAS OF SOME INTEREST

VIRT OF TIME-- its curious Cyclicity

Probl of TRUE VIRT OF TIME-- how show resonances?

ROTATABLE CYLINDER prob. cleanest

Virts of AUDIO

VIRT OF PORTABLE TAPE RECORDS

VIRT OF DICTATION MACHINES

Zips and Audiotape

VIRT OF MUSIC

MUSIC VIRTUALITY -- search for a Metavirt

What is Music, Anyhow?

THAT'S WHERE YOUR METAPHYSIC COUNTS

Classic metavirt of music

Two notations

THOUSAND TRACK MUSIC

Tonal surfaces

Rhythmic spaces & their transitions

And on and on.

VISUALIZATION OF TONALITY SURFACE

EXPLANATICS

PROBS. OF DOCUMENTATION & EXPLANATION

SW SHD BE SO SIMPLE YOU DON'T NEED IT.

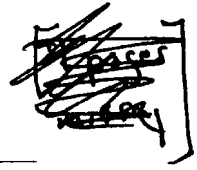
walk-up, instant understanding

"Value of card has been transferred to pump."

EXPLANATION IS EASIER IF SYSTEM IS EASIER

DIAGRAMMATICS

**Most people can't read diagrams.
Most people can't read maps anymore.**



VS.TX

THEMATICS

"IDEAS IN GENERAL"-- but a specific model.

With specific new terminology.

A new threaded metalogic of structure, definition and inner meaning,
defined in terms of principles, instances and ramifications.

Unity and organization may be defined as thematic
metapredicates.

Thematic design as the search for cross-cutting organizational
threads.

Clever compression and collapsing of function and controls (as in
JOT™ text editor and PAC-MAN) versus disastrous collapsing
(Mac garbage can).

(Part of TN's General Schematics.)

Can handle different notions of consistency, exactness, completeness.

For design: Thematics should help in SEEKING A THING'S TRUE SHAPE

"Following where it leads"-- history of "King Kong"

"VERY LOGICAL" -- WHAT COULD IT MEAN?

In classical logic, a nonsensical phrase

People use the term all the time

Perhaps it means something sensible after all

Thematics: A GENERALIZED SOFT LOGIC OF IDEAS.

Classical Deductive Logic

Premises

Deduction

Containment

Venn Diagrams

Logical Operations

WE WILL SOFTEN THESE NOTIONS--

Broader model

Greater generality.

THE SOFTENED GENERALIZATION OF DEDUCTIVE LOGIC:

APPROPRIATENESS the generalization of Containment

Set-containment generalized as APPROPRIATENESS

Deduction generalized as RAMIFICATION

Predications generalized by adding two new types:

THEME (softest)

SOFT PRINCIPLE (medium)

HARD PRINCIPLE (predicate)

Soft thematics: STYLES, DANCES, PROPS,

Character, culture, etc.

Softened generalization of logic:

RAMIFICATION THE GENERALIZATION OF DEDUCTION.

'THEME' THE SOFTENED GENERALIZATION OF

PRINCIPLE.

THE THEMATIC MODEL

ITEM (instances element)

THREAD

- General idea associated with a series of items**
- THEME**
Thread with very vague specification, like theme of a party.
- SOFT PRINCIPLE**
Thread with an approximate specification.
- HARD PRINCIPLE**
Thread with an exact specification.
- THRUST**
Apparent direction of a thread, with other items seemingly likely.
- THRUST THREAD**
Thread that appears to go in the direction of certain further items.
- RAMIFICATION**
Item that would seem also to be on the thread
New items associated with a thread.
New item in the thrust zone.
- SPECIFICATION OF A THREAD, THEME, PRINCIPLE**
softened version of a "definition"
may just characterize or be approximate
- ACCORDANCE or HARMONY**
Item seems to go with a thread
- DISCORDANCE or CLASH**
Item seems not to go with a thread
- LOCUTION**
Way of stating something, esp. a specification.
- ALTERNATIVE LOCUTIONS OF A SPECIFICATION**
may seem similar but have different ramifs.
- SUBSTRUCTION**
Set of specifications to make the system come out right,
especially for the ramifs you've chosen.
- SUPERCOMPLETENESS**
Soft system allows contradiction
- SOME TERMS BEST INTERPRETED THEMATICALLY**
- "Make sense"
Seem to accord with the principle.
- "Romantic"
The idea of the principle itself gets a strong and vivid grip on you.
- "Idealistic"
The principle seems right, and someone wants to stand by it.
- CONTRADICTION**
Two hard principles both appear to own the same instance.
- OXYMORON**
Two soft principles both appear to own the same instance.
- CHARACTERIZATION**
Soft specification summarizing a thread and its instances.
- DEFINITION**
Hard specification summarizing a thread and its instances.
- PARADOX**
Two threads at some level both appear to own the same instance.
- RATIONALE**

Specification binding an instance to a principle according to another principle.

IRONY

Element on a thread that also clashes with it.

STYLE

Theme whose ramifications have strong, systematic feel or quality, but which cannot be exactly specified or predicted.

UNITY

Specification (explicit or apparent) which
Specification (explicit or perceptually apparent) of strong commonality for all elements.

THEMATICS AND SOFTWARE

The ideas and constructs of software are arbitrary.

Thus we may define our themes to come out right with great freedom.

MOVIE REPRISES AS PART OF TX

"Pinocchio" excerpt (reprise)

ANALYZE HOW IT GOT THERE

Rock-throw in "It's a Wonderful Life" (reprise)

ANALYZE HOW IT GOT THERE

(ZigZag & Dimensia, sorry)

THEMATIC DESIGN PROCESS

Seek a clean specification

Seek Commonality, Condensation among seemingly disparate items

Transposition

Choose the ramifications, defining the principles accordingly

Try to find a good specification.

Nice example:

Mathematician Hamilton reworking Quaternions.

Children would ask: "Daddy, have you gotten them to multiply yet?"

PAC-MAN II:

POSTULATED HYPOTHETICAL HISTORY OF PAC-MAN

NB its clever compression and collapsing of function and controls .

Ramifications

Possible THEMATIC EVOLUTION OF THE GAME

First Idea: a maze game

Follow a maze

Show where you've been on the maze. Line? Area fill? Add dots?

Add area fill to show where you've been?

Prob. too dull

SUBTRACTION OF DOTS!

HEY! HOW ABOUT-- this is really oral-- EATING DOTS?

Make it more interesting: monsters

Gotta be some way you can chase the monsters sometimes

Extra button too expensive

EAT SPECIAL DOTS TO CHASE THE MONSTERS
ASSIMILATION OF WHOLE GAME TO "EATING DOTS"
Unusual unification around "eating dots."
THEMATIC DESIGN PROCESS STATED GENERALLY:
CONDENSATIONAL DESIGN
Parallel Consideration of possibilities
seek commonalities
seek possible transpositions
seek clean reductions
DEFINE THE PRINCIPLES FOR THE RAMIFS YOU WANT
CHOICE OF RAMIFICATIONS
SUPERCOMPLETENESS AS A DESIGN STAGE
(possibly contradictory parts)
SUBSTRUCTION TO FIT THE RAMIFICATIONS
find specifications and definitions that get best ramifs
THEMATIC UNIFICATION of a Virt
Final stage?
VARIOUS DIRECTIONS OF THEMATIC BUILD
A THEME AS ITS SPECIFICATION
A THEME AS ITS ITEMS
THRUST OPTIONS

Example: TANGLED RAMIFS.
M. Word **OUTLINER** tangles with **HEADER VIEW**

Example: Dave Levine's BALLBLAZER game
Substructed so as to have certain controls be a valid strategy.

Example: JOT Thematics
JOT™ as Thematic Design. (A folded design.)
The unifier: **STEPPING WITH SPACEBAR.**
Clever compression and collapsing of function and controls in **JOT™** text editor

Example: Garbage Can Thematics
Disastrous compression and collapsing of function and controls (Mac garbage can).

"Metaphors" vs THEMATICS
RAMIFS ARE NOT GIVEN BUT SELECTED
MEANING OF THEMATIC UNITY AND COHERENCE
High discrete accordances
Unified themes
As precisely as possible: **GOOD SPECIFICATION**
PRECISE SPECS MATCH AN INTUITIVE LEVEL
THEMATICS OF VIRTUALITY AND METAVIRTUALITY.
Getting the **CONCEPTUAL STRUCTURE** right
Well aligned
Precisely definable-- **POSSIBILITIES ARE ENDLESS**
Getting the **FEEL** right
Hard to get enough political control to do a good job
Getting a good and general **ABSTRACTION & SPECIFICATION**
Example of Structure and Ramifs

Let's study ODDITIES OF M.WD OUTLINER

How to move stuff around

Accidentally moving stuff you didn't mean to

Park the part to be used above

Create a dummy Leftmost

writing: THREADED MODEL

WRITINGS ARE COMPOSED OF THREADS!

NO THREAD MANAGEMENT FOR WRITERS!

ZIPS AS METAVIRT OF THREAD MGT FOR WRITING

CROSS-SUBSUMPTION STATED THEMATICALLY

You could DO ANYTHING IN ANYTHING

WHAT'S THE BACKBONE OF THE SYSTEM?

Look at the movie excerpts again

"Wonderful Life" excerpt (reprise)

"Pinocchio" excerpt (reprise)

vs. CLOSING

[1 page missing]

TN READINGS NOT IN PACKAGE

NEW TN READINGS

TN, "The Tyranny of the File." Datamation, 1987?

TN, "A New Home for the Mind." Datamation, 1988?

"Fantics" section from Computer Lib

**"The Design of Virtuality" in two parts. Creative Computing,
1980-1. (Exact citation not available at press time.)**

OLDER TN READINGS

Virtuality piece in two parts from Creative Computing, 1980

GENERAL NELSTUFF

NELSON HISTORY IN BRIEF

Abstractions always
Theater in school, college
Magazines and newspaper in school, college
Movie-making in college
Abstractions + Movies-- Became stereoscopic understanding in
1960
1960 Revelation and Plan
A world of work at screens-- destiny of humankind
Personal computers everywhere
Interactive Software
Interactive Media
Computers and movies
Network publishing
PLAN: a franchised publishing network
(1961 invented im. synth, pat. app. 1970)

T. NELSON BIO

Parents separated before birth; raised by grandparents in NYC
Grew up in Greenwich Village (well-to-do Washington Square)
At nine: wanted to be a Bohemian when I grew up
Bohemian hero: Joe Gould (writing Oral History of the
Universe)
MAJOR MENTOR (uncle): Agnar Mykle, naughty Norwegian
writer
Major Mentor, h.s.: Leo Rosten (humorist/strategic thinker/social
critic)
At Swarthmore College:
Freshman year: published own magazine, NOTHING,
1956.
Junior year: wrote first rock musical, "Anything &
Everything"
(TN produced, directed, wrote lyrics. Music by Dick Caplan.)
Junior year: did major paper on General Schematics.
Senior year: weekly column, yearbook photographer.
Senior year: shot movie, "The Epiphany of Slocum
Furlow."
MAJOR MENTOR, S'more: Michael Scriven, philosopher
B.A., Philosophy, Swarthmore, 1959.

Year at University of Chicago, 1959-60 (Sociology).
Two years at Harvard, Ph.D. program, Social Relations.
First fall at Harvard, 1960: took computer course.

HAD MAJOR VISION--

Computer screen as humanity's new home
Interactive software
Interactive media
ALL MEDIA WOULD BECOME DIGITAL!
(Now called "the Convergence")

Network publishing
Transclusionm the key mechanism for--
revision and version tracking
boilerplate management-- REUSABILITY of
stuff
SOLUTION OF COPYRIGHT!

Franchised server network for worldwide delivery of media
Royalty for network publishing-- BY TRANSLUSION!

**Early 1961: independently invented 3d computer graphics,
raytracing.**

**MAJOR MENTOR, Hvd: Thomas C. Schelling, theorist of
strategy**

**MAJOR MENTOR, Hvd: Talcott Parsons, very theoretical
sociologist**

M.A., Harvard, Social Relations/Sociology (received 1963).

**1962-3: Photographer and movie editor, Communication Research
Institute (Dr. Lilly's Dolphin Lab, Miami).**

1962-3: sang in coffeehouses, Miami.

1964-6: Instructor in Sociology, Vassar College.

**1966-7: Senior staff researcher, Harcourt Brace & World
publishers.**

1967-8: Consultant to Bell Laboratories, Whippany, NJ.

1968: WORK AT BROWN U. ON FIRST WORD PROCESSOR

**This work was later called HES, "Hypertext Editing
System."**

**None of TN's ideas were included, except simple links and a
Return stack.**

Negligible credit.

**Whole thing was a serious waste of time (& TN's own
money).**

1969: work on patent application in image synthesis.

1970: Tech adviser to "Software" show, Jewish Museum.

1970-1: drove cab in New York City.

**1970-2: INVENTION OF THE ENFILADE. (With Ridgway &
Daniels)**

(1972: Xanadu implementation in Fortran by John Ridgway.)

(1972: Xanadu implementation in Algol by Cal Daniels.)

1973-6: various positions at U. Illinois, Chicago.

(1974: double enfilade invented by William Barus.)

1974: published COMPUTER LIB.

**1975-6: partner in Itty Bitty Machine Co. (early Chicago computer
store)**

1977: published THE HOME COMPUTER REVOLUTION.

1977: taught for one semester at Swarthmore College.

**1979: Assembled Xanadu Group (Roger Gregory, Mark Miller,
Stuart Greene, Eric Hill, Roland King). Summer of 1979 spent
redesigning Xu.**

1980--1: editor, Creative Computing magazine, Morristown, NJ.
1981: Published LITERARY MACHINES.
(1981: Supreme Enfilade Grinder invented by K.Eric Drexler.)
(1981: Xanadu group finishes new Xanadu design around Drexler
idea.)
1981-5: software designer (later tech writer), Datapoint, San
Antonio TX.
1983: founding of XOC, Inc. as Xanadu company.
1987: Microsoft edition of COMPUTER LIB.
1987: Revised version of LITERARY MACHINES.
1988: Project Xanadu acquired by Autodesk, Inc., Sausalito CA.
(Fall 1988: XOC group completes 1981 Xanadu, decides to
REDESIGN.)
1988-92: Distinguished Fellow, Autodesk, Inc.

1990: Ted Nelson World Tour: 5 keynotes, several more countries.
1992: Autodesk drops XOC, Inc.
1993: Nelson rethinks Xanadu, uncovers underlying business
model.
1993: design of Xanadu Light.
1991: Sound track finally put on "The Epiphany of Slocum
Furlow."

1960: TN's Computer Revelations in some more detail
TN obsessions (abstrax & showbiz) gave me Stereoscopic Vision
Computers deal with ARBITRARY ABSTRACTIONS &
CONSTRUCTS
Computers are MEDIA MACHINES-- but
INTERACTIVE!
NONSEQUENTIAL WRITING POSSIBLE
1960: Computer is an INTERACTIVE MEDIA MACHINE
1960: Computer deals w ARB ABSTRACTIONS
HYPERTEXT
Nonsequential writing
Structure all writing has groped toward
New generalized literary genre
Many kinds of designs
CHUNK STYLE HYPERTEXT
Just pieces and jumps
If people keep adding, you get "lost in hyperspace" prob.
COLLATERAL HYPERTEXT

COLLATERAL HT

Most powerful and general kind:
(Documents side by side by side forever)
See origins
See alternatives side by side
Comments have EQUAL STATUS.
Important for studying--
correspondences & counterparts

commonalities

1960 DESIGNS: A COMPLETE WORLD

(Not yet an "alternative" computer world)

ONE BASIC MEDIA IDEA

Hypertext, hypermedia--

EXPLORABLE COMPLEXES

HT: Nonsequential Writing (with free user movement)

HM: Branching Media (with free user movement)

LESS TROUBLE TO CREATE

Don't have to CUT ANYTHING, just decide WHERE

REPRESENT STRUCTURE OF CONNECTION

Let user follow that structure

ONE BASIC PUBLISHING IDEA

An interconnected publishing network

ONE VISION OF THE SOCIETAL RAMIFICATIONS

SOCIETY

This was to be the new shape of society: at-screen,

at-screen

on-line

deeply-informed

DEMOCRACY

HT PUB FOR DEMOCRACY

New Jeffersonian Hope

HT for grass-roots facing of world problems

Popu-litist (TN)

TYRANNY

HT PUB AGAINST TYRANNY

The Fahrenheit 451 Problem

-- keeping alive suppressed documents

FIXING EDUCATION BEFORE COLLEGE

(Oppressive schooling is generated by TIME

SLOT and CURRICULUM, just as

broadcasting is generated by THE TIME

SLOT.)

SMASH THE SCHOOL SYSTEM!

End the Monstrous Boredom and Stupidity

Smash the tyranny of shallow teachers

Smash the tyranny of the Curriculum

Allow each to study in own way

LET STUDENT EXPLORE EVERYTHING!

FREE STUDENTS TO STUDY OWN

SUBJECTS!

FREE STUDENTS TO STUDY THEIR

OWN WAY!

HT TO REFORM EDUCATION

Create new criteria for graduation--

**present your own program of mini-
modules**

FIXING ACADEMIA

A new and deeper scholarship
All the material could be made available
All the connections could be published
Minority academic views could be heard better
End tyranny of dumb smug conventional Ac. Estab.

LITERATURE

This was the new literature
The Manifest Destiny of Literature

LIBRARIES

HT PUB AGAINST LIBRARY ESTABLISHMENT
End tyranny of dumb smug conventional
librarians

ART

NEW CREATIVE FREEDOM FOR EVERYBODY
End tyranny of dumb smug conventional Art
Estab.

BUSINESS: HT for management
(now called "drill-down")

BOOKKEEPING

Side-by-side z.list viewing to clarify accounts
Alternative bookkeeping visualizations

PUBLISHING

HT PUB AGAINST NEWS ESTABLISHMENT
End the tyranny of the dumb smug
newsmedia
HT PUB AGAINST PUBLISHING ESTABLISHMENT
End the tyranny of dumb smug conventional
editors

BROADCASTING

(Nature of Broadcasting is given by the TIME SLOT.)
Interactivity, non time-slot-based, will REPLACE IT ALL.

NATIONAL CULTURE AND STUPIDITY

Our culture enshrines stupidity; WE'LL FIX THAT.

POSTERITY

The Posterity Machine, Safeguarding--
Minority views
The truth (an amalgam of many views)

TWO BASIC TECHNICAL IDEAS, ACTUALLY ONE

"THE WRITER'S CONSOLE"

EVOLVING-PROJECT SYSTEM: Collateral Text Handling
Version-to-version transclusion
Working author sees original context of all source material

UNIVERSAL NETWORK PUBLISHING

Automatic Royalty
Transclusion meant

Everything re-usable as boilerplate

Credit to originating party

Royalty to originating party

SAME IMPLEMENTATION: Transclusion from a source pool

Source pool of material

All uses point at same original material in pool

Transclusions easily recognized in software

(pointers go to same material)

World-Wide Publishing System

Royalty Proposal

Network of distrib'd documents

EXACTLY THE SAME: TRANSCCLUSION

TN's 1960 Inventions, more or less

DISCARDED "word processing"

DISCARDED "outline processing"

Menus (independently)

Various Interactive Software techniques

Mark-of-Zorro controls

General Interactive Media

Hypertext

Hypermedia ("interactive multimedia")

-- where's the borderline?

Versioning

Delta-list change-mgt

Version forking

CASE (Computer-Assisted SW Engineering)

VR (independently)

Image synthesis, raytracing, "painter method" (all 1961; pat. app. 1970)

1960 PLAN

Design of complete software world and electronic publishing business

COMPLETE SOFTWARE WORLD

TEXT HANDLING FOR AUTHORS

INTERACTIVE SOFTWARE FOR OTHER PURPOSES

a variety of designs

CREATIVITY CONSOLE

The console for the writer, designer, filmmaker

(The console I WANTED)

Collateral Zip Editing

Origins

Complex alternative structures for any project

Example: DIFFERENT MAJOR

ORGANIZATIONAL STRUCTURES FOR A MOVIE

OR NOVEL, simultaneously linked to the constituent

shots

Example: DIFFERENT MAJOR

ORGANIZATIONAL STRUCTURES FOR A

NOVEL, simultaneously linked to the constituent
portions
Example: A MULTI-POSSIBILITY FILMSCRIPT
ELEGANTLY TRACKING ALTERNATIVES TO
SHOOT

**PLANNED ELECTRONIC SERVICE AND PUBLISHING
BUSINESS**

For computer storage and electronic publishing
With royalty, unrestricted quotation
To be a McDonald's-like franchise

**LIFE WORK OF WRITING to be personal/collateral OEUVRE
("Irv")**

One single block (hyperblock)
NONE OF THE CONNECTIONS CUT

TN's Words 1960-94

cybercrud
technoid
hypertext
hypermedia
docuverse
transclusion
image synthesis
"visualization" in computer field
dildonics
digitalia
popu-litist

TN's "Attention Deficiency Disorder"

(New term coined by Regularity Chauvinists)

Extremely absent-minded
impatient

can't remember names or faces
constantly forgetting
constantly mislaying, losing things
don't recall incomplete tasks

either don't finish or do several times

forget the things I buy

A.D.D. THE PERFECT PREP FOR SW DESIGN

--emp. w. impatient, flustered user

TN KEY BIBLIOGRAPHY NOT IN THIS PACKAGE

Nelson, Theodor Holm, "Virtuality and the Art of Software
Design" (?) Creative Computing, 1981.

First written presentation of Virtuality Design as a
philosophy.

Nelson, Theodor Holm, "The Design of Media." In SOFTWARE
(catalog of "Software" art show), The Jewish Museum, New York,
1970.

TN APPROACH

Personal approach: **CONTRARIAN**

Intuitive where others analytic & v.v.

Special insights in many places
I am the atom out of line in the crystal;
I see down tunnels others do not suspect

TN RELIGION

Human creativity
Inspiration
Inspired understanding
INSPIRED INTERCONNECTION
Human life: a avalanche of ideas throughout the ages
Posterity
Analysis & Rationalism
World is ruled by the Shallow Conventional Pompous & Smug

TN THROUGH THE DECADES

A WHOLE ALTERNATIVE WORLD OF COMPUTERS
(Except at the outset it wasn't Alternative)
Many attempts to Get My Stuff Up
Since 1967, called "Xanadu"*
Variety of jobs
Disgust with those who did not understand
(and especially with those who were merely enthusiasts
about computers or computer graphics, not understanding
the depths of the problems)
Deepening bitterness; mellowed by California

TN MAJOR TERMS THAT HAVEN'T CAUGHT ON YET

Splandremics (SPL) (TN Comp. paradigm 1960-5)
Mapping what's to be shown to available strux
Schematic Mapping:
Mapping desiderata to available alts
ASSIGNMENT OF DIMENSIONS
color
interaction
sound

ANYTHING CAN BE SHOWN
ANYTHING CAN BE MANIPULATED

always a schematic representation or assgt

FANTICS (TN comp. paradigm 1968-75)
Computer SW & Media as Showbiz
Tricks and Techniques of showing
Vizualization

VIRTUALITY (TN comp. paradigm 1965-current)

THEMATICS (TN model of structure & design of ideas)

Other individuals who took on whole computer world

Jef Raskin
Alan Kay
Richard Stallman
Steve Jobs

to **DESIGNS**

ZIPPER LIST DESIGNS, 1965-72

Zipper Lists, or--

**Parallel connected structures for
indexing
versioning
complex alternatives.**

The basic design of all Nelson's designs

SNP DESIGN, 1968 (Modules: Sexus, Nexus, Plexus-- and others)

One module: delta list of changes between versions

One module: virtual data strips (zips)

represented by pointers into pool of text

One module: links between virtual zips

1969: zippered lists implemented as

meanders

**disconnected pieces of a virtual stream (same as Piece
Table)**

beds,

babbling in beds

1972: Enfilade structures (secret)

1981: Datapoint Zipper Lists (closer to op.system)

Computopia Zipper Lists (in TRAC)

Z.LIST EDITING (slide sideways between versions)

ZigZag (1974-94; design largely closed 1994)

1994: ZigZag,™ Dimensia™

TN DESIGNS

TN'S HYPERMEDIA WORLD

Links may be created from anything to any else

Links may be followed across whole docuverse

IRV, TN's evolving oeuvre

Continual accretion of material to Irv

Always organized

Collateral structures (Zipper Lists or Zips) for EVERYTHING

SHOW THE TRUE STRUCTURE OF EVERYTHING

**LET READER BROWSE AUTHOR'S STRUCTURE OF
THOUGHT**

OLD TN DESIGNS (1970s)

SOFTWORLD™ (suite I designed in 1976)

Planorama™

Pictrola™

ThingEez™

Bill Juggler™

Ledgerdomain™

JOT™

MY FUNNY-FACE MENUS

LATCHING TREES

RINGSTEP

MY GAMEBOARD "Document Conferencing"

VORTEXT™, 1981

Collateral text syst. for Datapoint

Fancy visual effects, very Kapow

TN's designs TODAY

ZigZag™, design completed 1994

(still secret)

2 1/2D integrated software

startling new visualization

in "folded quantum hyperspace"

Dimensia™, full-power extension of ZigZag

(still secret)

Fully programmable extension of ZigZag

"The Wind-Up Crossword Puzzle"

N 1/2D, in folded quantum hyperspace

Xanadu today (Xanadu Light)

(server and business system for copyright)

HyperFormance™ Xanadu client language (in progress)

PREFERRED DESIGN APPROACHES TODAY

No one-way buttons/jumps

Continual overview

DESIGN FOR FAST REVERSIBLE OPS

User can go FAST WITHOUT WORRYING

OVERVIEWS-- ALL THE TIME
PAN-SCROLL-ZOOM
True zoom
CONTINUOUS VISIBILITY & ORIENTATION
EVERYTHING REVERSIBLE
moves
effects
(For hypermedia: I now favor
Roy Stringer designs, the most admirable)

BASIC INTERNAL DESIGN OF ALL XANALOGICAL SOFTWARE
Great pool, plus pointers
Delta-lists (until 1981 Swarthmore Server)
Sideways viewing

NELSONIAN PARALLEL LINKAGE IN VARIOUS VERSIONS
COLLATERAL HYPERTEXT (always)
ZIPPERED LISTS (1965 on)
1965 Zipper Lists
(abstract, assumed development in machine language)
1972: Enfilade structures (secret)
Datapoint Zipper Lists (closer to op.system)
Computopia Zipper Lists (in TRAC)
Z.LIST EDITING (slide sideways between versions)
ZigZag (1974-94; design largely closed 1994)

HISTORY OF TN's IDEAS

TN'S OVERALL WORK

(Fiction, Movie scripts, occasional songs etc.)

Philosophy and the Social Sciences

General Schematics

Theory of Strategy

(foundational for psych, other topics)

General theory of Biostatus

(foundational for psych)

Gen. theory of status, territory, paradigm

(foundational for psych, sociology & anth)

LITERATURE: the Final Conglomeration.

The document and "literature" defined and generalized into the screen and repository future.

TOWARD A UNIFIED LANDSCAPE OF DATA. The Xanadu™
model of true representation, interconnection, versioning,
repository publishing, and copyright simplification.

TN'S SOFTWARE WORLD

Human creativity at center

Always Inputting (not "word processing")

SAFETY OF CREATIVE INPUT

Storing every input item on disk

printing out every change immediately, as an option

**SYSTEM ALWAYS INSTANTLY READY FOR
INSPIRATION**

Grab it like a fire extinguisher, INSTANTLY TYPE

INPUT ALWAYS SACRED, NOTHING LOST

(Not like Mac "clipboard"--A bominable hidey-hole)

No "Applications"

Everything integrated software

One layer for writing & "files"

All creative work is EVOLUTION BETWEEN PROJECTS

Instant view of connections to previous versions

TN HISTORY OF IDEAS BEFORE 1960

Very Philosophical Child

Totally Alienated from Age 11

Not Modest

Boyhood: MOVIES, LITERATURE

Filing and writing experiments in highschool

College: ABSTRACT PHILOSOPHY & MOVIES

General Schematics, spring 1958

"The Epiphany of Slocum Furlow," spring 1959

Filing and writing experiments in college

GENERAL SCHEMATICS (1958-current)

Abstraction

HYPertext, HYPERMEDIA

VIRTUALITY (1976-current)

PHILOSOPHY & SOCIAL SCIENCES: GENERAL SCHEMATICS

RECENT WORK IN SOCIAL SCIENCES

STATUS, TERRITORY (TTRY), PARADIGM (PDGM)

TERRITORY

TERRAIN or OPERATIONAL SPACE

Scalar 2+D mappings of resources

STATUS

Evaluations

Acts of Valuation and Devaluation

Non-spatial mapping of advantage

General Schematics (SKX) -- College and Grad School

An entire philosophical system

Schematics (SKX)

Structures, modelling

Commonality, analogy

Correspondence

Discrete evolution

Predicational gradients and how they match the world

The Fit of Models

Normatics (NORX)

Models and Structures involving

Benefit

Results

Rules

Attitudes

The Fit of Judgments and Criteria

Thematics & Idea Structure (IDSX, TX)

Flumatics (FLUM)

Systematics (SYX)

Ranges of variability and context of everything

Gradients of attributes

Co-occurrence ranges

"constant conjunction (Hume)

Studies in General Strategics (ACT, SRC)

(formerly "Action Center Theory")

Strategemics?

stratics?

strategemics?

stratentics?

(stratentivity-- strategic entity)

Genstratics? (gen'l strategics)

BASIC TN COMPUTER VIEWS:

TN SW PARADIGMS IN BRIEF

SOFTWARE AS FORM OF MOVIE

S(L)IDEWAYS LINKING

Zips, Whichways, Xanadu Documents

TN'S IMAGINED WORLD OF THE 60z

Type anywhere

Dock with system

ONE CONGLOMERATE OF DATA

Universal transclusion, side-by-side viewing

Work in twilight

ELIMINATE PAPER

NONHIERARCHICAL

COLLATERAL HYPERTEXT: VIEWING & PRESENTATION

Collateral viewing & use of EVERYTHING

See the origins & sources, in context

See connected documents and comments

(in context of larger whole)

See the alternatives

See permutations and excerpts

(eg edited audiotape-- TRANSCLUDED)

Nelson SW Paradigms in Brief: Unifying abstractions

Today's Software World hopeless;

WE MUST START OVER!

ACCESS STRUCTURE

VIRTUALITY: Concep. Strux & Feel

**Conceptual Structure: ART OF ABSTRAX STRUX, like
GAMES**

SOFTWARE AS FORM OF MOVIE

Auteur theory of SW Design

"True" Virtuality

Metavirtualities

Thematics of Virtuality

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COLLATERAL HTEXT: LINKAGE STRUCTURES

TOMORROW'S OP. SYSTEM

Multithreading, Zips, Whichways

Zip Structure

S(L)IDEWAYS LINKING

Xanadu* Publishing

LITERARY THEORY & SYSTEMS

Nature of document

INFO PACKAGE with POINT OF VIEW

Nature of literature is & has always been
LINKED DOCUMENTS

The electronic docuverse
ELECTRONIFICATION OF LITERATURE
MANIFEST DESTINY OF LITERATURE

Hypermedia and Hypertext
COLLATERAL HM & HT

Transclusion solves copyright problem
CHANGE AS THE MODEL OF WRITING & WORK
WRITING

PROJECTS KEEP CHANGING CONCEPTUALLY
Constant problem of Overview
Overview of what you're doing

CONSTANT CHANGE OF CENTER
CONSTANT CHANGE OF WHOLE
Implications for Naming of Files
Implications for Working Terminology
Implications for "Outlines"

CHANGES IN SYSTEMS OF CONSTRUCTS

TN PARADIGMS

TN PARADIGMS

Lifelong paradigm: EVERYTHING IS WRONG

School the First Example

Everything is designed wrong

Houses

Cars

Telephones

Clothing

Bathrooms

**So of course, ALL COMPUTERS AND SOFTWARE are
designed wrong**

It's as if you had to be an auto mechanic to drive

Wrong personality assumptions of user

Wrong assumptions of nature of work

Too much closure

Not enough connection

TN Pdgm: 'NOTHING EVER FINISHED'

Only most recent draft

Godard?: "You never finish a film, you only stop."

Or you Publish.

However, you still revise till you die.

Marcel Proust revised death scene on his deathbed.

**TN Pdgm: REARRANGEMENT MOST BASIC CREATIVE
OPERATION**

ITEM TRACKING, esp. in my own work

ARB. CONNECTIVITIES

"Everything is deeply intertwined."

INTERTWINGULARITY: arbitrary complex interconnection.

PDGM: WORDS MATTER

TN COMP. PARADIGMS: PRESENTATION: VIRTUALITY

TN COMP. PARADIGMS: PRESENTATION: Linked Windows

TN COMP. PARADIGMS: PRESENTATION: Faceted Icons

TN COMPUTER PARADIGMS: XANALOGICAL DATA (Zips)

TN COMP. PDGM: ITEM TRACKING

TN Comp. Pdgm: MULTITHREADING

TN COMP. PARADIGMS: PRESENTATION: Auteurism

TN ASSUMPS OF WORK

Projects become projects forever

Closure is PARTIAL AND INCOMPLETE

Material must be RE-USABLE FOREVER

TN deeper pdgm

My lifelong paradigm: EVERYTHING IS WRONG

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