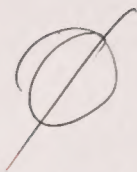
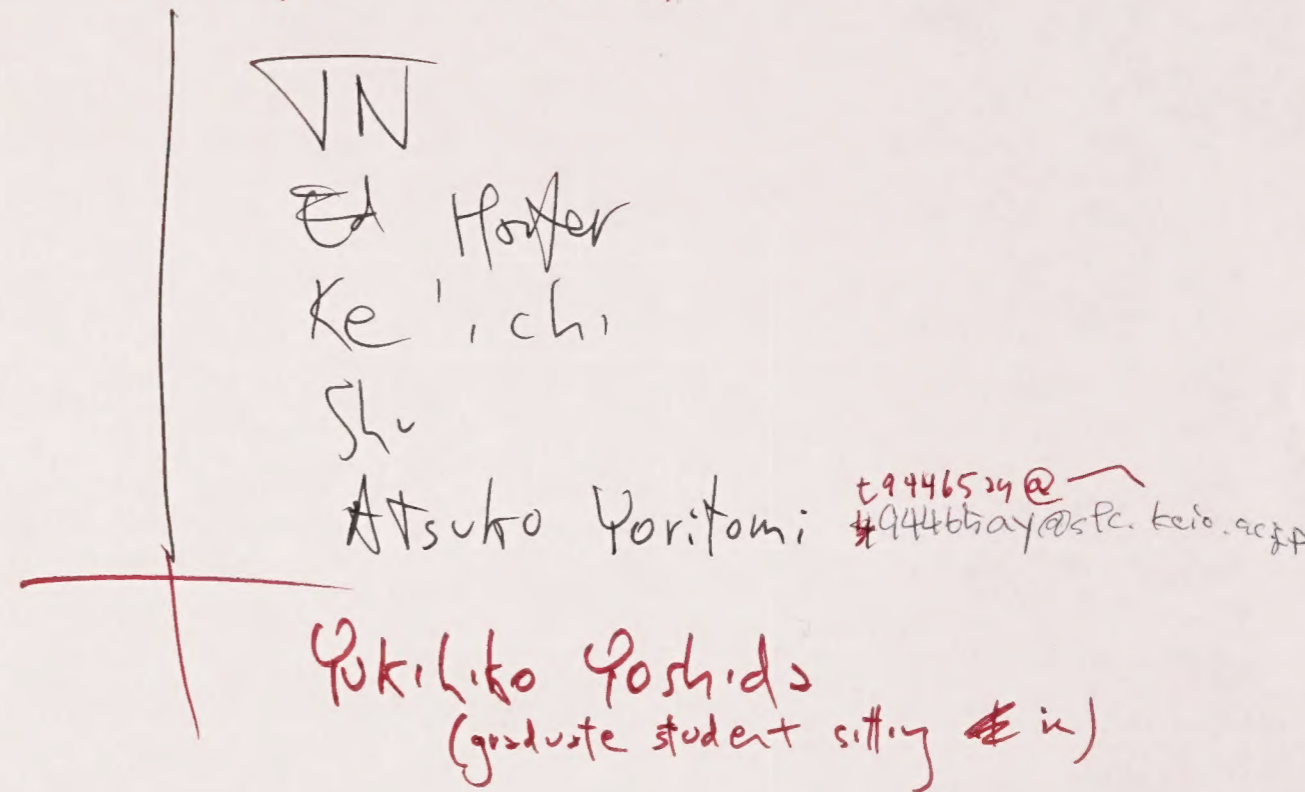


SEP 25 1997



NELSON'S HYPERSTRUCTURE WORKSHOP, FALL 1997.

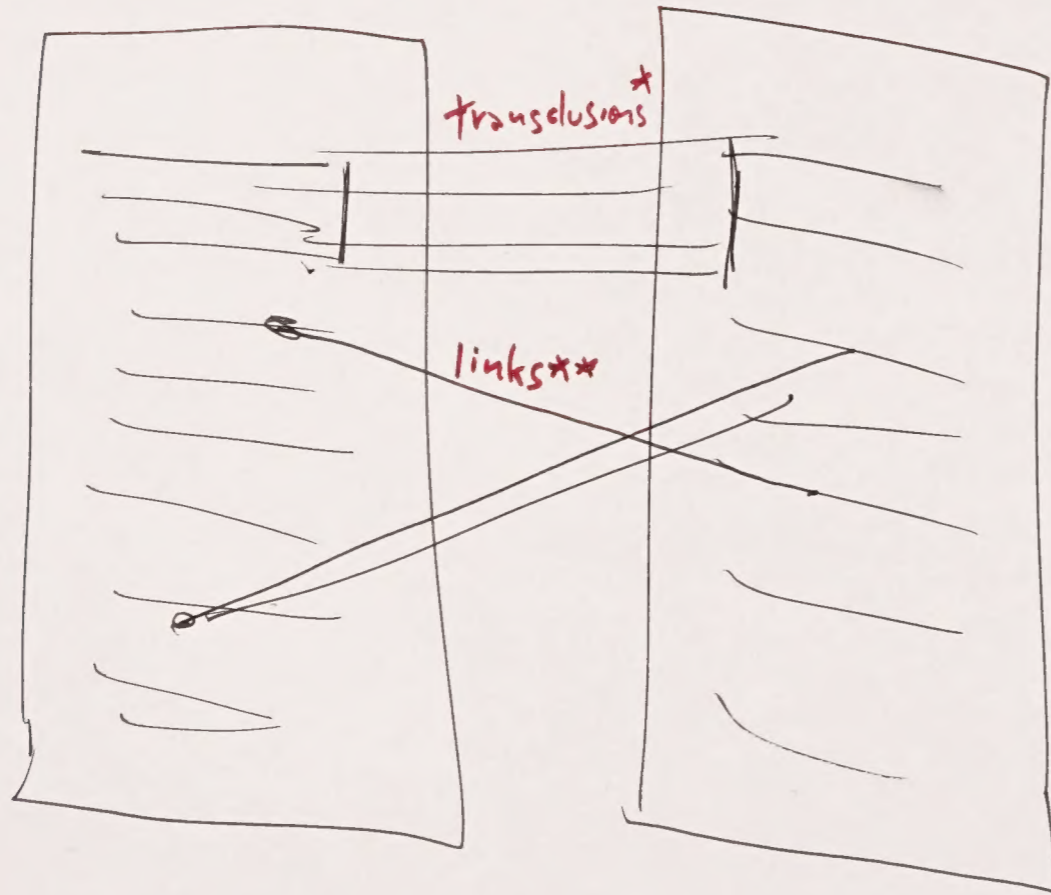
First meeting SEP 25 1997



We will try to summarize the ideas so far.

/Notes added 09.28.

A FUNDAMENTAL IDEA: THE PARTICLE TEXTFACE, highlighting:



WHAT DATA STRUCTURES
 WILL WE NEED?
 (Answer: OSMIN
 derived from the city
 topology data structures).

* connections among things which are the same.

** connections among things which are different —
 (OUR LINKS ARE NOT LIKE HTML LINKS.)

DATA STRUCTURE FOR
TEXT
AUDIO
FAX (TIFF)

PRIMEDIA:



VIRTUAL OBJECTS

(sequential objects to begin with)

are

LISTS OF ADDRESSES OF PRIMEDIA.



We must simultaneously,

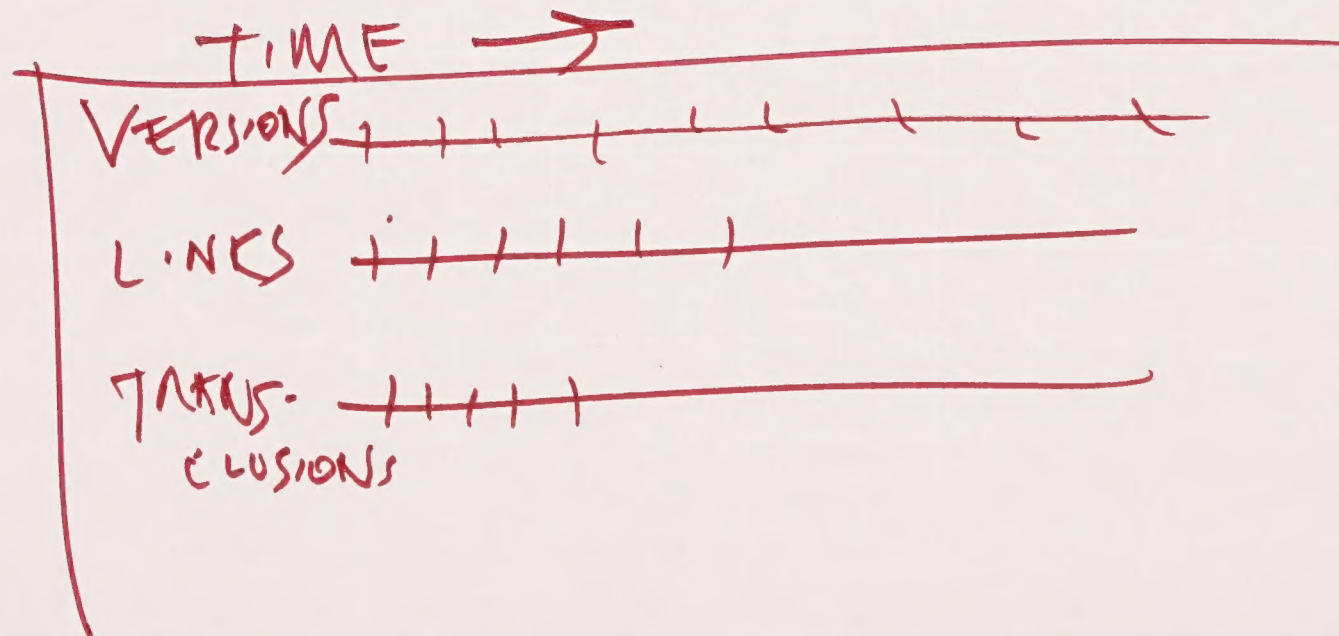
SEP 25 1997

3

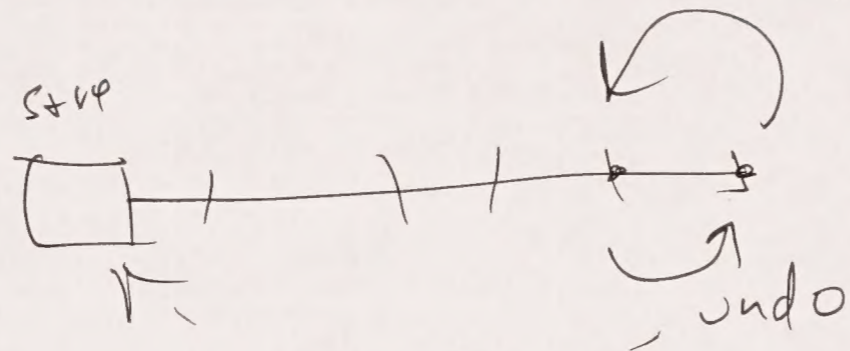
MANAGE TIME & VERSIONS

CONNECTIONS
LINKS
TRANSCLUSSIONS

and their changes.

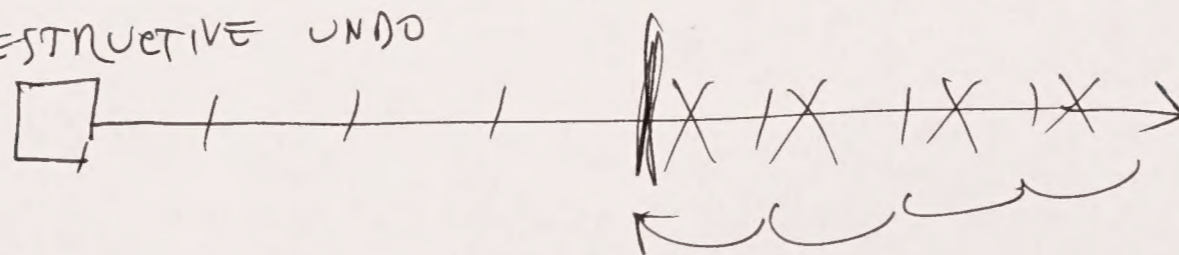


TIME ON MACINTOSH undo



TIME
ON
UNIX
(some
programs)
and
others
(like
Live Picture)

DESTRUCTIVE UNDO

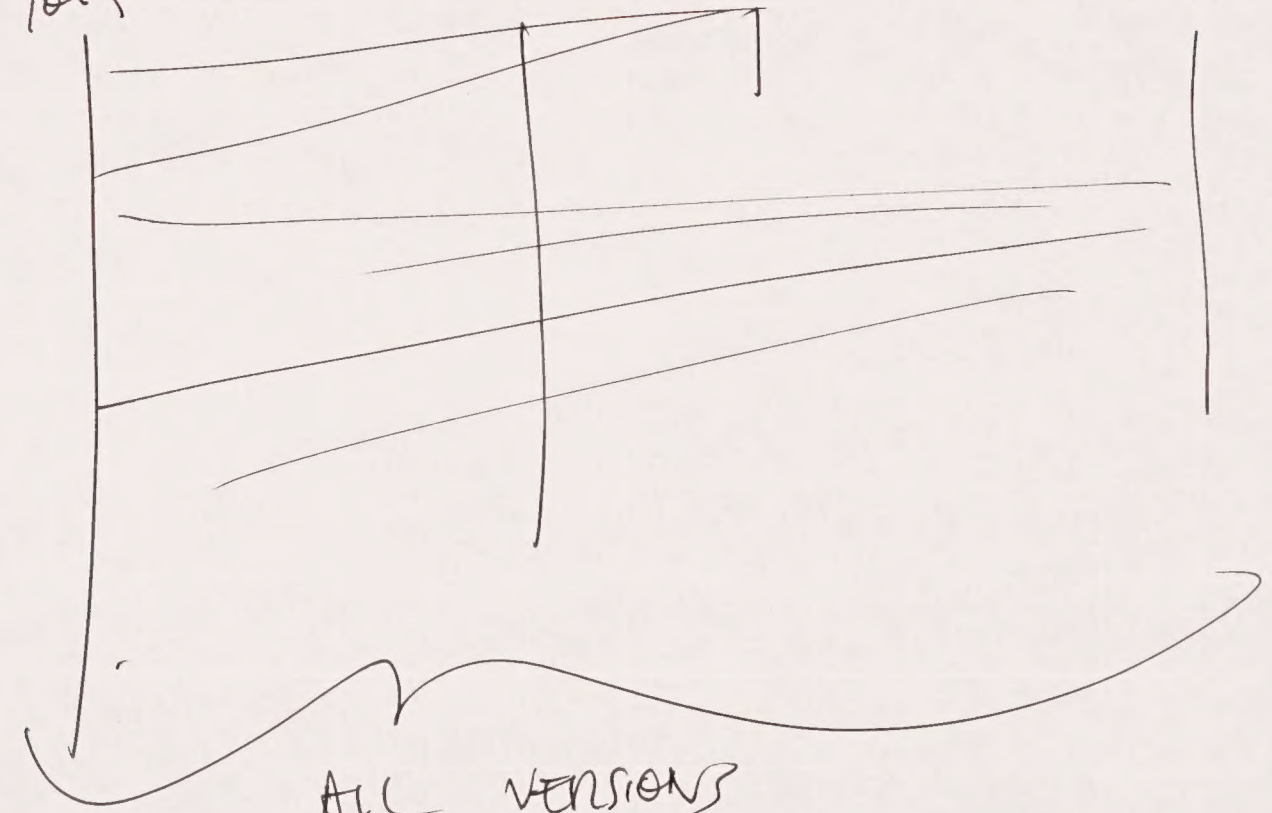


TOO SIMPLE

Sometimes

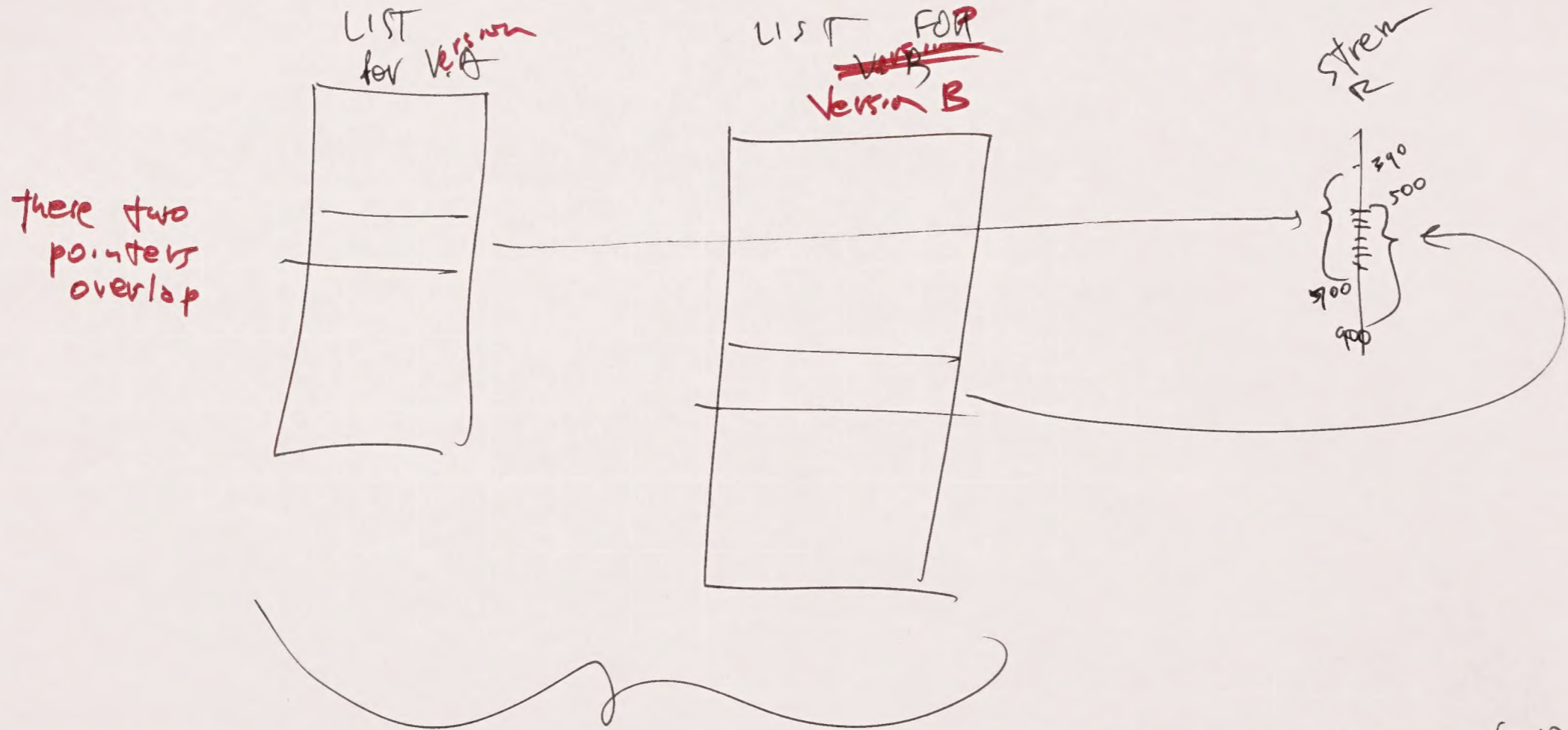
WE

WANT MANY ^{SIMULTANEOUS} VERSIONS
low version short version mid-size version



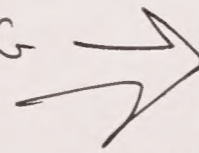
ALL VERSIONS SHOULD STAY CONNECTED

TWO VERSIONS CONTAINING ~~TEXT~~ SAME TEXT



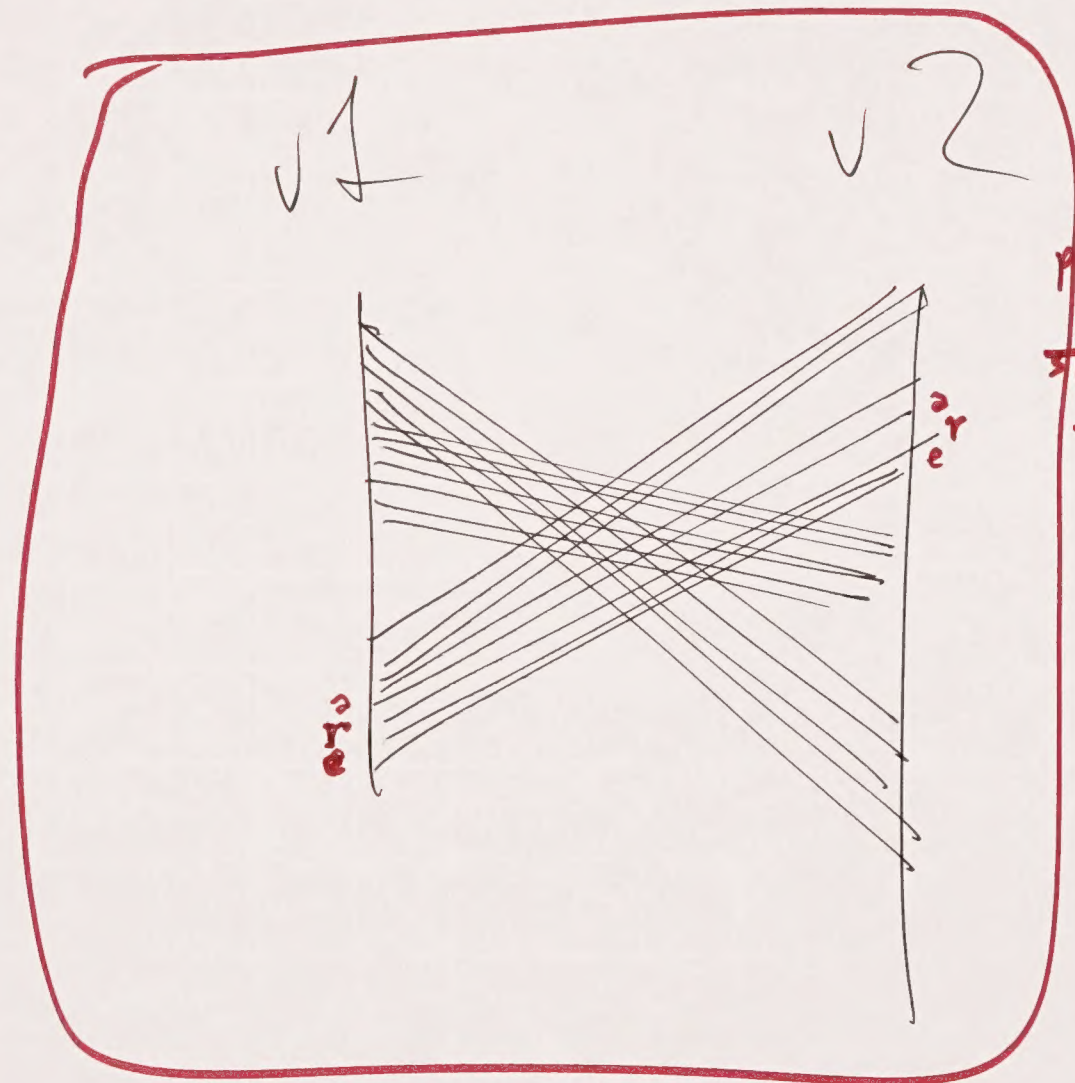
these two pointers overlap

FIND OUT BY COMPARING POINTER LISTS



FUNDAMENTAL OF FOR FINDING TRANSLATIONS

Another way of visualizing versions: AS TRANSCLUSSIONS

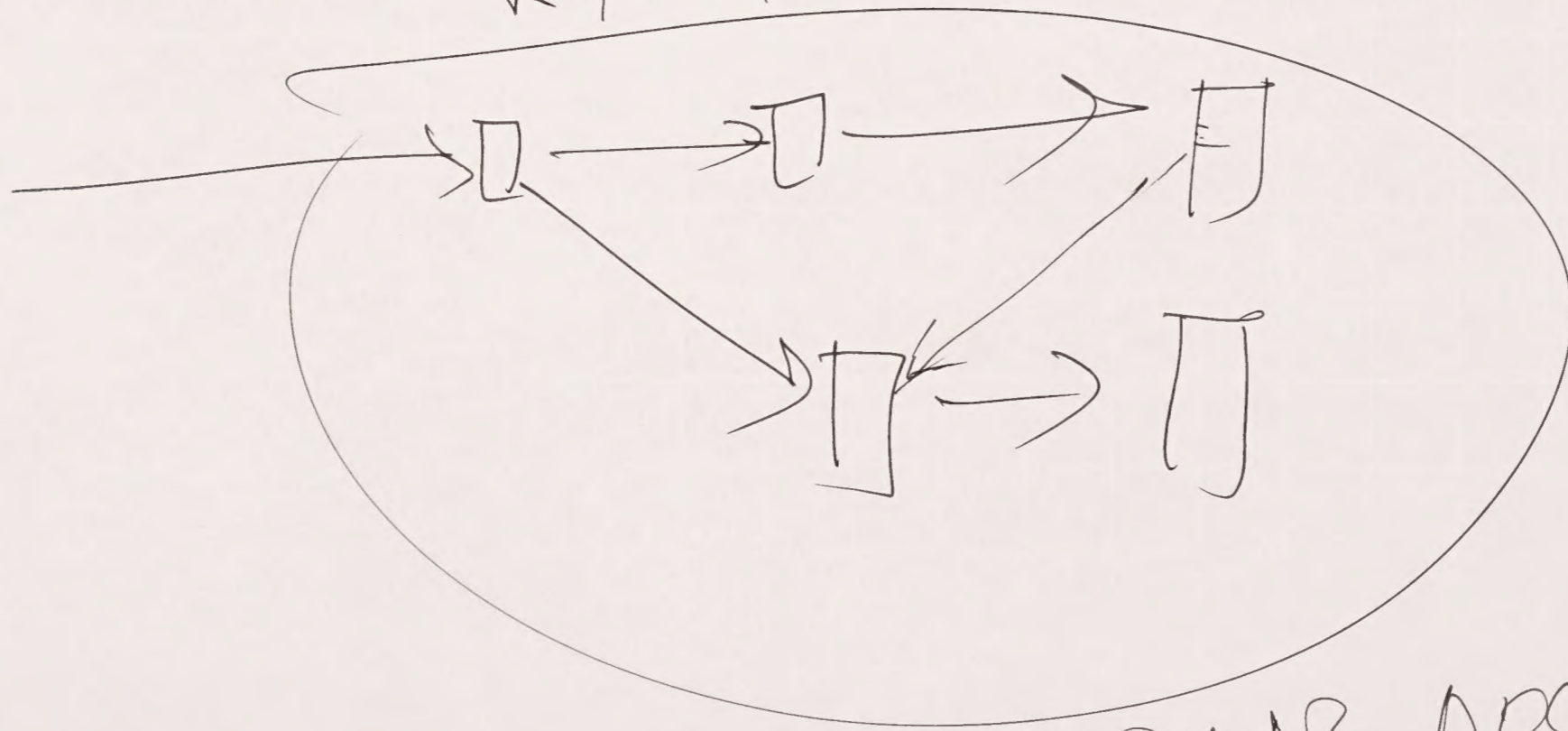


position of
same
~~specific~~ bytes
~~equal~~
in both versions

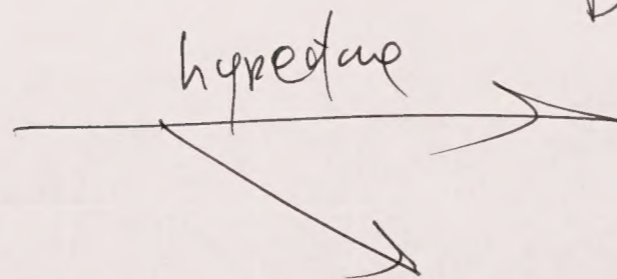
what you'd see on screen

WHAT IS A DOCUMENT?

A collection of versions
that have a common name.



BRANCHING DOCUMENT



~~CURRENT BACK END~~

RECEIVES ~~INFORMATION~~* INPUT TEXT

RECEIVES EDIT OPERATIONS

- INSERT
- DELETE
- RETRIEVING
- TRANSCLUDE

EDITORS

BUILDS CURRENT VERSION
from edit operations

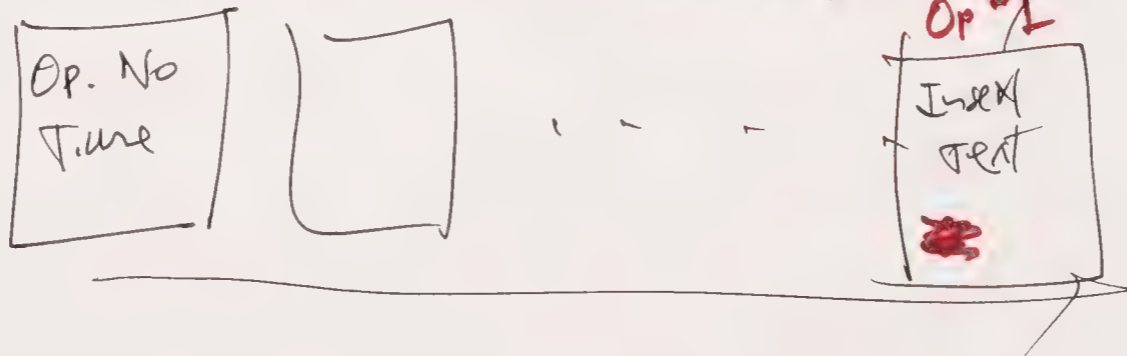
* Try always to avoid the term "information." HIGHLY MISLEADING.

TWO FORMS OF STORAGE

ARRIVING TEXT (permanently record)
APPEND-AND-READ-ONLY TEXT

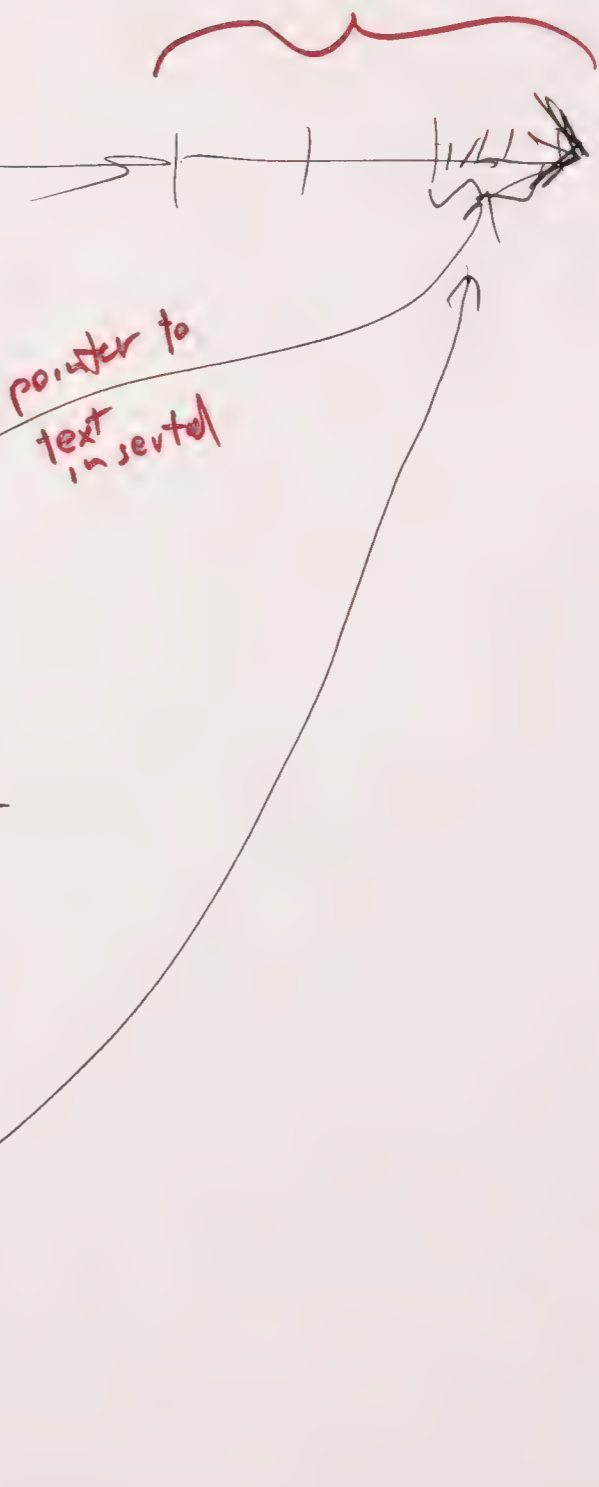
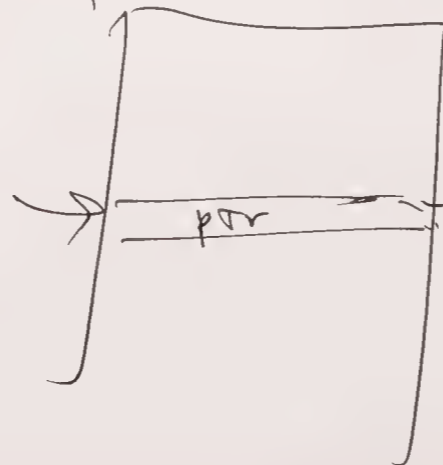
stored as primitives

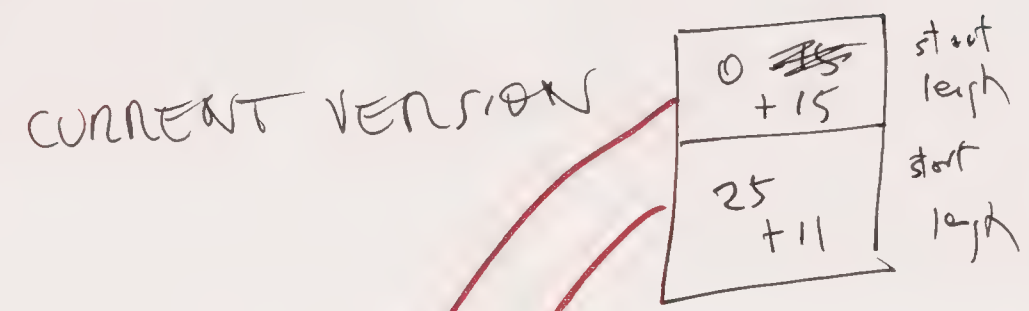
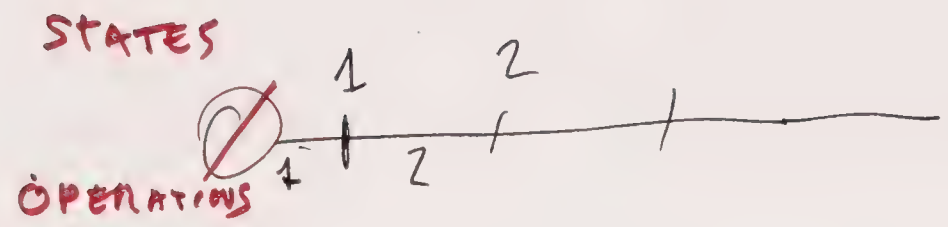
LIST OF OPERATIONS (also append-and-read-only)



pointer to text inserted

RESULTING VERSION ("Virtual version")





EXAMPLE:
A short text.

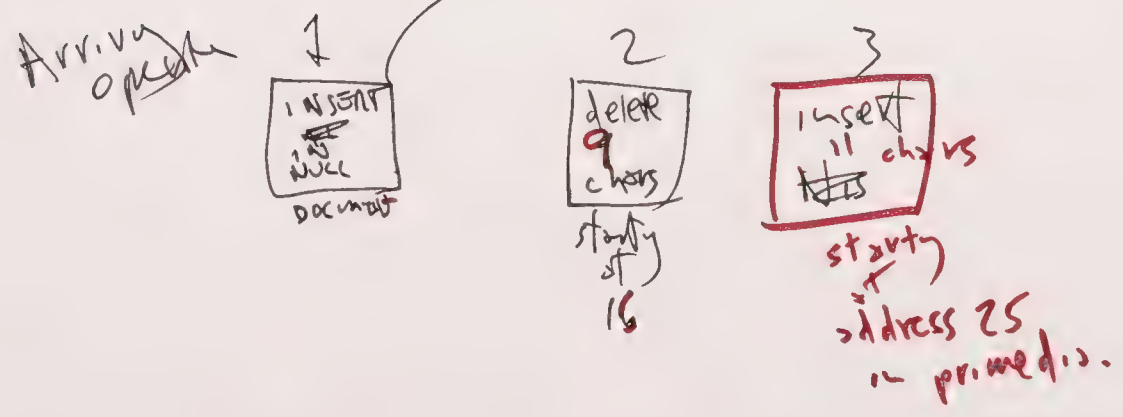
arriving text record.

~~text~~

My name is Shu Nakamae. Nishizawa. ep

~~CURRENT~~
DO

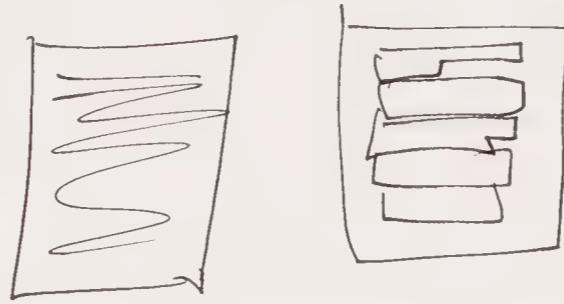
STORED PRIME MEDIA



STORED OPERATIONS

WHAT DO WE DO NEXT?

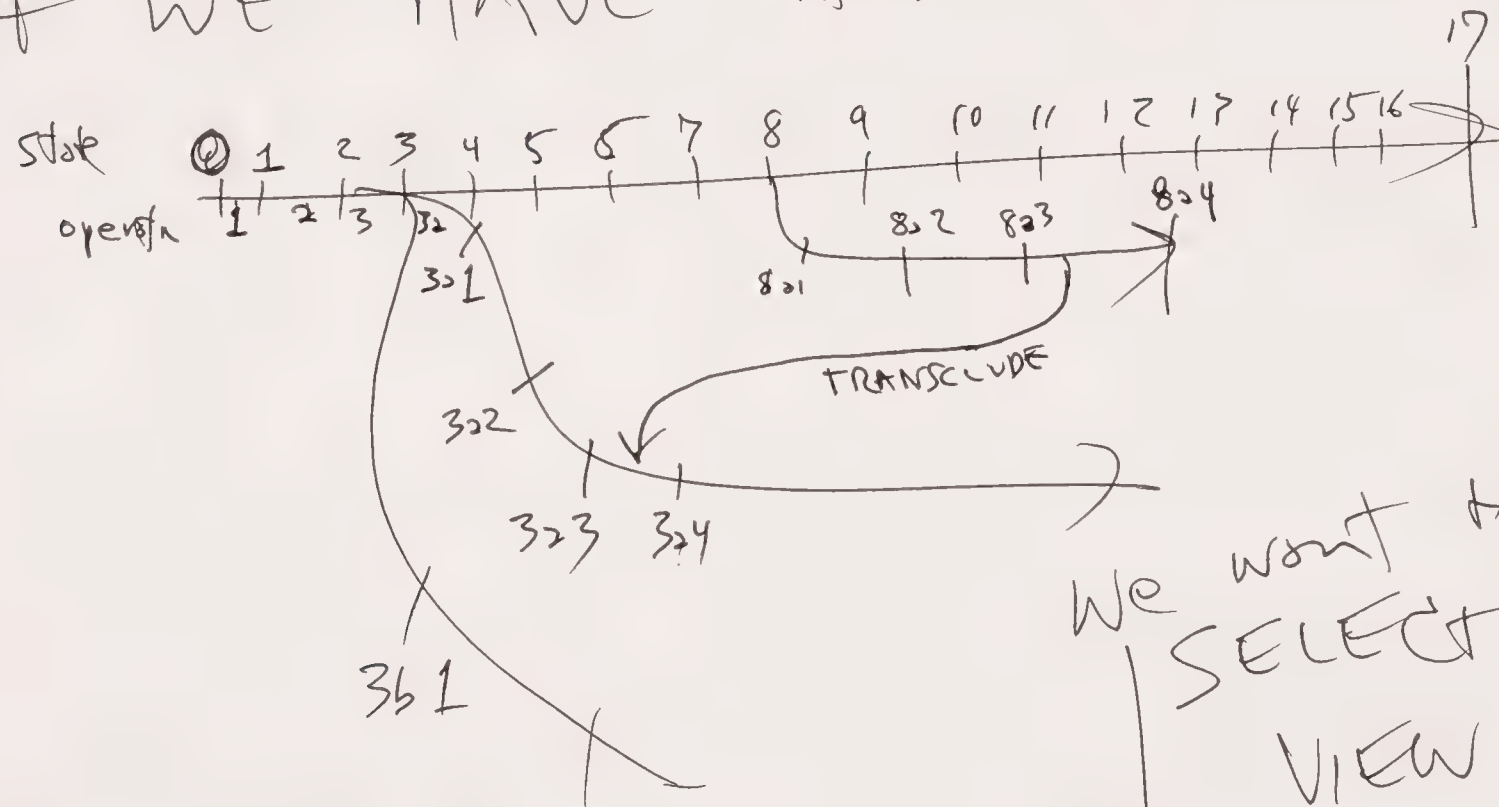
SOME FRONT END for viewing + sequential ~~down~~ version



TRANSCRIPTION DISPLAY

LINK FOLLOWING

IF WE HAVE AN EVOLVING DOCUMENT



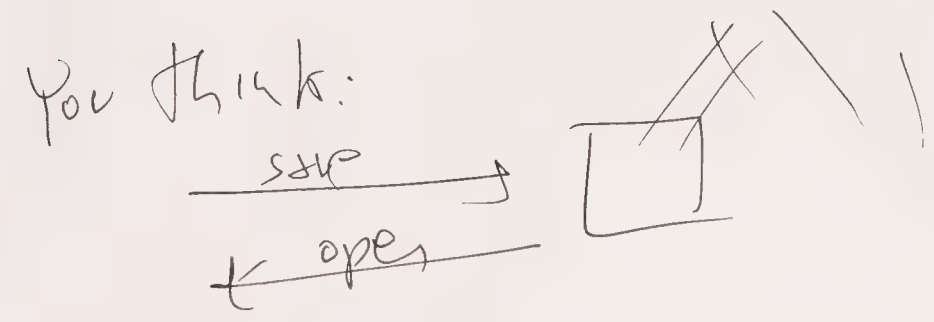
We want to
 SELECT A STATE
 VIEW THAT STATE
 EDIT THAT STATE
 FOLLOW LINES
 TO & FROM THAT STATE
 FOLLOW TRANSCLUSSION
 TO & FROM
 THAT STATE

FAX is a cost-effective input

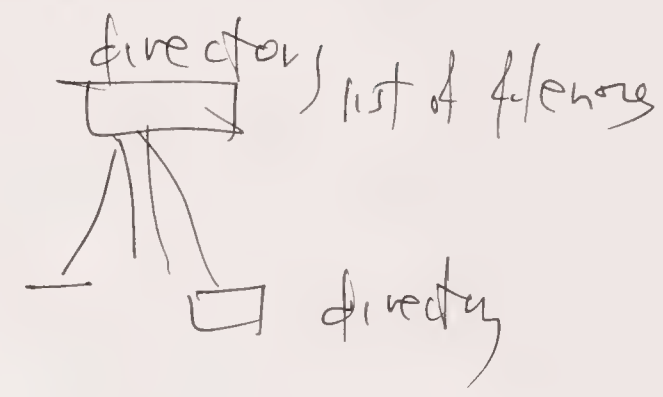
FAST
MANY INPUT DEVICES (millions, around
the world)
~~DATA~~ CAN BE EFFICIENTLY COMBINED
for very long data streams

COMPUTER FILE SYSTEMS

ARE NOT WHAT MOST PEOPLE THINK.

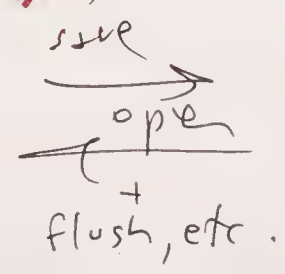


} hierarchical



THE TRUTH:

A file system is a program that satisfies "file system" interface



HIERARCHY NOT NECESSARILY NON STRICT.

Hierarchy has been put a convoluted mess!

In the VMS operating system

~~save sam, version 3~~

open sam 2

open ~~sam 3~~

open sam



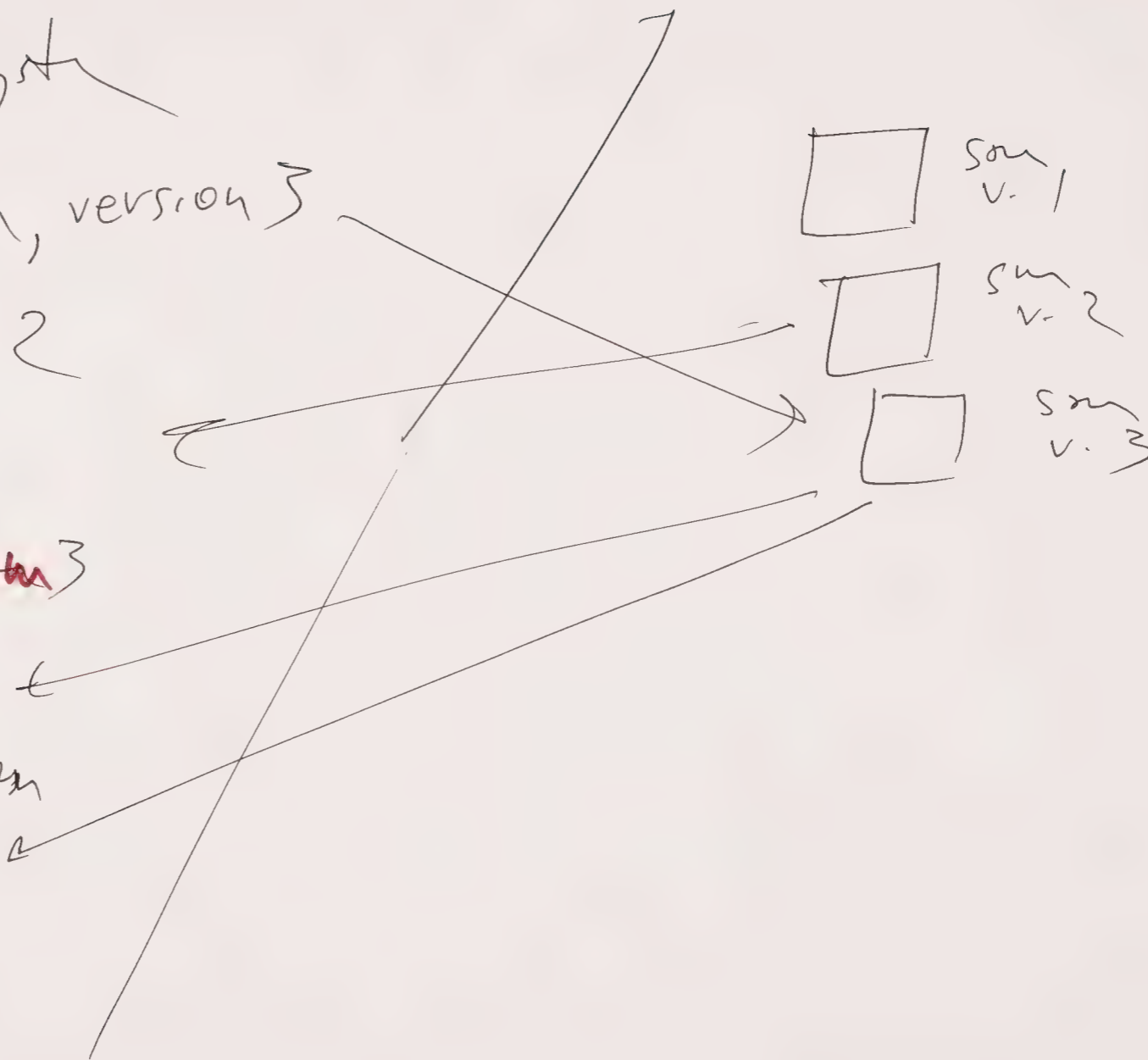
sam v. 1



sam v. 2



sam v. 3



FOR NEXT WEEK:

Ken'ichi will send code

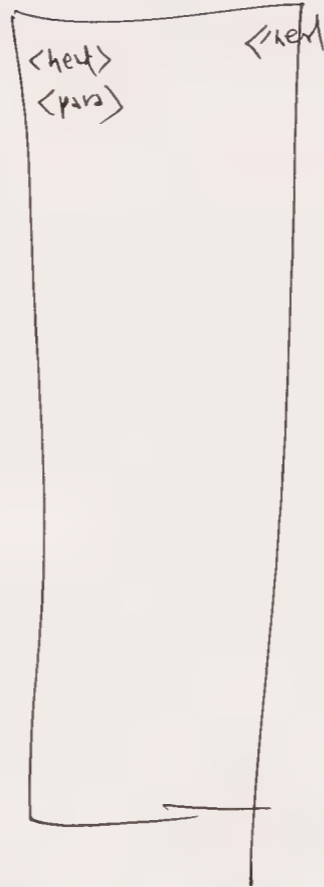
Sho will do a writeup

Atsuko will study previous materials.

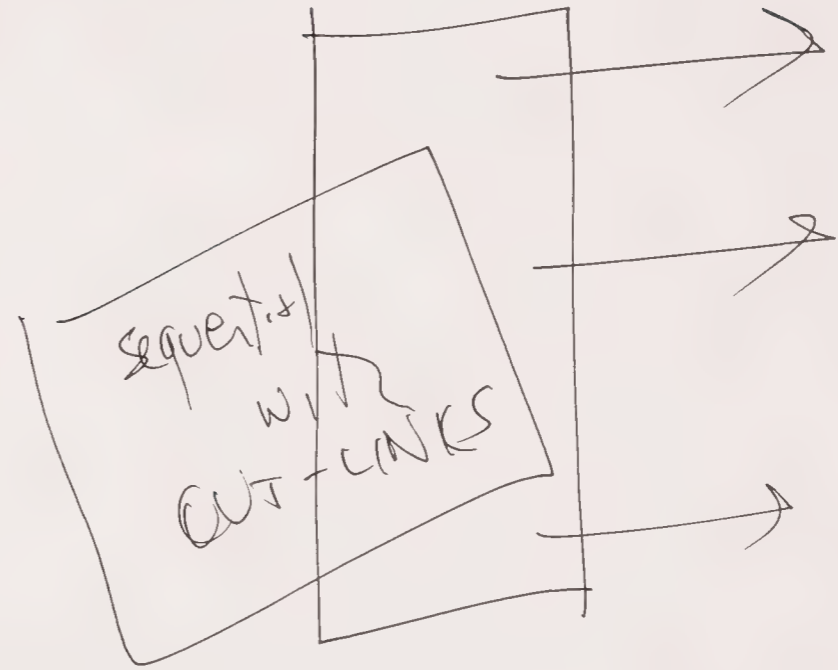
↑
TN will email when ready.

SGML format
for
"structured text"

sequential
object



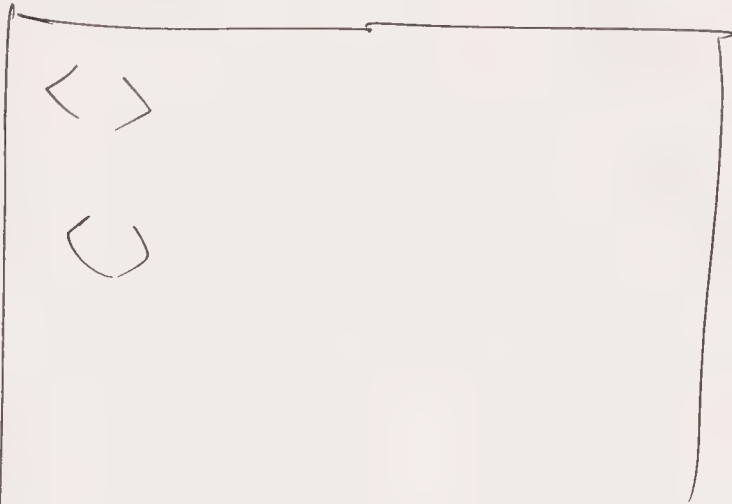
→ HTML



MINIMUM
HYPERTEXT!
sequential
with
simple links

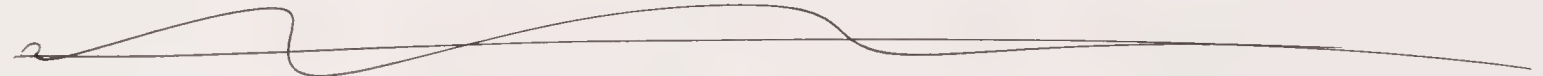
HTML (Tim Berners-Lee) (1992)

format tags
LINK tag



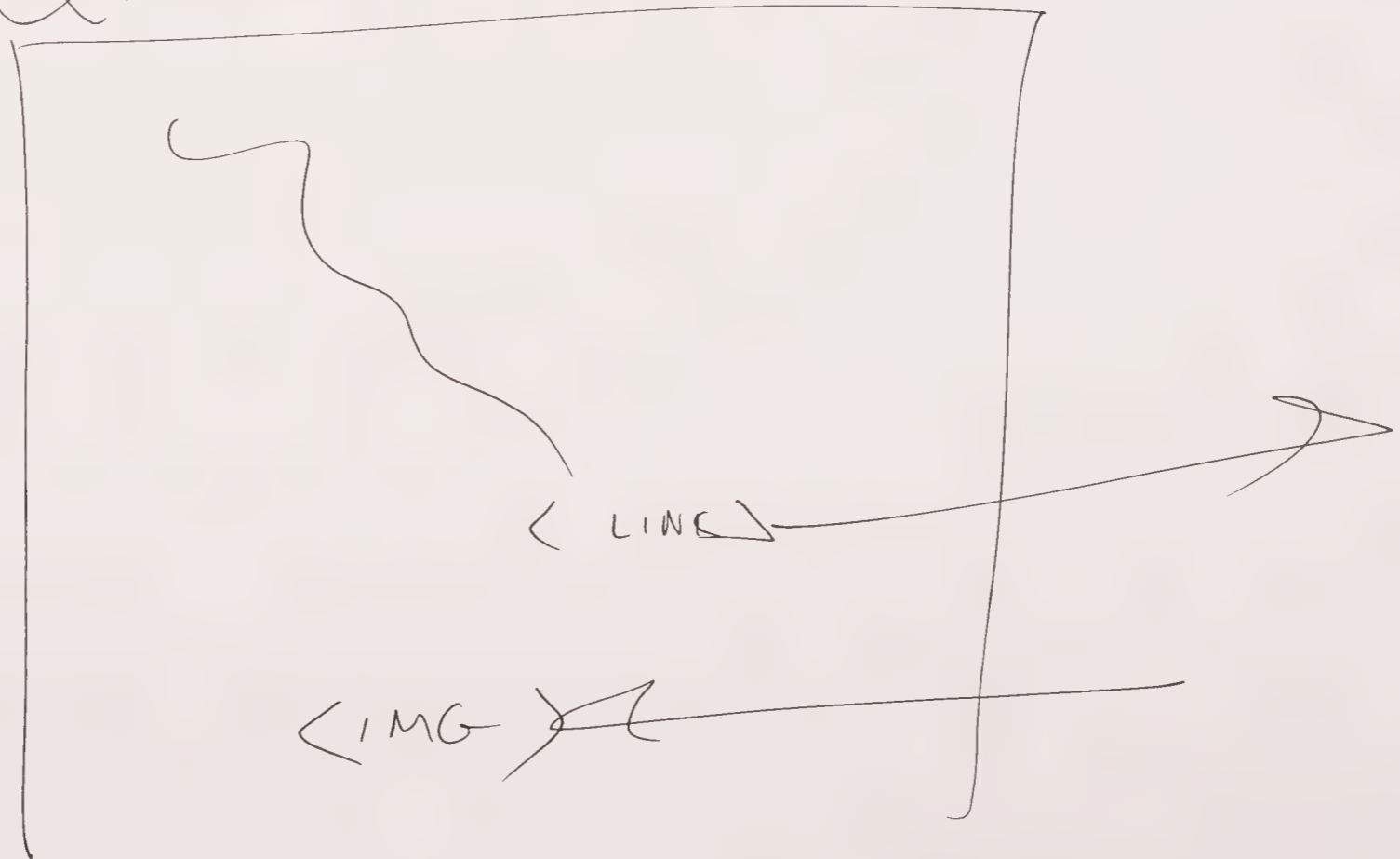
<A HREF = URL /

>



MOSAIC EXTENSIONS TO HTML (Marc Andreessen, 1993?)

SEQUENTIAL



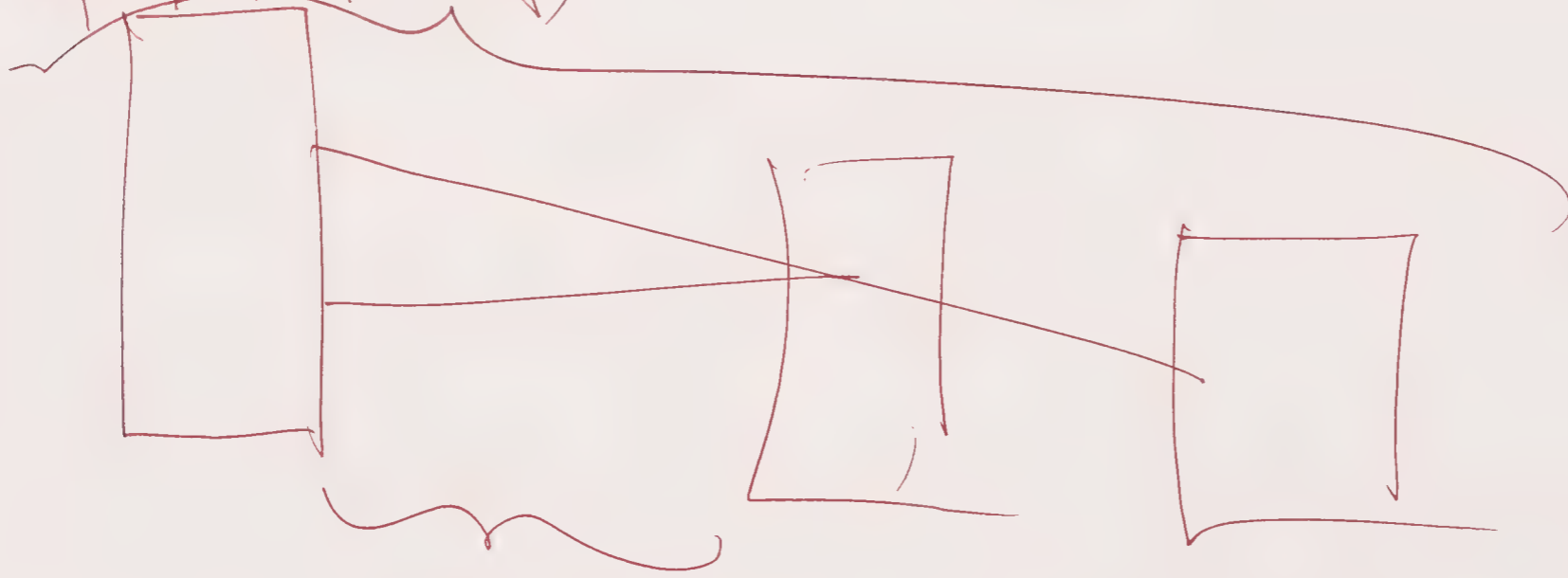
SEP 25 1997

21

NEXT TIME: Ken'ichi / Walkthrough of Code.

HTML is the minimum hypertext system.

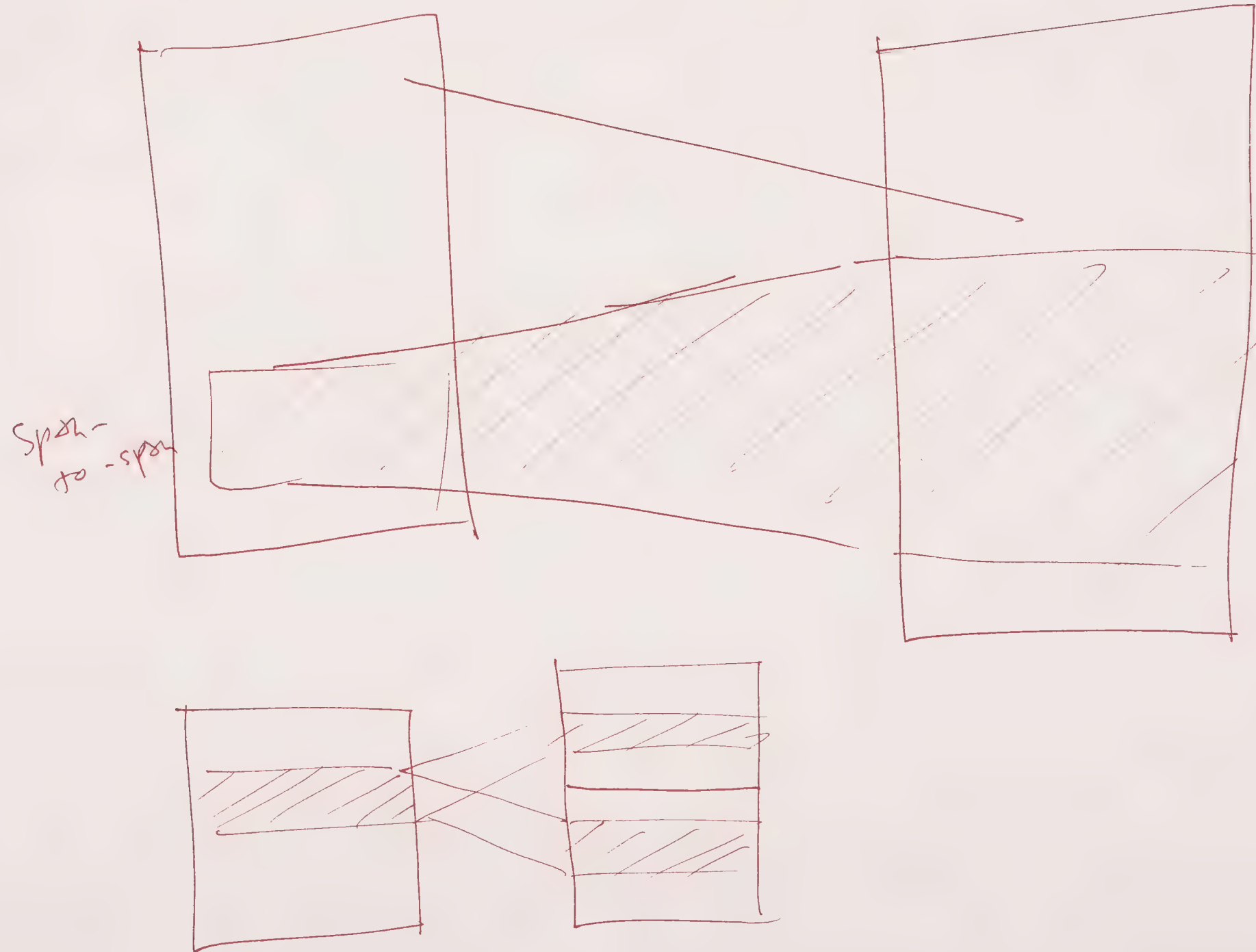
sequential documents



very simple links
point-to-point (anchor)
point-to-page

'BROWSER' idea is stupid! Shows ONLY ONE PART
AT A TIME — AND NOT RELATIONS

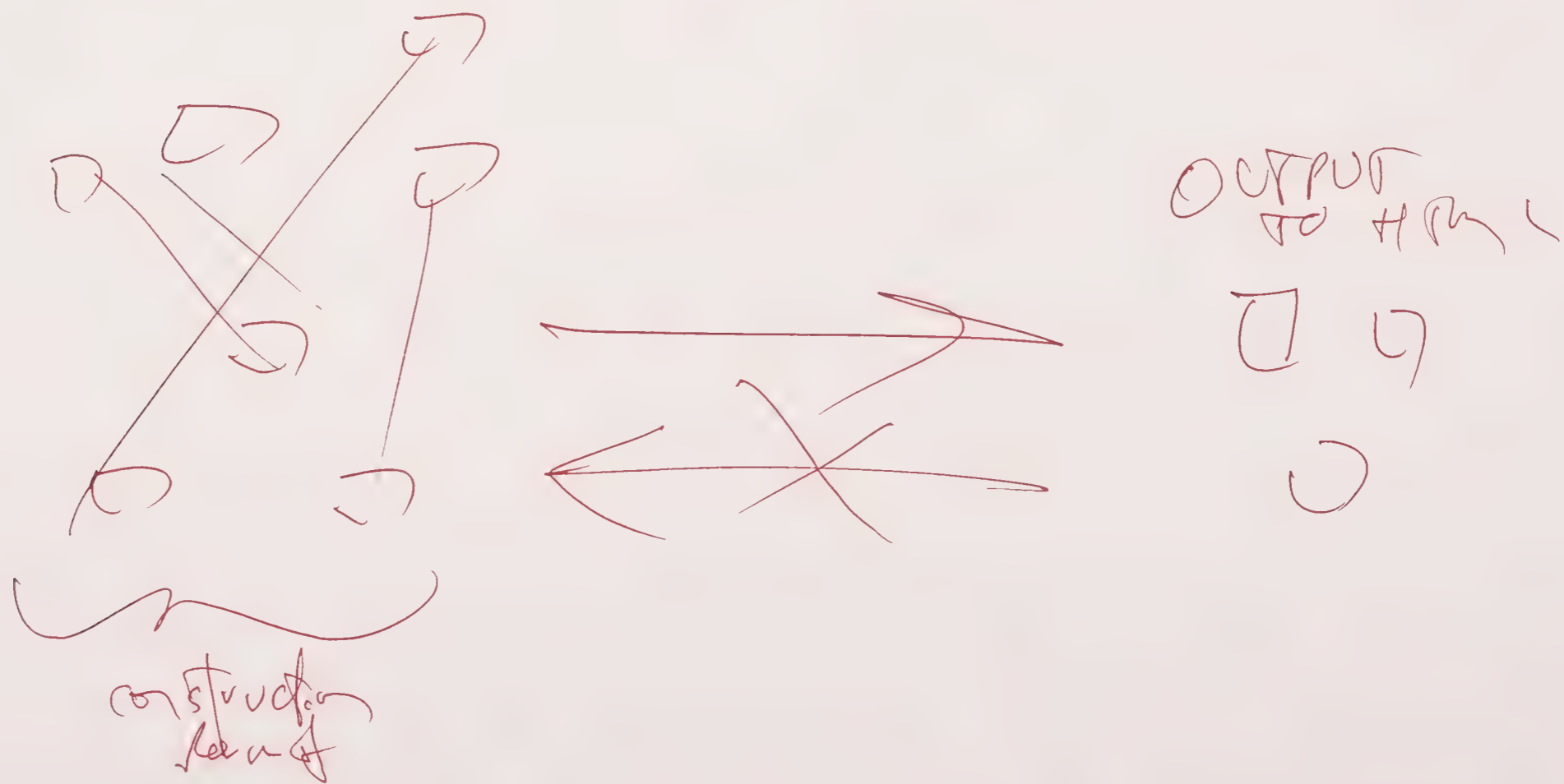
MORE GENERAL SPAN-LINKS



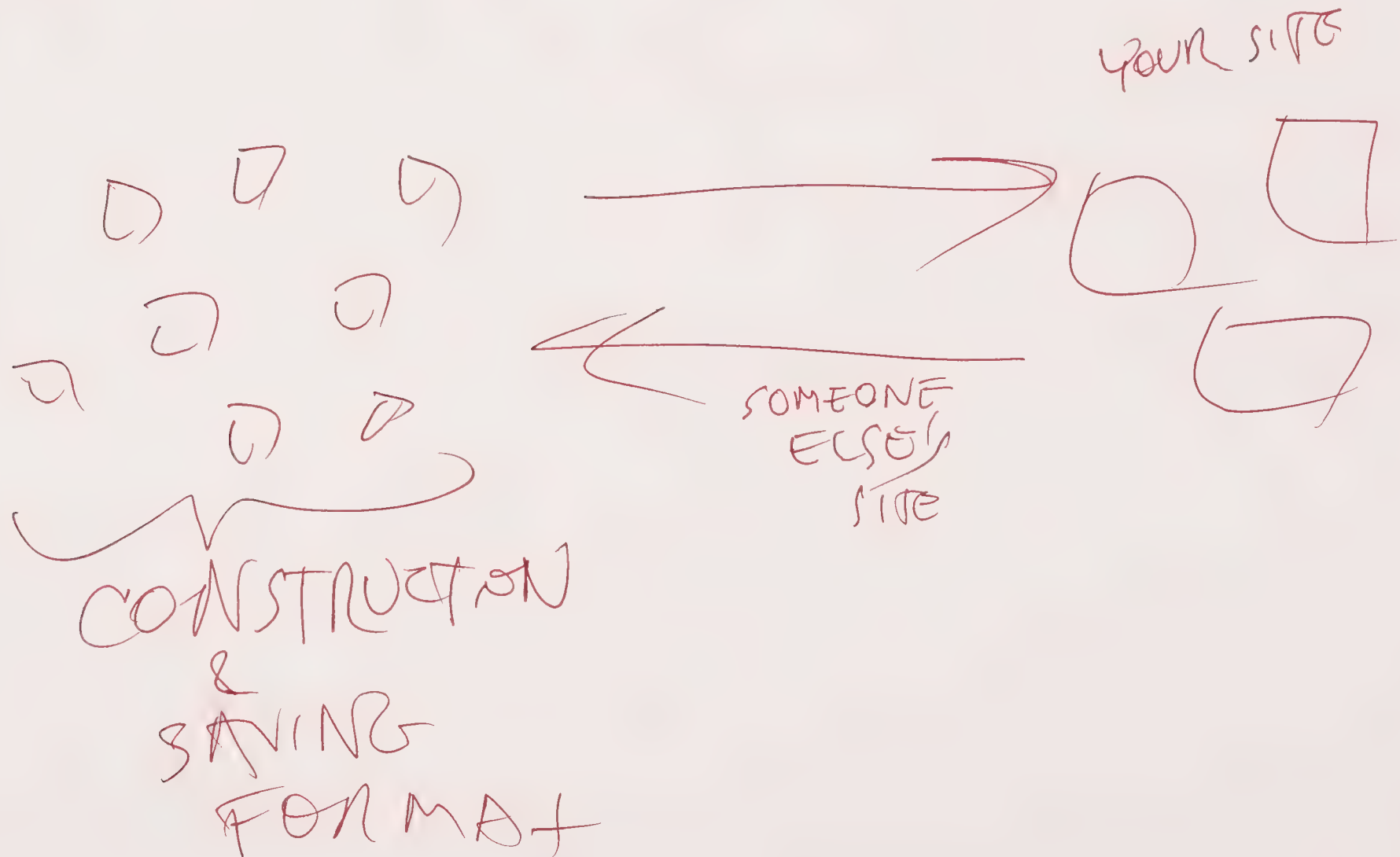
HTML WILL BECOME AN OUTPUT LANGUAGE!

We need to represent a whole site.

Some new systems represent whole sites
but they're UNIDIRECTIONAL



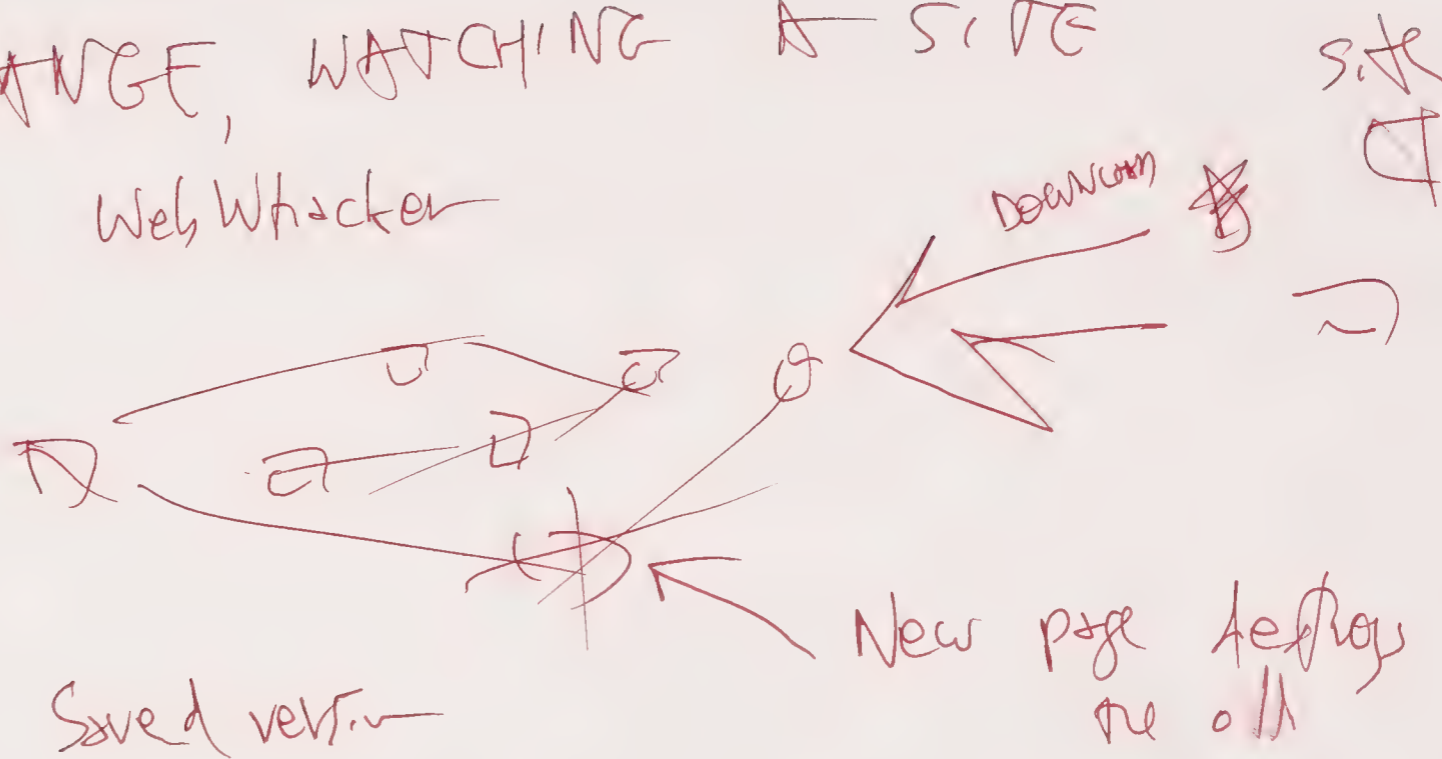
We want a BIDIRECTIONAL
"site" representation





FORMAT FOR CHANGE, WATCHING A SITE

Other people's, eg WebWhacker

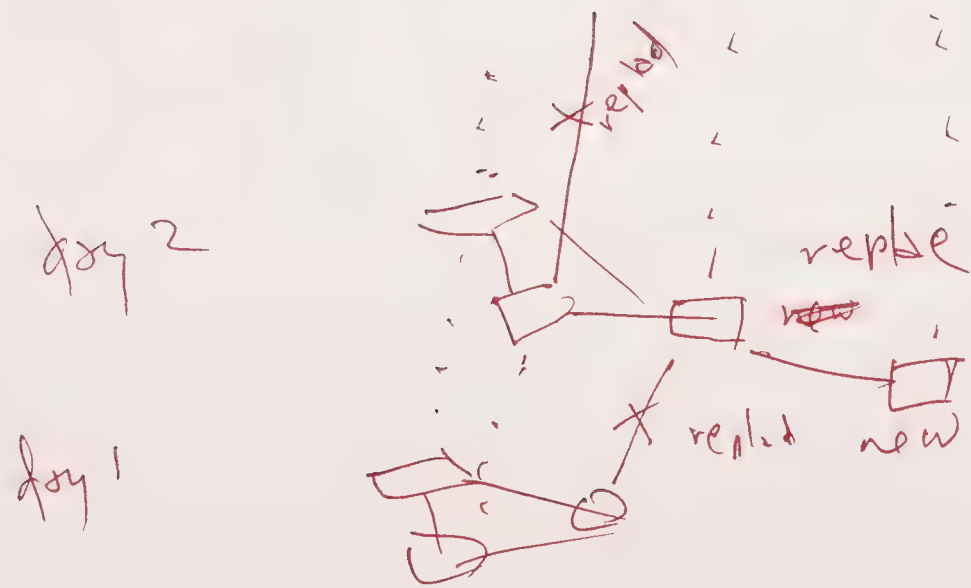


~~WE CREATE A HYPER~~

We want to create

A HYPERTEXT FORMAT

for creating or records evolving state



NUSL or LUX

Universal Structure Language

DEFINE STRUCTURES
& THEN MAP TO CONTENTS

NUSL/LUX



OSMIC
(contents only)

∨

LUX/NUSL level:
You DECLARE OBJECTS
& CONNECTIONS
WITHOUT CONTENT

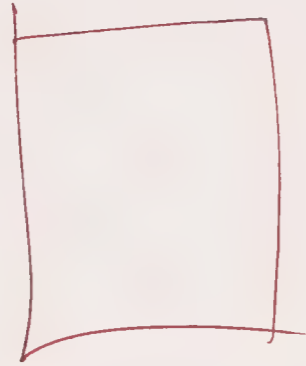
OSMIC level =
connections
implicit in contents

"Anchors"

imply that

LINK-ENDS MUST BE PREDEFINED
AND ~~CANNOT~~ BE CREATED BY USER.

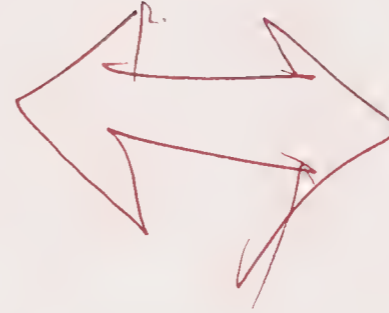
HTWC PR



Anchor



Out-Link



Other floating objects



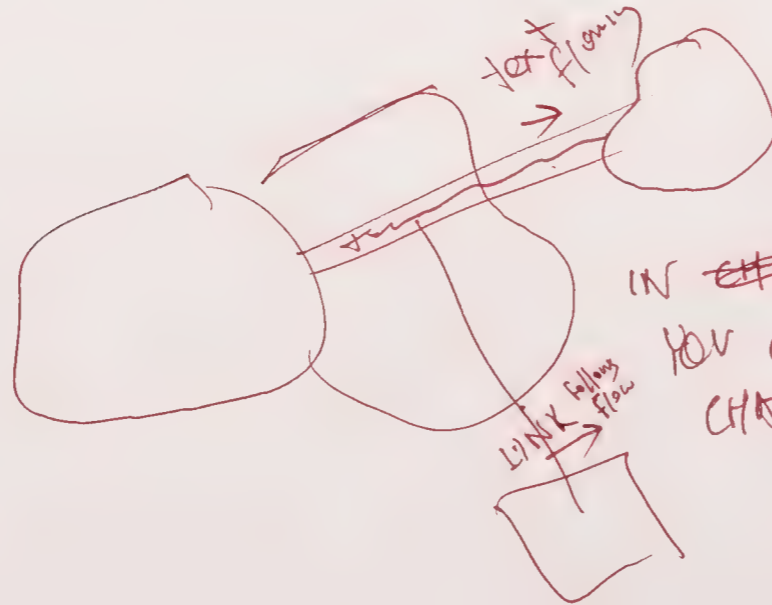
NUSL example of structure

"Flying island" system

Bidirectional
mapping
to
context



~~SYSTEM~~



IN ~~THE~~ UNIX (X)
YOU CAN CONTINUOUSLY
CHANGE THE
SHAPE OF A WINDOW

THE SYSTEM MUST ANSWER THESE QUESTIONS:

Where ^(what page or unit) is $\frac{\text{byte}}{\text{span}} \times \dots$ for users

What context is \dots ? certain object?

Links, trace(users [as "OSMIC])

Low-level connections
(like Anchors)

97.11.06



HYPENSTRUCTURE WORKSHOP

Prof. Ohno,
TN, Ed Hunter,
Yasuke Iguchi,
Y. Yoshida,
F. Ichikawa,
Shu Nakamura.

Keiichi Umase.

Michael Ikeda, Freshman.

↓ Plans for Open Research Forum

7 Keiichi's NEW SUPER DEMO
FX & Audio Forum

NOV 6 1997

PLANNING FOR THE OPEN RESEARCH FORUM.

Alt OSMIC memo —

Prof. O. Tsubo DEVT SHOULD STOP FOR THE FORUM.

∇ Since there's not a lot of content,
it's okay to keep developing
from to be with.

□

NEXT MTC 97.11.13

∇ N documentation
at OSMIC

Kenichi; FINAL MEMO.

NOV 6 1997

3

↓

TRANSAUR JEMO

ON writ for Youvite MONTY.
 SHU will TRANSLATE.

COPYING THE SOURCE
 FROM PERMISSION DOCT
 TO A NEW DOCT.

Youvite will check
 whether Netscape or Unix
 will edit source HTML.



NOV 6 1997

4

FOR (TXT SRC)

We'll demonstrate ~ Windows, ^{Netscape} - Eynik,

You will choose method for N.ongo.

WE'LL DO THEM SEPARATELY FIRST,
THEN COMBINE IF IT WORKS.

NOV 6 1997

5

China: Fogasi's writ the stuff.

THE. WE NEED TO SEE IT!

(O. We'll look it up after meeting.

will do

MII
Transpub dev script

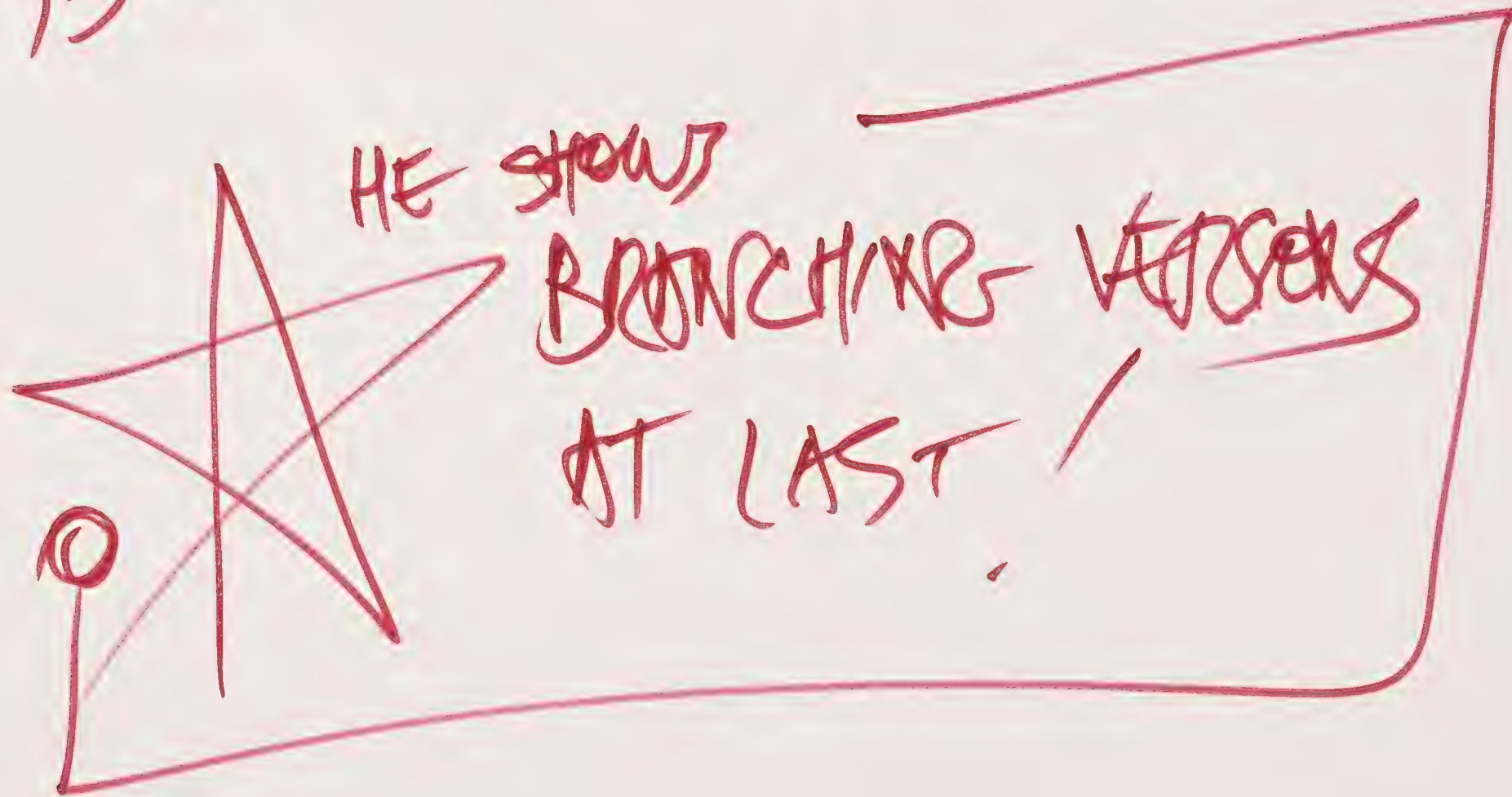
MII
Transpub halouts



MII
BA to SU

★ Kenichi arrives, 5:30.

AnyD new? 'Yes. You'll be surprised.'



NOV 6 1997

8

[Discussion of other formats]

NOV 6 1997

9

~~Fax~~

She has done some prelim. research, found up net.

Sho=

NOV 6 1997

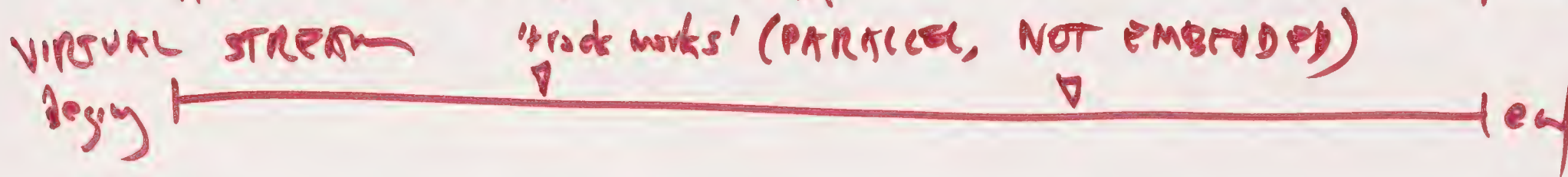
10

MD records 44 kHz (same as CD) but at 8 BITS.

Ed. It's a special compression, may be proprietary.

MD

Has a table of contents ^(rearrangeable), so it can start it w/b. places.



Track-marks are IN THE TABLE OF CONTENTS.

But you can edit.

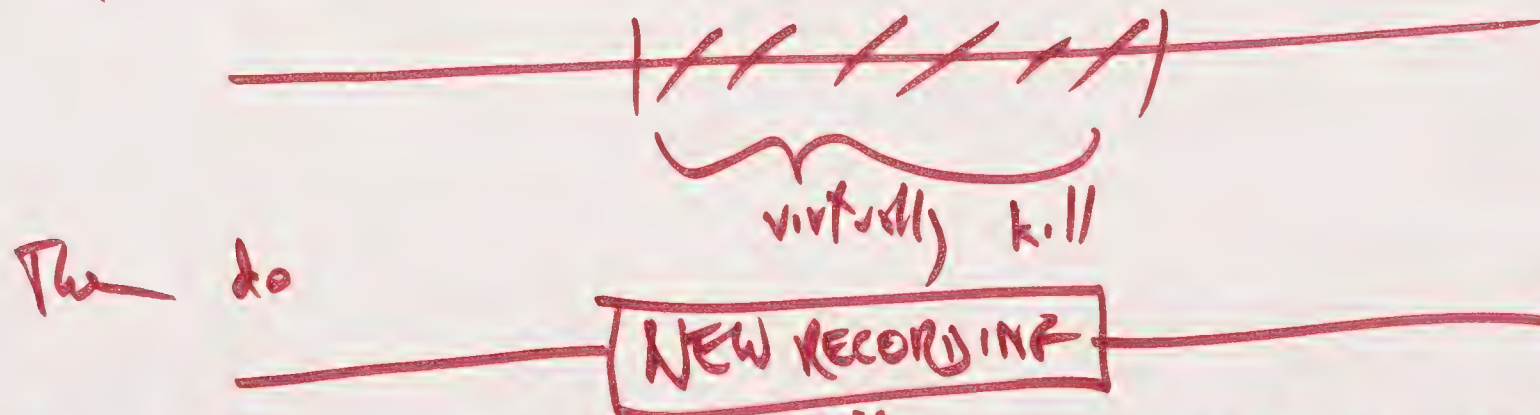


Table of contents ~~edit~~ ^{shows} THE NEW MATERIAL AS SEPARATE.

Max # of ^vtracks may be 128.
virtud

HYPERSTRUCTURE

WORKSHOP

NOV 13 1997



The usual suspects:

JN, Andrew Pan,
Shu Nakase, Keiichi Urase,
Michael Ikeda,
Fumiko Ichikawa, Yukihiro Yoshida.

[Additional scribbles 97.11.27]

- 1 Audio format
- 2 File format

4 REVIEW OF THE SYSTEM

- 7 Links
- 11 Version compare
- 12 Following a link
- 14 Keiichi's design

16 Layers

for

HOW IT SHOULD LOOK

AUDIO

~~NOV 11 1997~~
NOV 13 1997

1

Andrew:

Suggests `.au` as the first ^{audio} format
(Sun's standard, 8k sampling, bytes)

And `.gsun` for the second ~~the~~ audio formats,
~~128 bytes~~ 13:1 compression,
each sample is 33 bytes.

WAV files are a variety, it's
exactly like TIFF.

~~NOV 11 1997~~
NOV 13 1997

2

FILE FORMATS [from Andrew]

- IFF Internal file format?
- TIFF Tagged Internal File Format
- RIF = WAV files
Microsoft bunch of stuff.

NOV 13 1997

According to Andrew,

"ZAPP" software does both Windows & X.

"TWISS" also.

NOV 13 1997

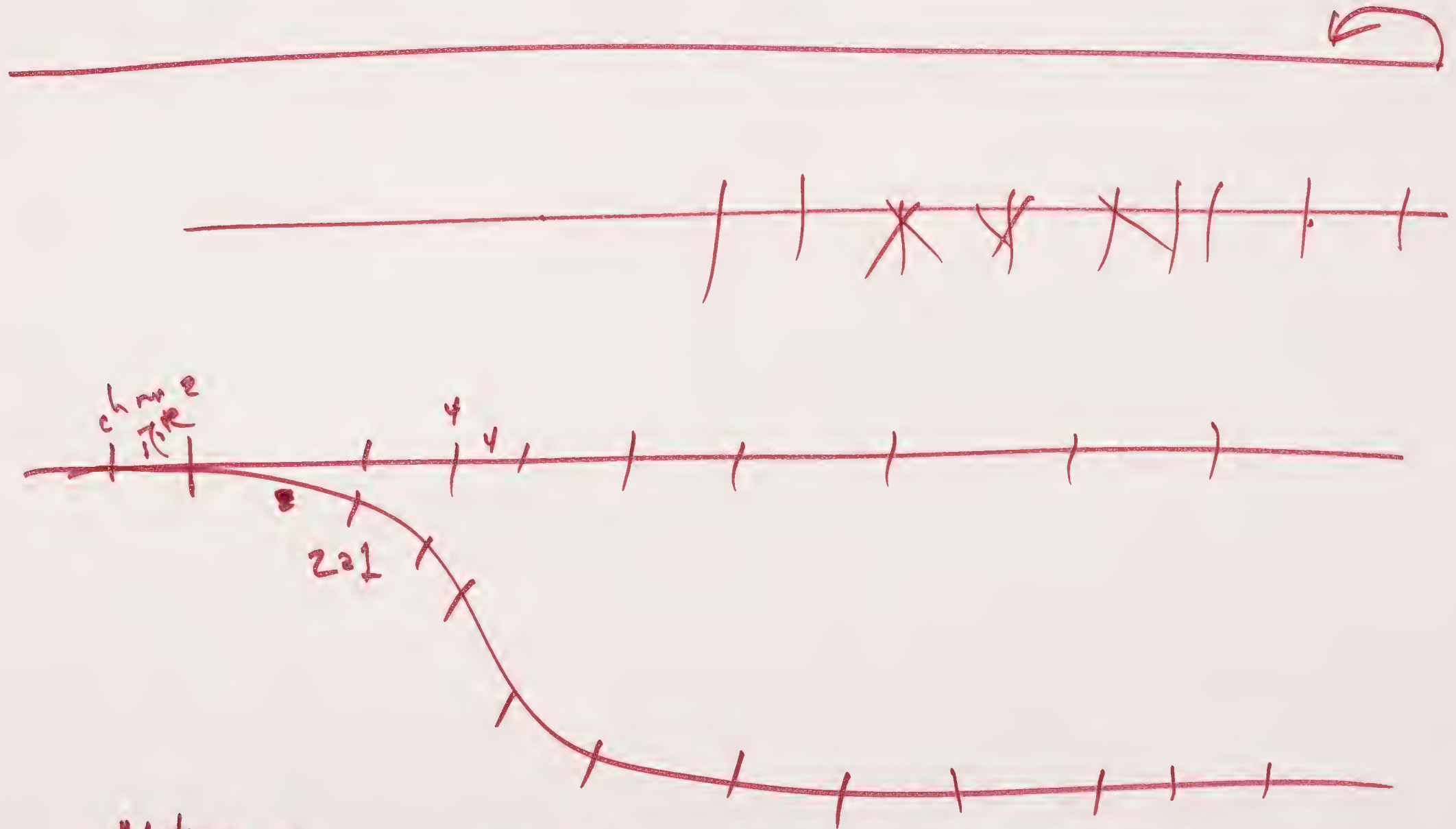
4

REVIEW OF THE SYSTEM —

~~NOV 17 1997~~
NOV 13 1997

5

Going back a fine is not hard —



Not hard — "just follow the map of the edits."

~~NOV 11 1997~~

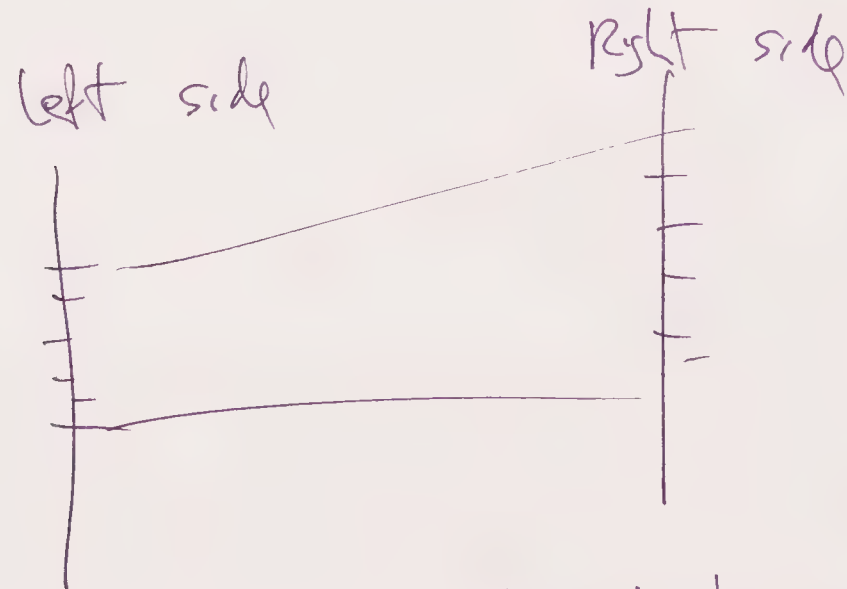
NOV 13 1997

Transcluded material
is not merely 'the same bytes,'
identical in content,
but the same data hereditarily.

NOV 13 1997



LINKS (not embedded but
between dots elements)



The link continues to exist
in every version
where both sides survive.

STORAGE OF VERSION (sequential)

ptr
ptr
ptr
...

STORAGE OF ~~VERSION~~ LINK

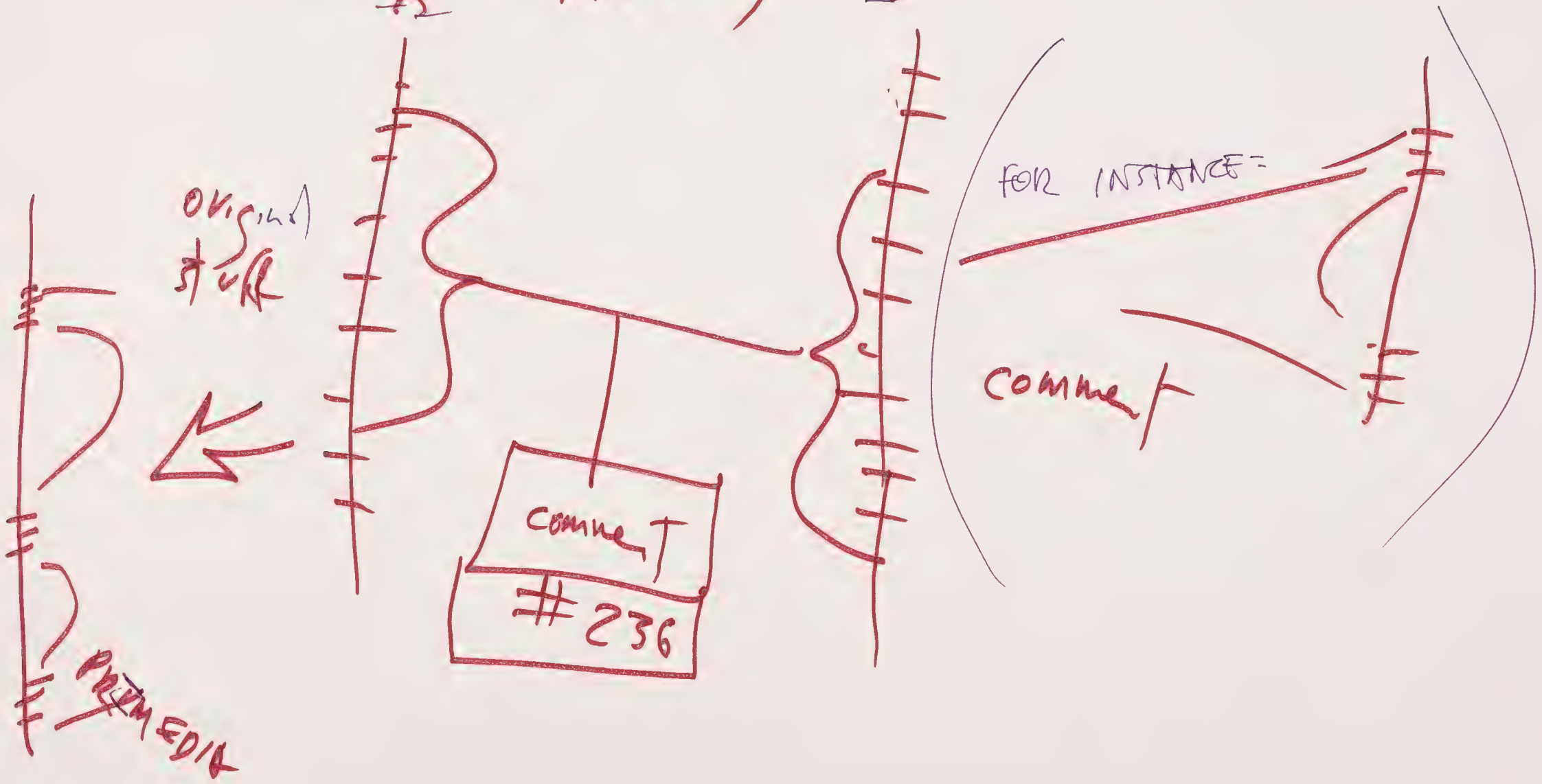
#	type	<u>left side list</u>	<u>right side list</u>
		ptr	ptr
		ptr	ptr
		ptr	ptr
	

How look₁ is represented
smoog dots element

NOV 13 1997

9

VIRTUAL STREAM (possibly late version)

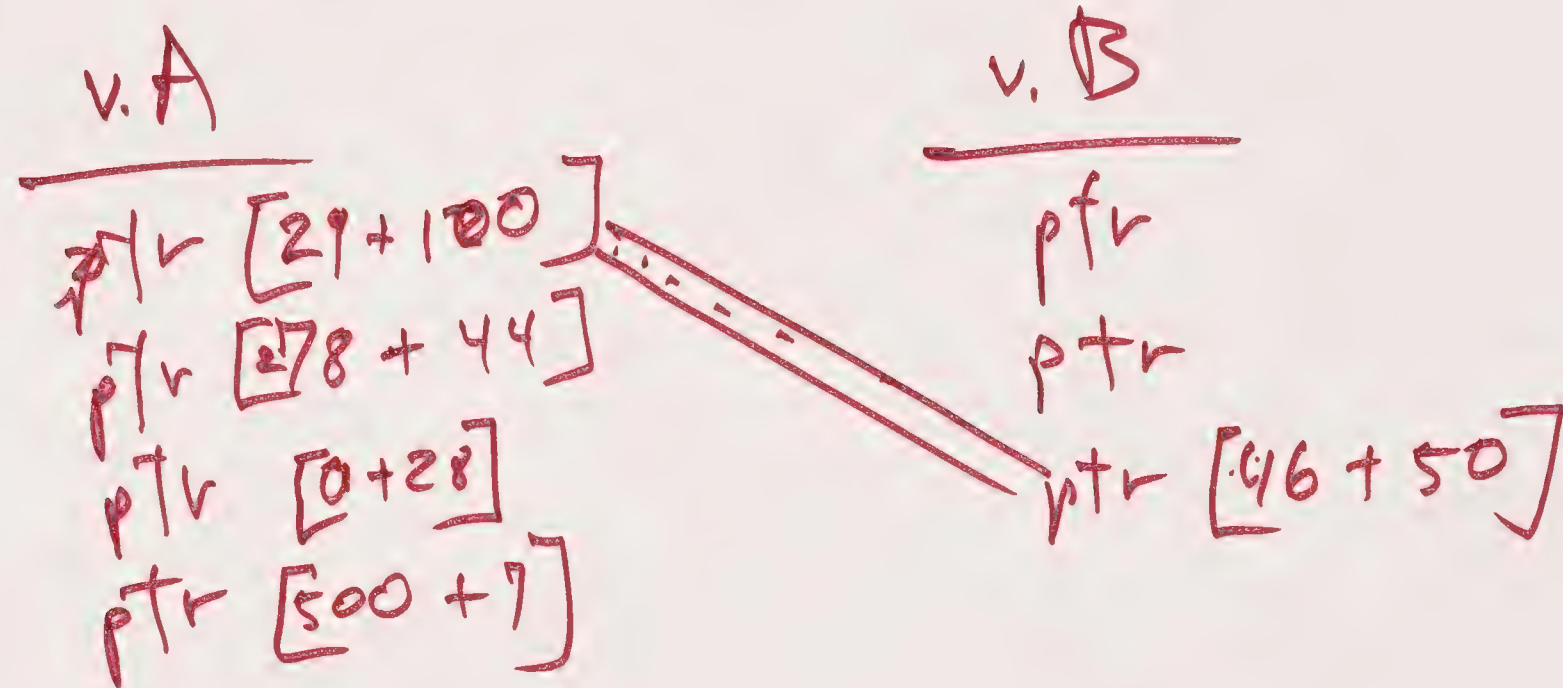


NOV 13 1997

10

VERSION COMPARE -

VERSION COMPARE (easier than following a link)



TO FIND: (STUPID EASY WAY)

convert v.A to ABS. BYTE NOS (list AA) ^{same for v.B (B)} (list AB)

PUT EACH IN NUMERICAL ORDER



COMPARE & DELETE NONMATCHING

↓
 List of abs. bytes shared
 SCAN ~~FOR WHICH~~ list AA & AB for shared bytes
 SHOW THEM

NOV 13 1997 12

FOLLOWING OSMIC
AT₁ LINK —

TO FOLLOW A LINK (harder)

- ① REDUCE TO LINKS YOU WANT TO CONSIDER
(preliminary) a PART OF DOCT TO CHECK
- ② PROCEED AS FOR VERSION COMPARE, COMPARING
~~ON~~ EACH SIDE OF LINK TO DOCT
This finds the elements of each link
which are in document
- ③ "Show Them" (interface issue)

NOV 13 1997

14

(Kenichi's diagram follows)

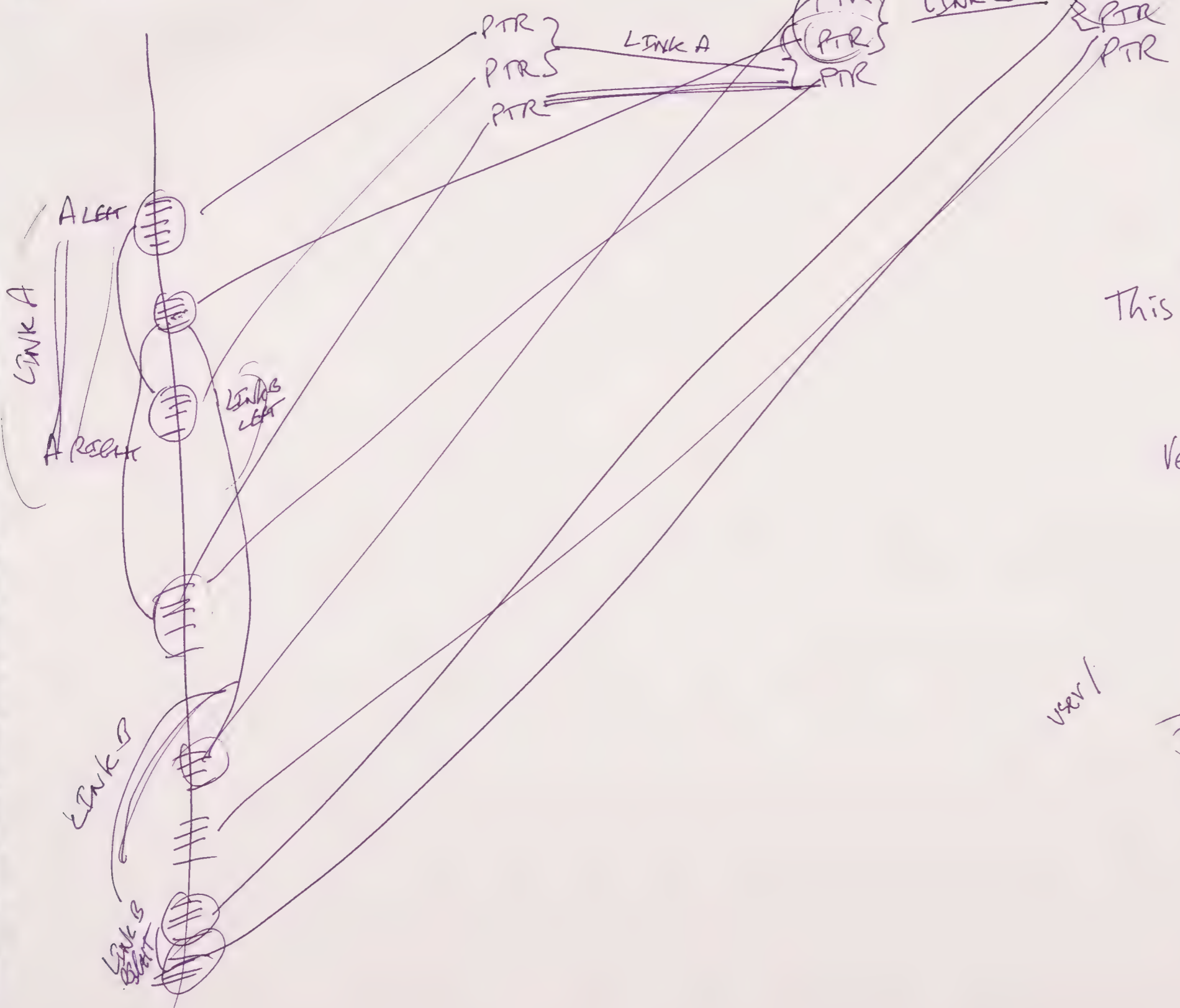
LINKS PRIMEDIA

VERSION A

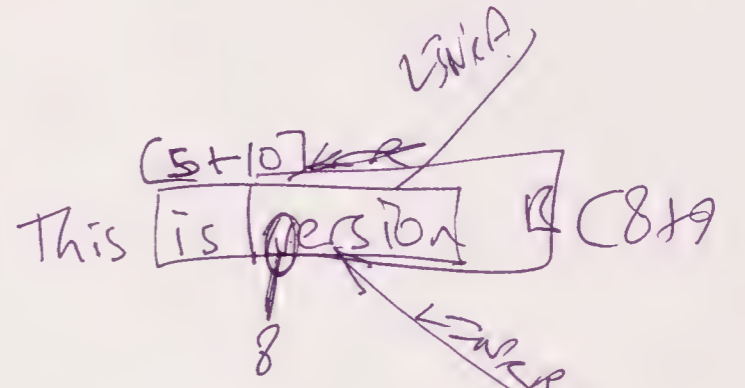
VERSION B

VERSION C

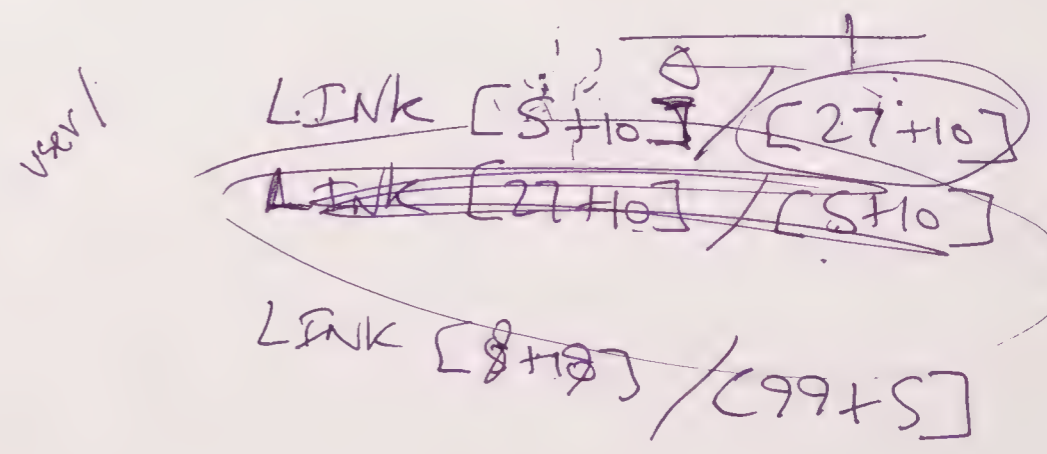
NOV 13 1997 15



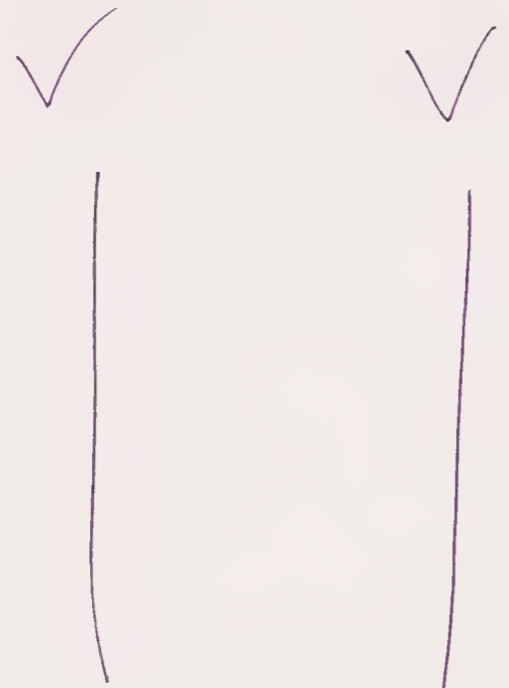
Here is vers A



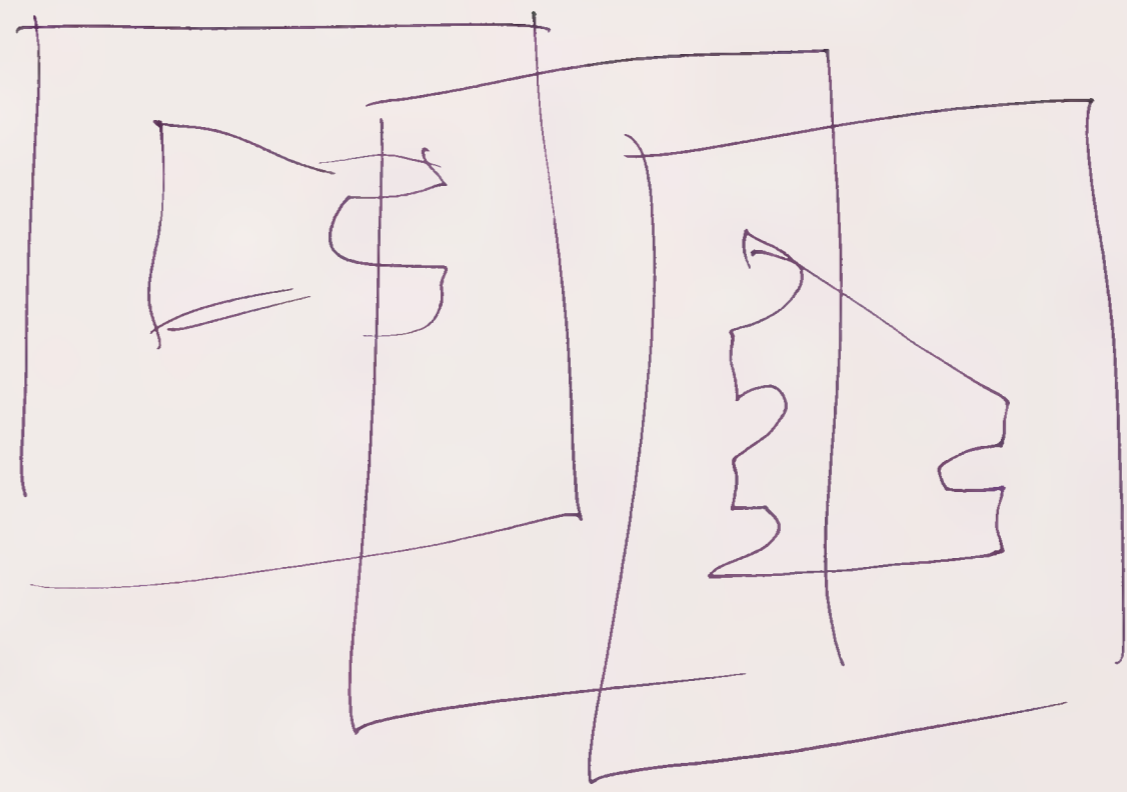
Version C looks like this
[27+10]



[*Final vs versions*]



Links



Layers

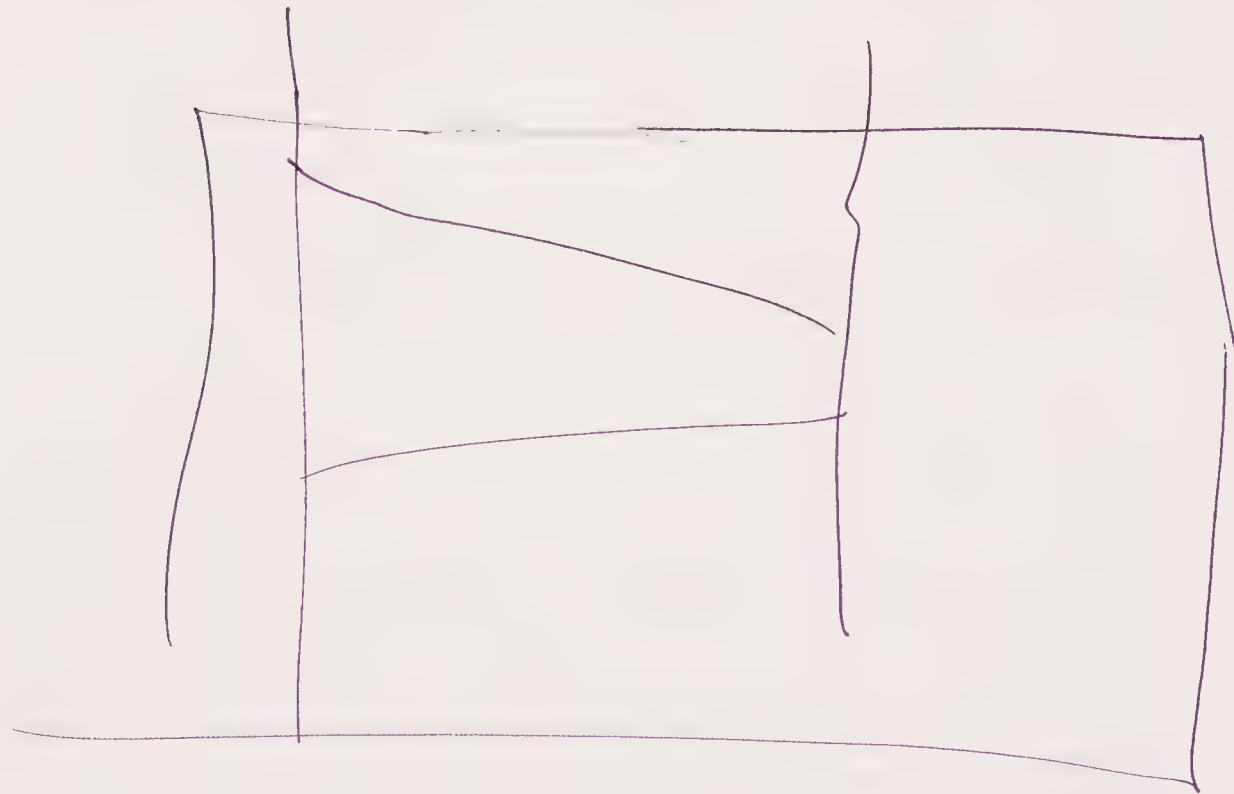
NOV 13 1997



[eventual version]

VVA

VVB



VERSION COMPARE INTERFACE

VV1 VV2



show up some differences in VV2

As it e-works - parts not match

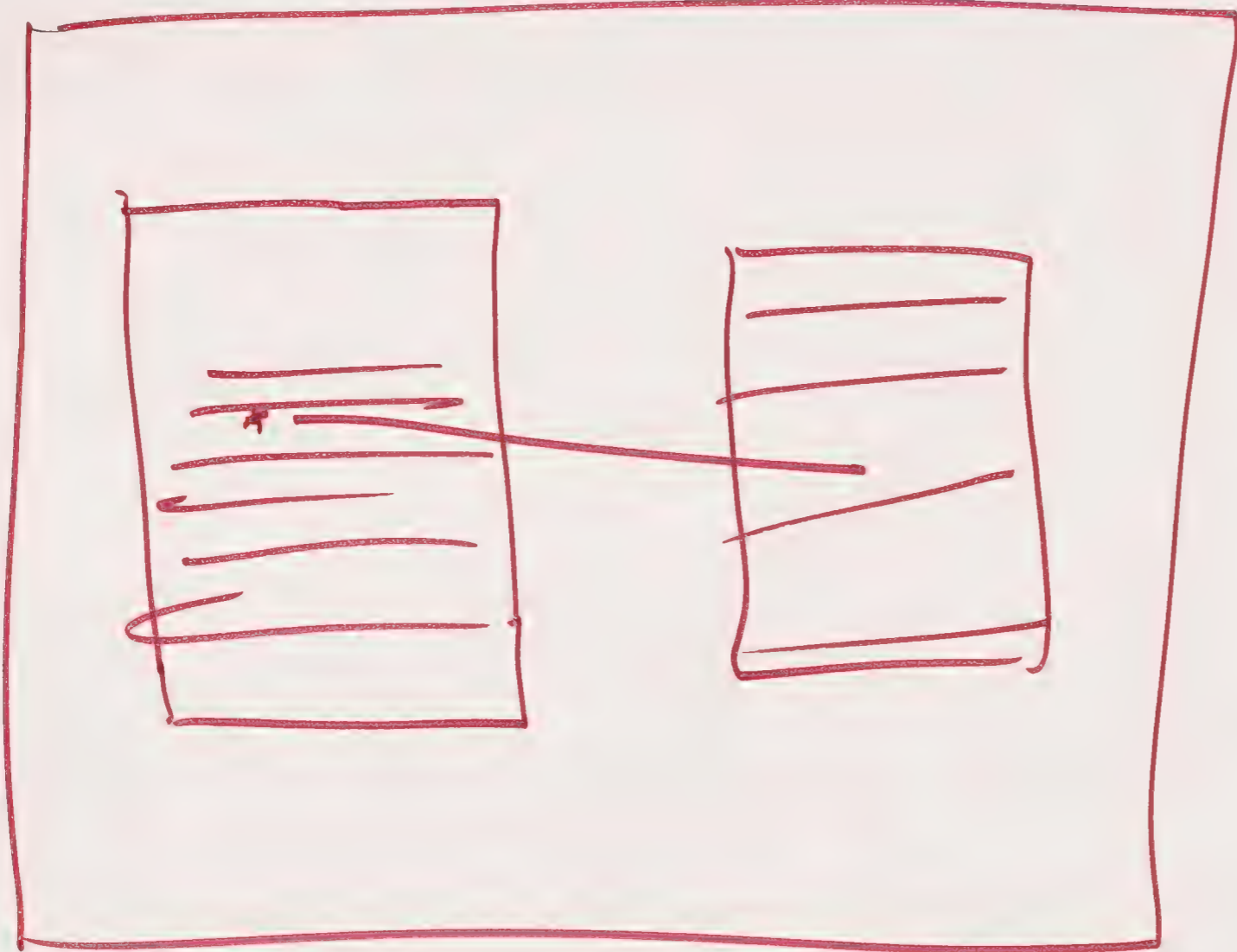
NOV 13 1997

19

HOW IT SHOULD LOOK

The PARALLEL TEXTFILES -

NOV 13 1997 20

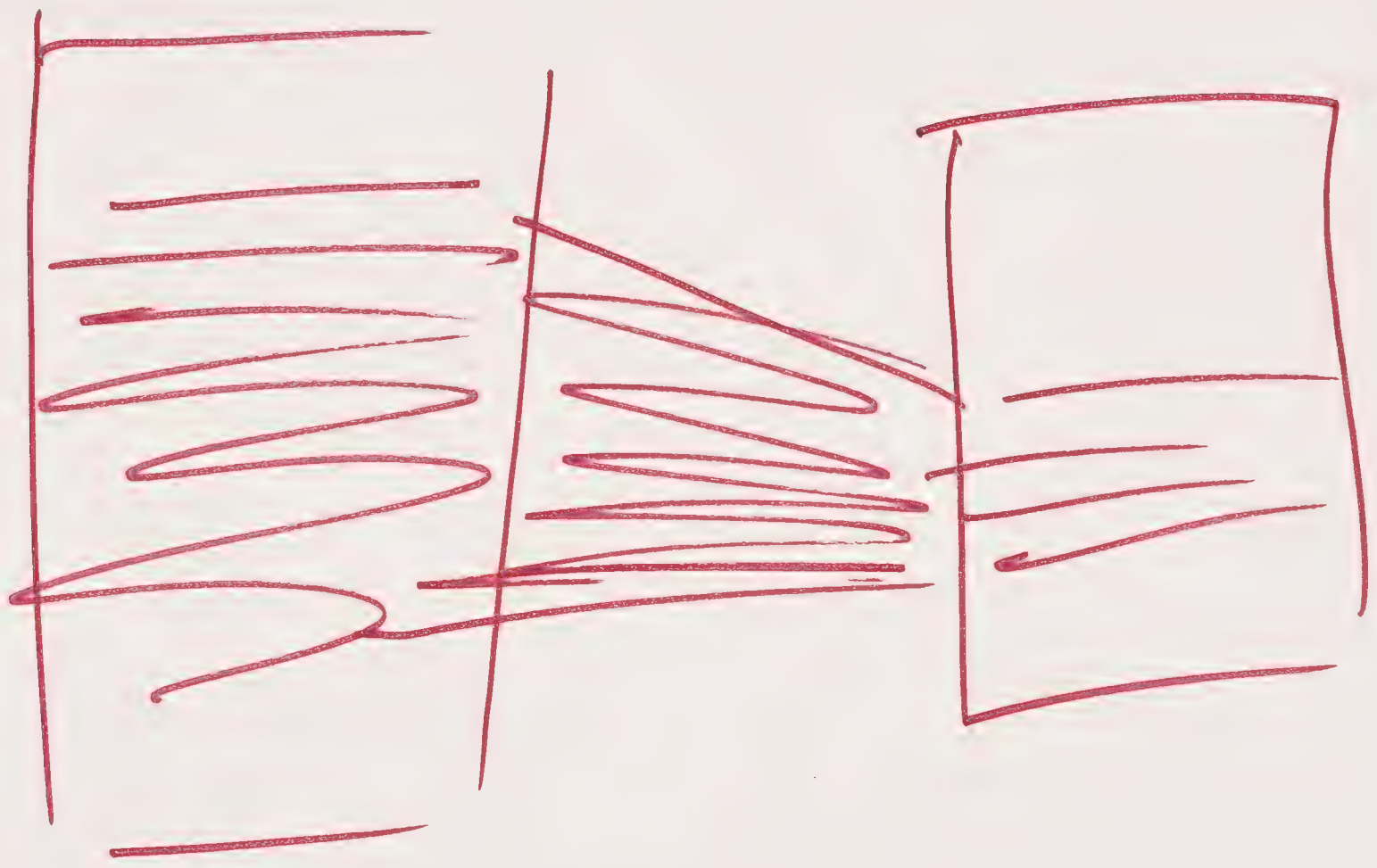


Idea
T. Nelson, ~1968

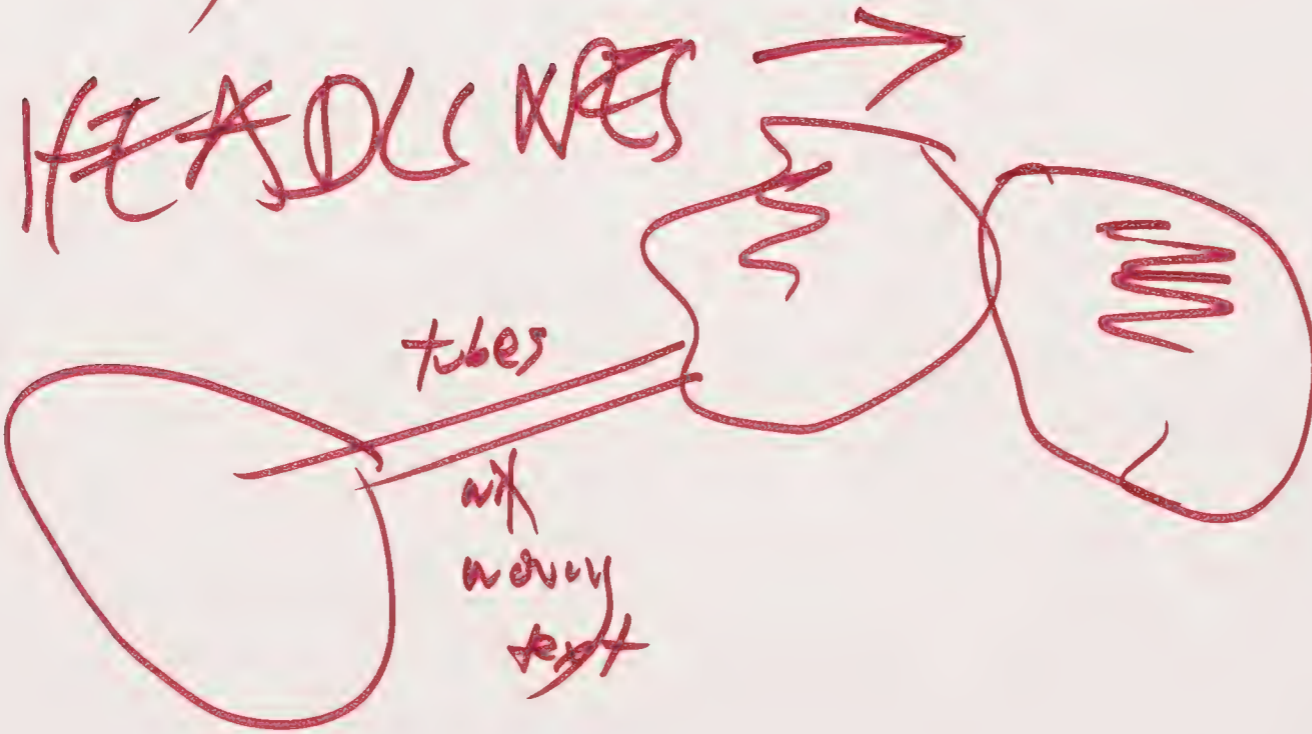
Implementation:
I. Herz, 1997

How it would look for transclusion

NOV 13 1997 21

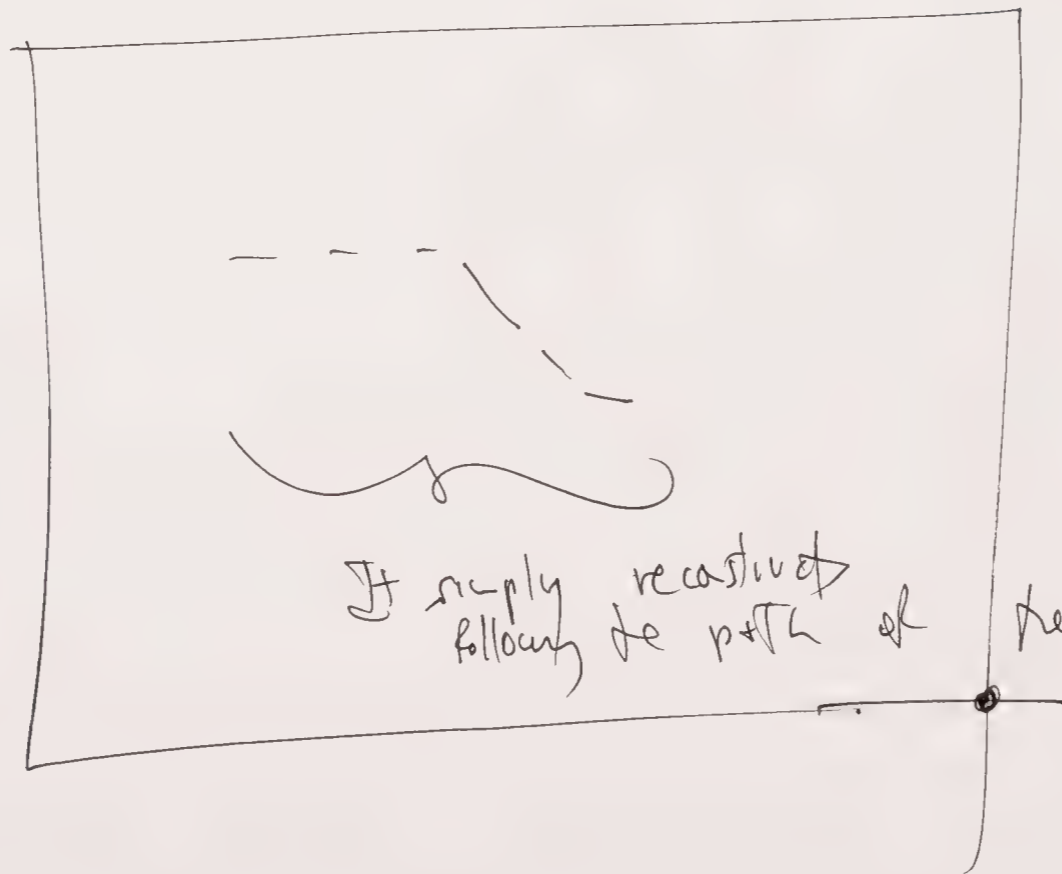


"Flying island" hypertext



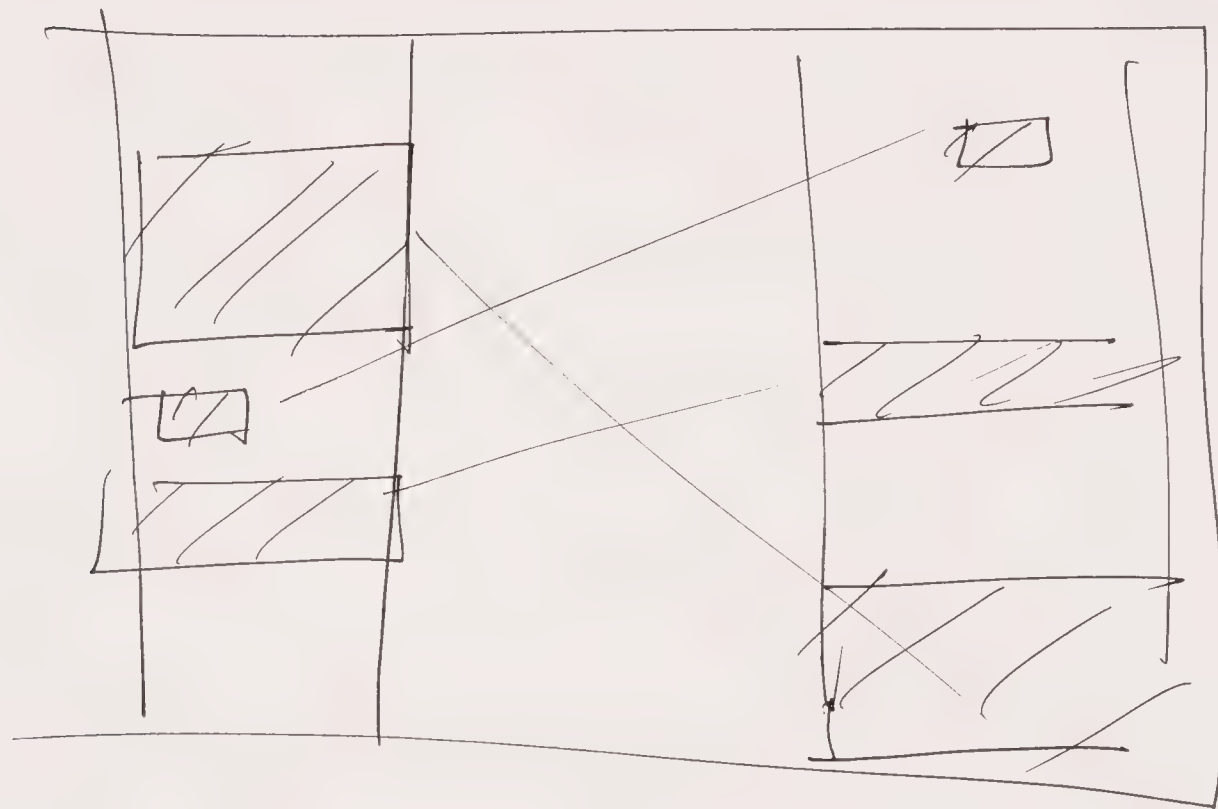
[Ken'ich. gets it. /]

How KEN'ICHI'S SYSTEM WORKS —

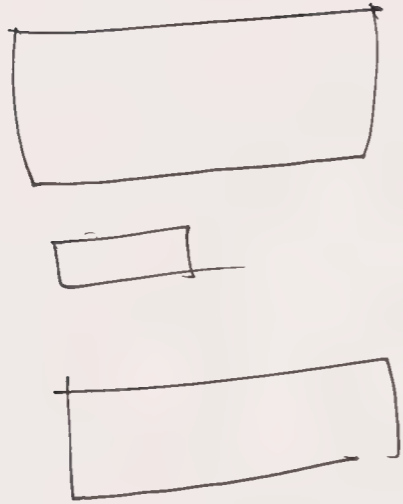


It simply reactivates
following the path of the selected edit.

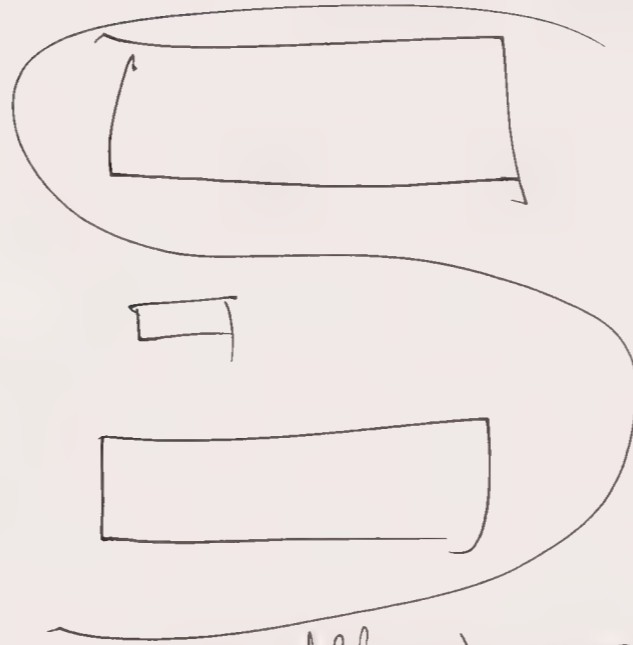
IF WE HAD THE CLASSICAL PARALLEL TEXTFACE —



v1



v2



different ~~version~~ sequence

same pieces



EMACS

SEQUENCE	OUT OF SEQUENCE

↑ open to see contexts

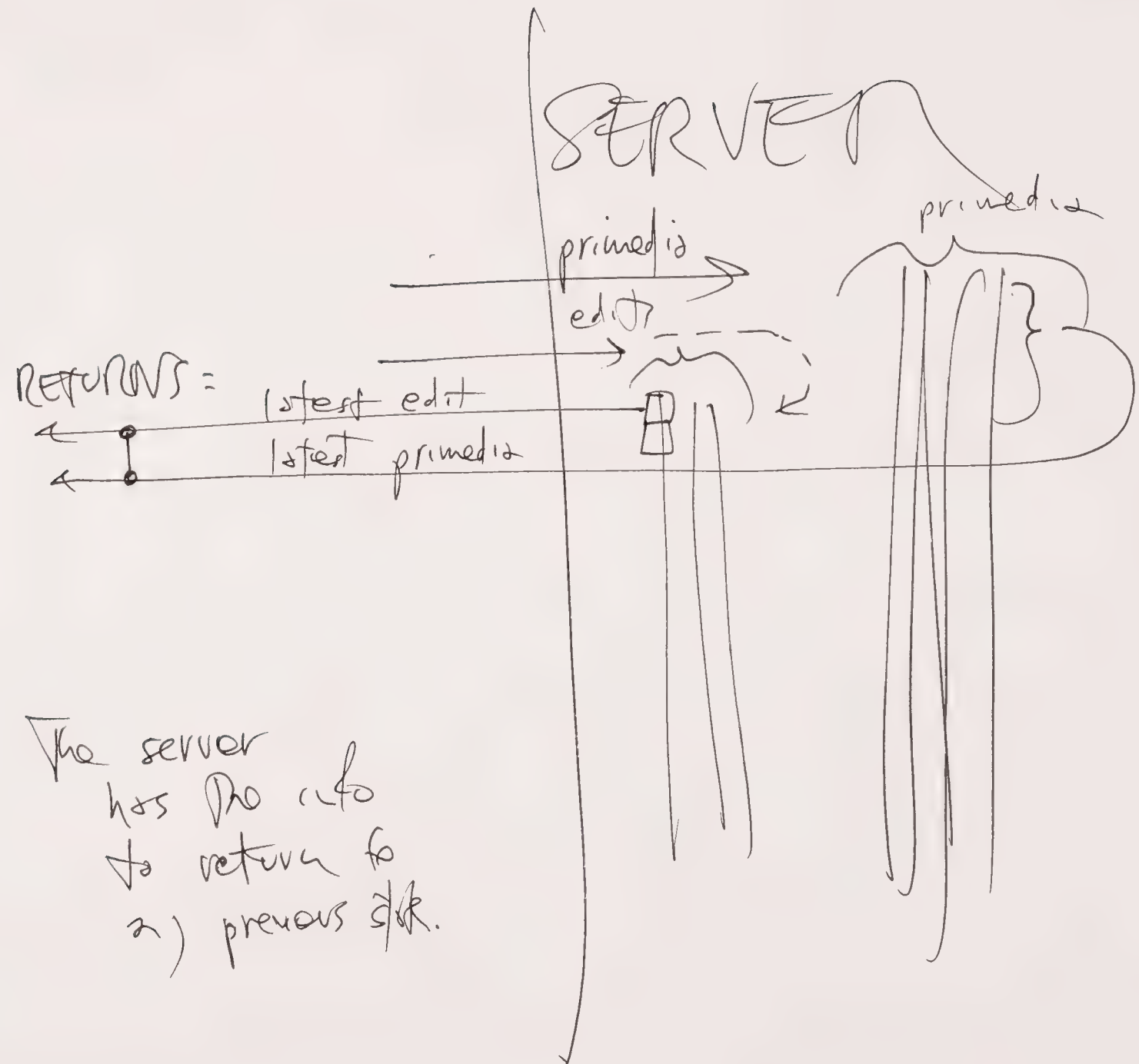
(Ken'ichi demonstrates his OSMIC implementation)

How does he restrict the paths he shows?

IT ONLY SHOWS THE PATH
TO CURRENT STATE.

(Ken'ichi Iwano's ^{OSMIC} ~~low stroke~~ ~~system~~ ~~system~~)

~~THE BRANCHES ARE THE PAGES.~~



The server
has no info
to return to
2) previous state.

PAPER

Intl Stds

A4

A5

B4

B5

USA

8 1/2 x 11

8 1/2 x 14

NOTEBOOKS

Intl

2-hole

A4 mult-hole

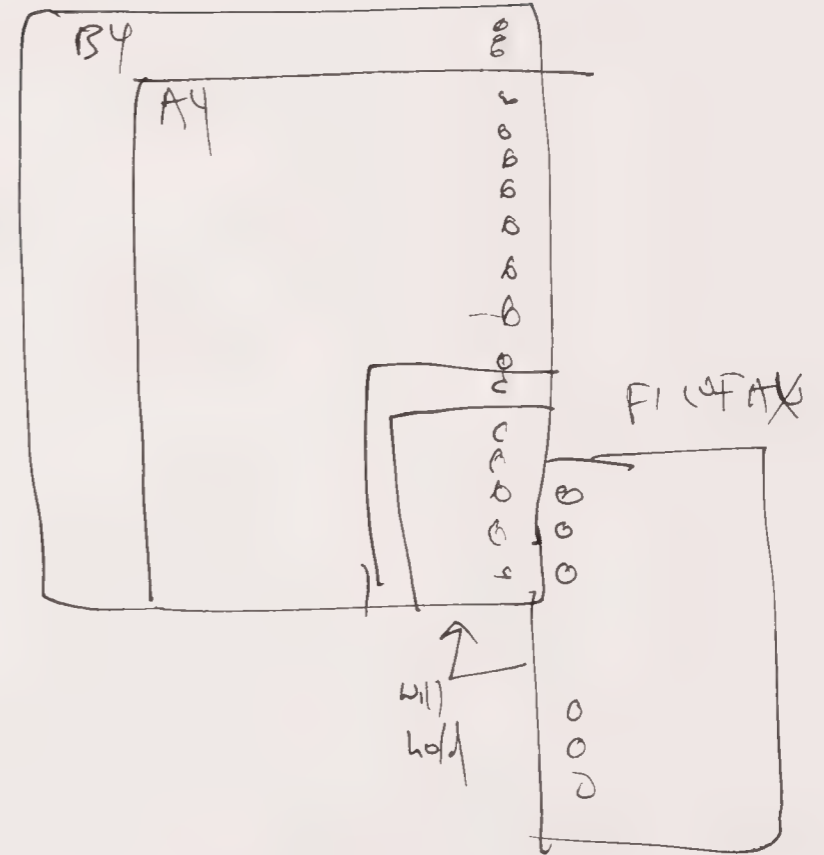
A5 mult-hole

USA

3-hole

British (& Intl)

FILEFAX



PROCESSES IN OSMIC.

- Connection 1 (first connection, remains open to end of session)
- FIRST EDIT OP: Connection 2 (second connection → FIRST EDIT OPERATION)
ENDS WHEN EDIT OP IS COMPLETED
~~and~~ acknowledged by server echo of edit op)
- SECOND EDIT OP = Connection 3 ...

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A*

JFAX.COM

\$10/month

INCOMING
Phone

Fax
or
message



New York



SF



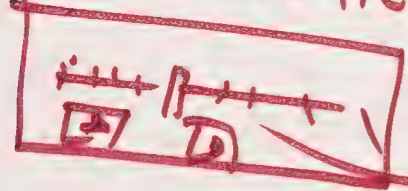
PARIS



LONDON

Internet

AUDIO PLAYER



FAX FRA

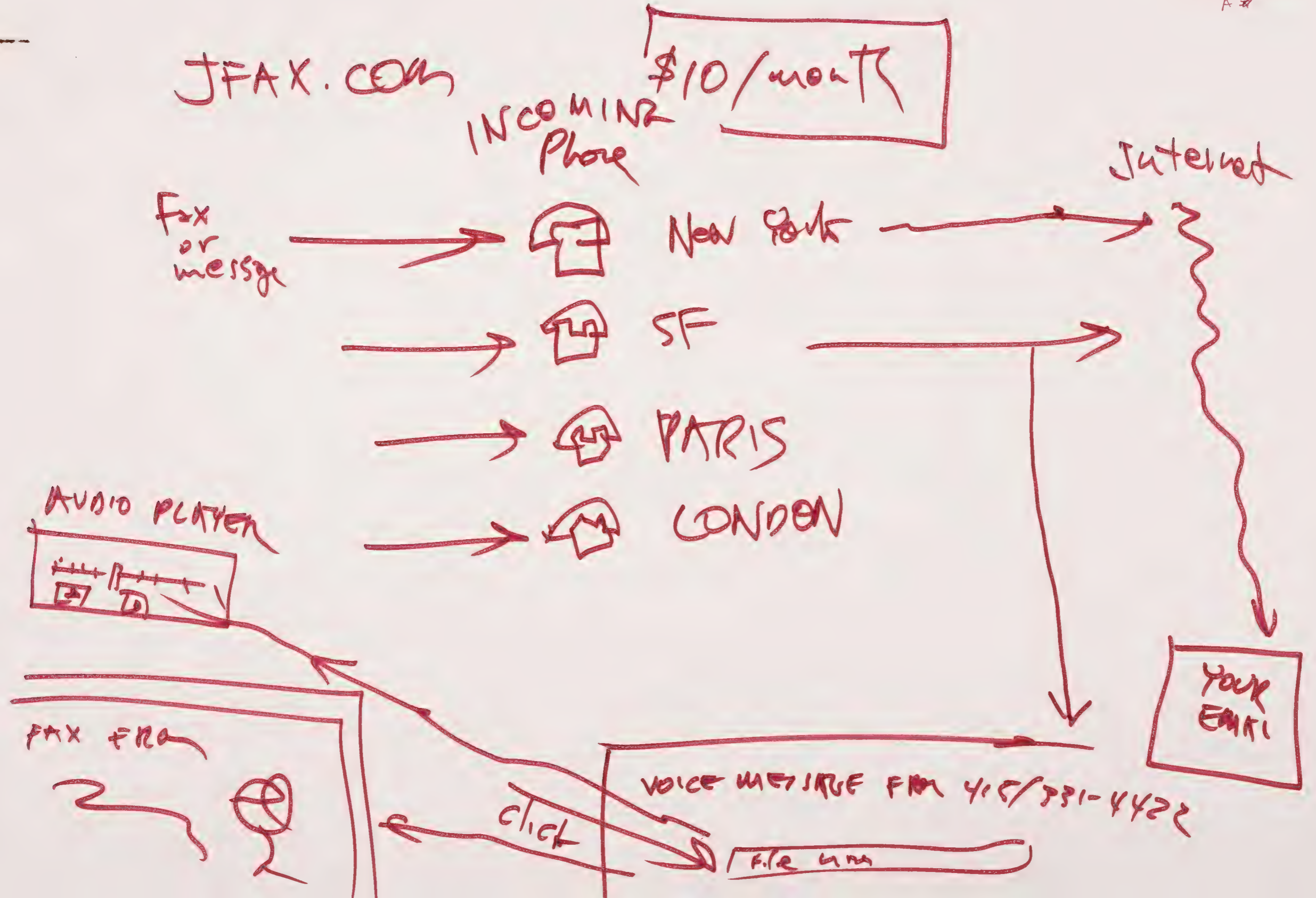


VOICE MESSAGE FROM 415/331-4422

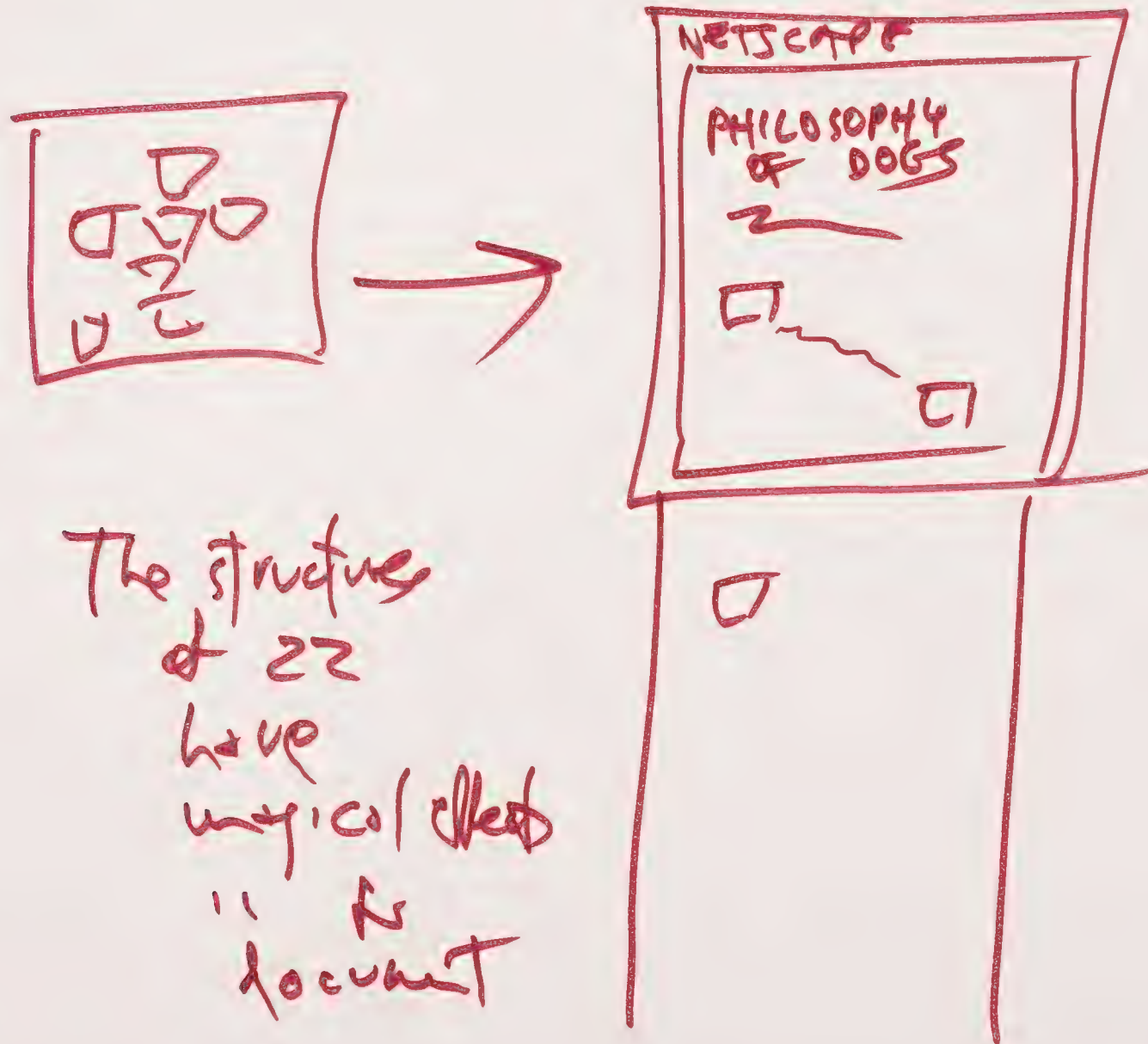
click

FILE LINK

YOUR
EMAIL



ZZ KILLER DEMO



The structure
of ZZ
have
magical effect
" to
document

ZIGZAG WEB SERVER



Threads
or
stories



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&

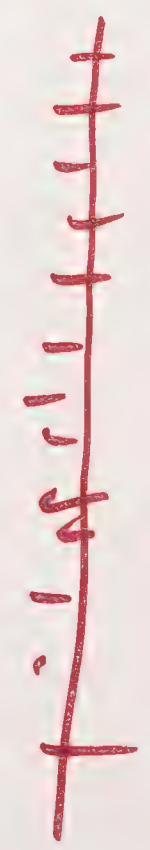


↑
TRANSCLUSIVE
HYPERTEXT
ON
MANY SUBJECTS

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>

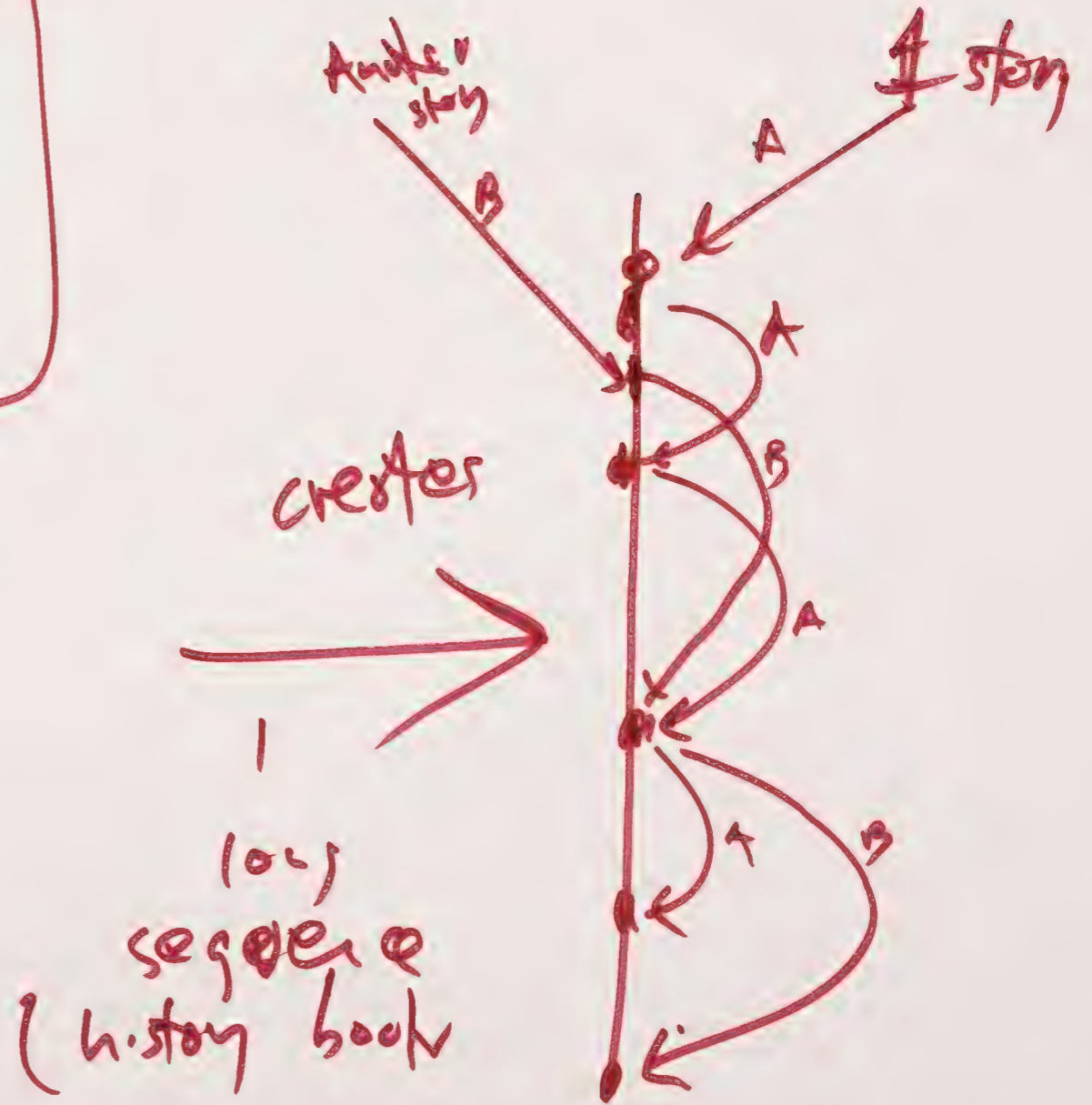
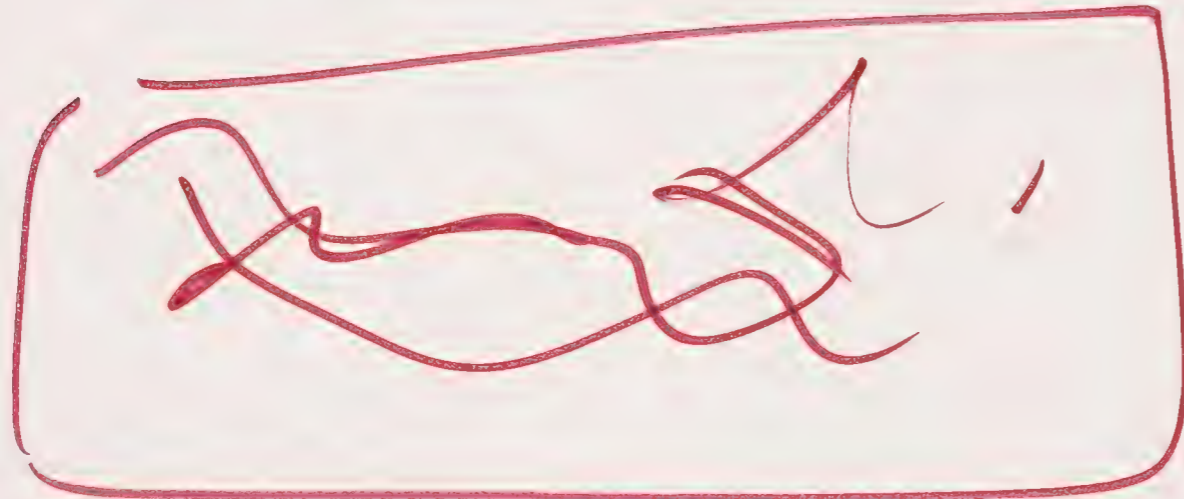
BIG HISTORY BOOK



Sequential writing

~~RR~~

PROBLEM OF WRITER



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F

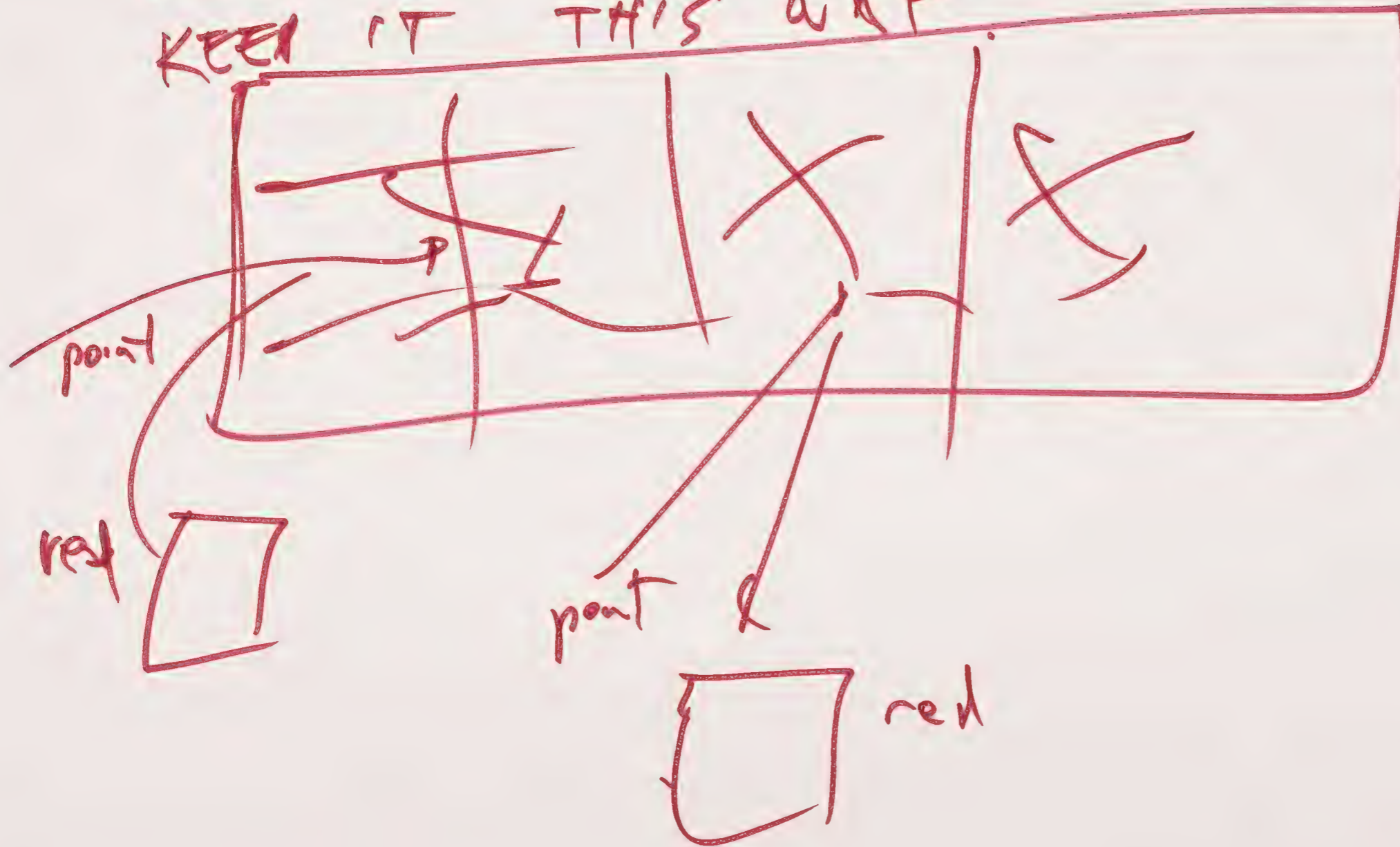
READER'S PROBLEM

— taking of
back output



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↳

ONE SOLUTION:
KEEP IT THIS WAY!



TRANSLUCENTIVE

HYPERTEXT

SEPARATE
STORIES
(SHORT
AS
POSSIBLE)



shared paragraphs

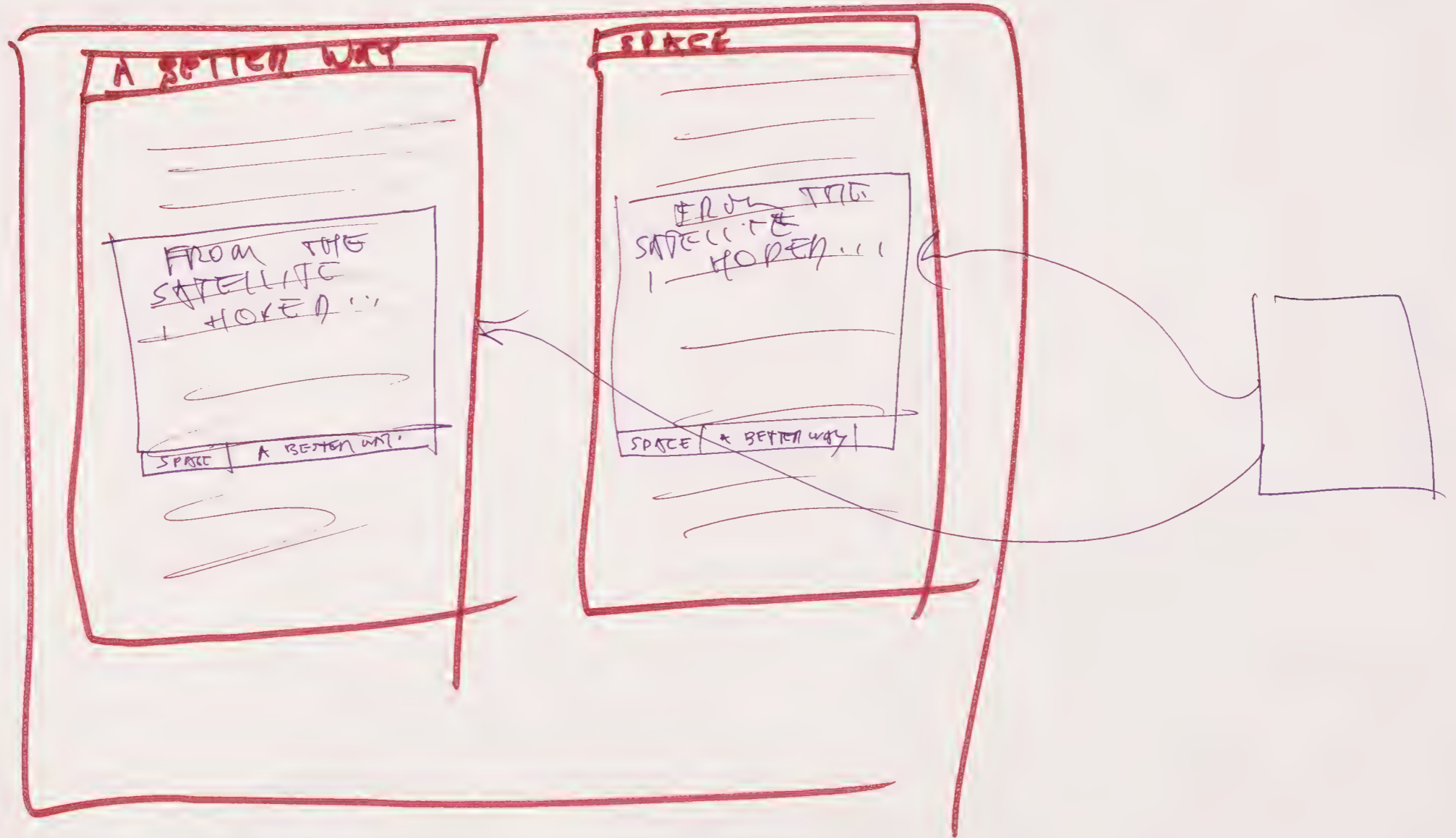


EASIER
TO
UNDERSTAND

can you study
their relationship

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I



~~Standard Xandu distinction~~

JUN 18 1998

J

LINK:

A CONNECTION BETWEEN THINGS
WHICH ARE DIFFERENT.

~~TR~~



TRANSLUCSION:

A CONNECTION BETWEEN THINGS
WHICH ARE THE SAME.

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K

CONCEPTUAL LEVEL

+

IMPLEMENTATION LEVEL

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✓

GODS ARE TRANSCENDED

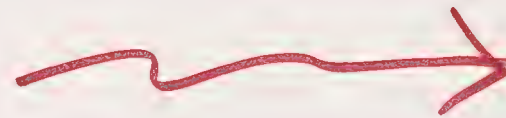
TRANSCLUSSION

Not
COPY

Not
INSTANCE
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Copy

Original



~~COPY~~
~~Disconnected~~
Set of
same bytes
d. connected
from original

Instance

Original

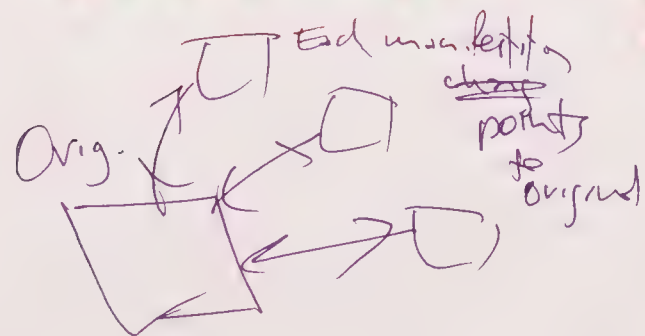


Instance



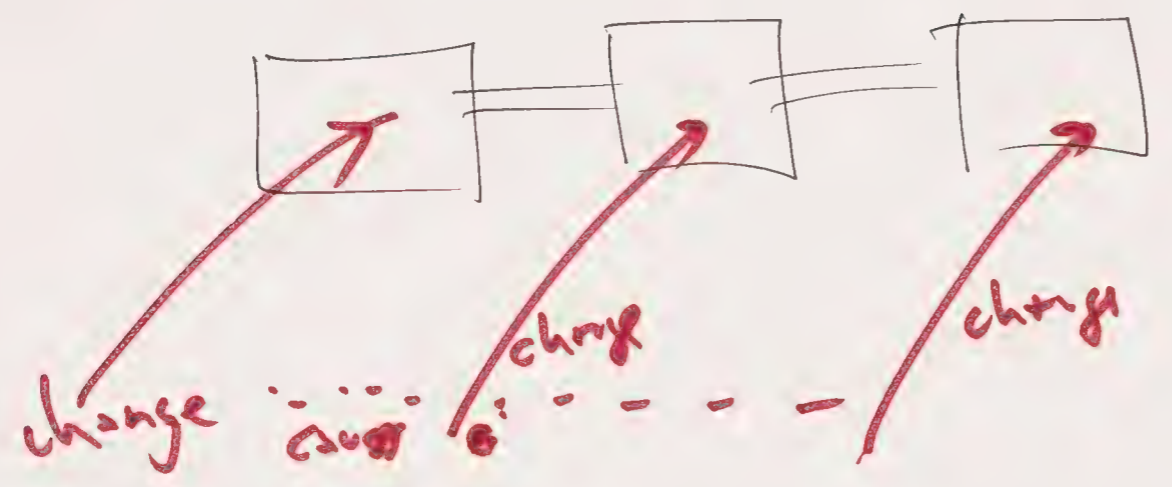
instance points to original
Original does not know about
instance

TRANSCLUSSION

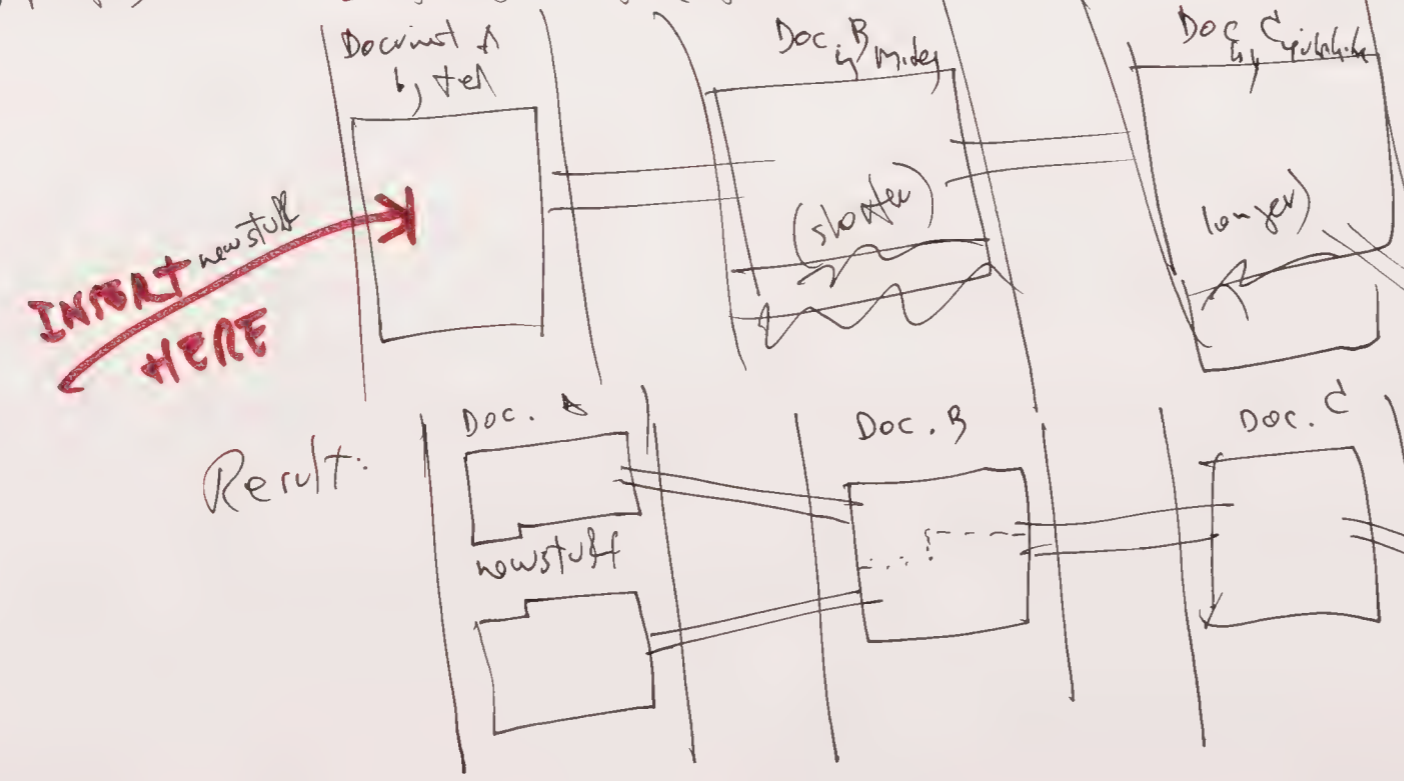


All manifestations
GUARANTEED IDENTICAL
AND
AWARE OF EACH OTHER

LIVE OR DYNAMIC TRANSLUCSION



STABLE DATA TRANSLUCSION



Some paragraph
in 3 document

EXAMPLE
A paragraph
from the Bible,
quoted by transclusion.



tmt

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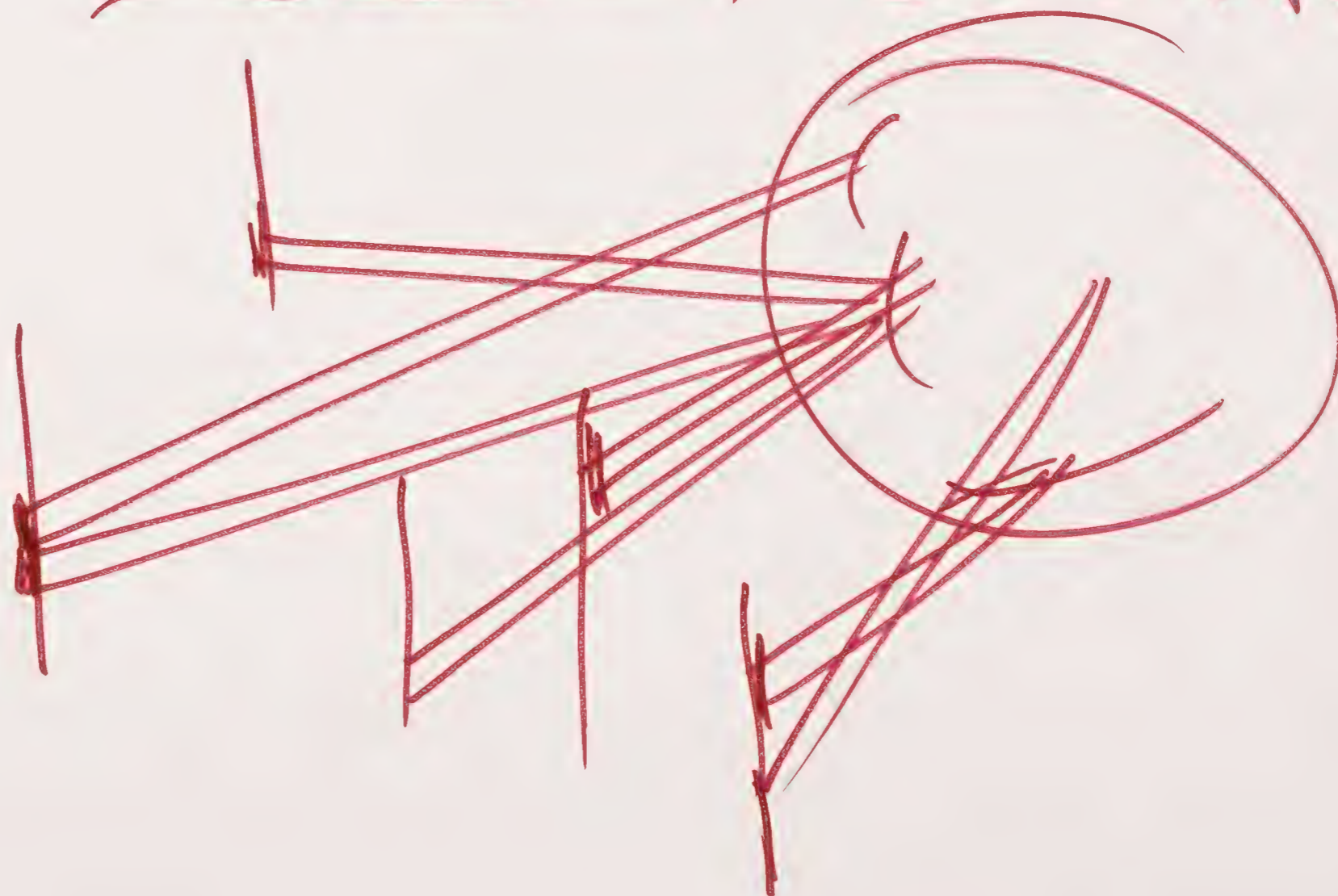
P

REASONS FOR TRANSCCLUSIVE PUBLICATION

Your document

Others

ORIGINAL



In Japanese Microsoft Office:

Hakkoto - inyo 'publishing and quoting'

Publish - 2uf - quote

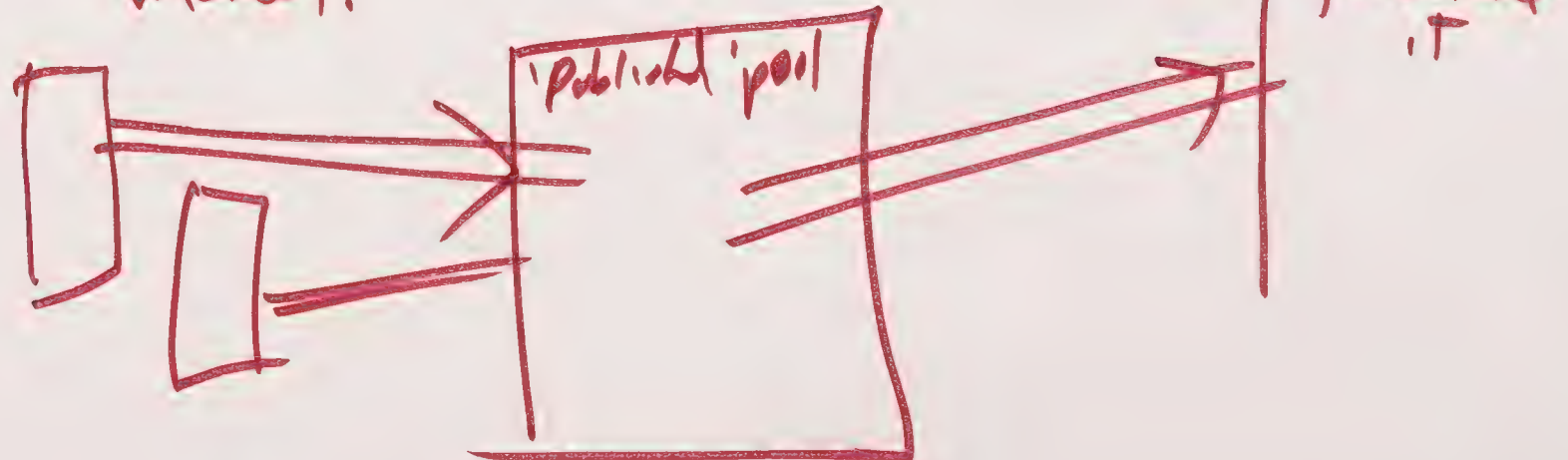
発行 : Hekko

引用 : In'yo.

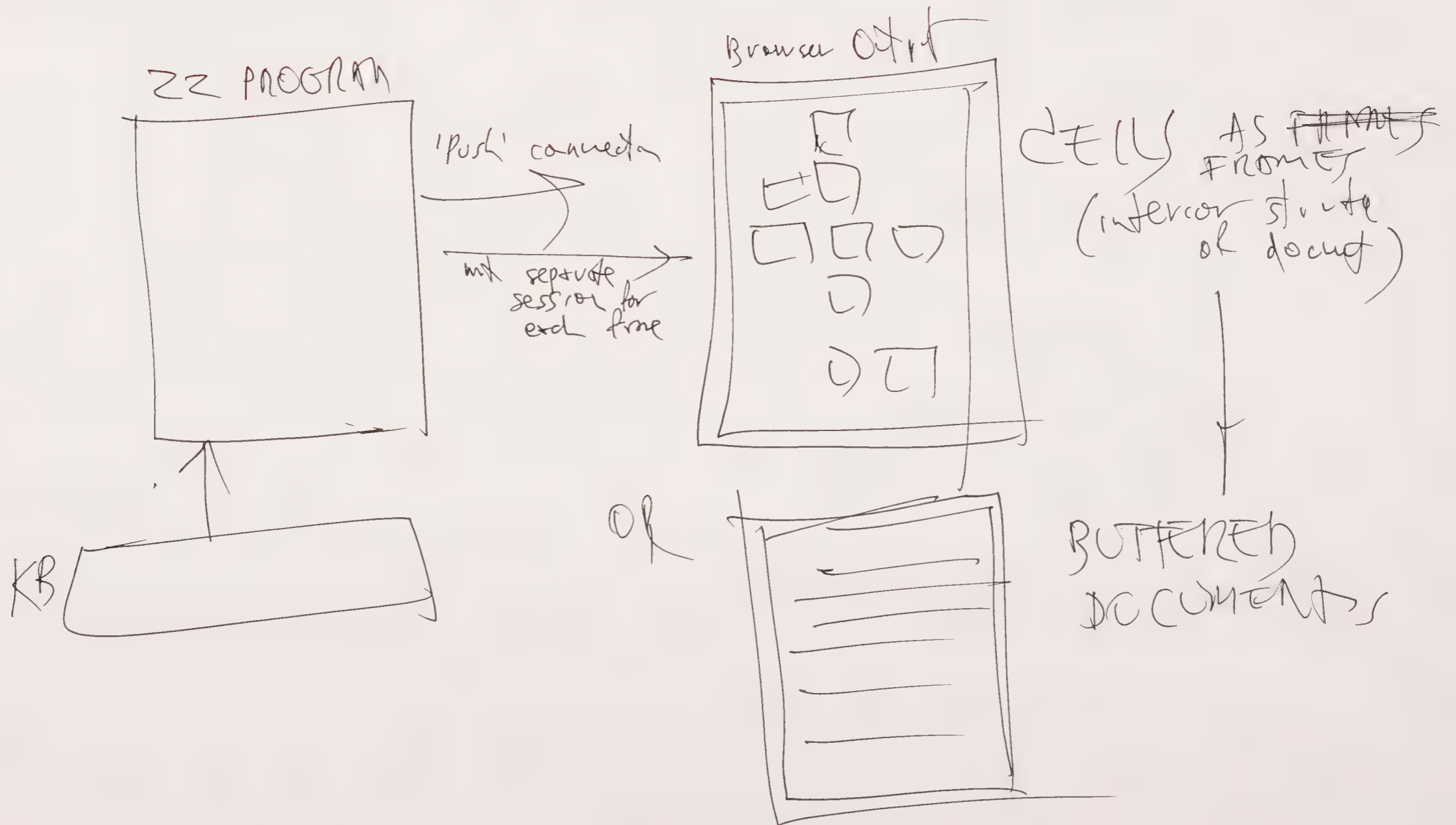
On The Apple:

'Publish and Subscribe'

Model:



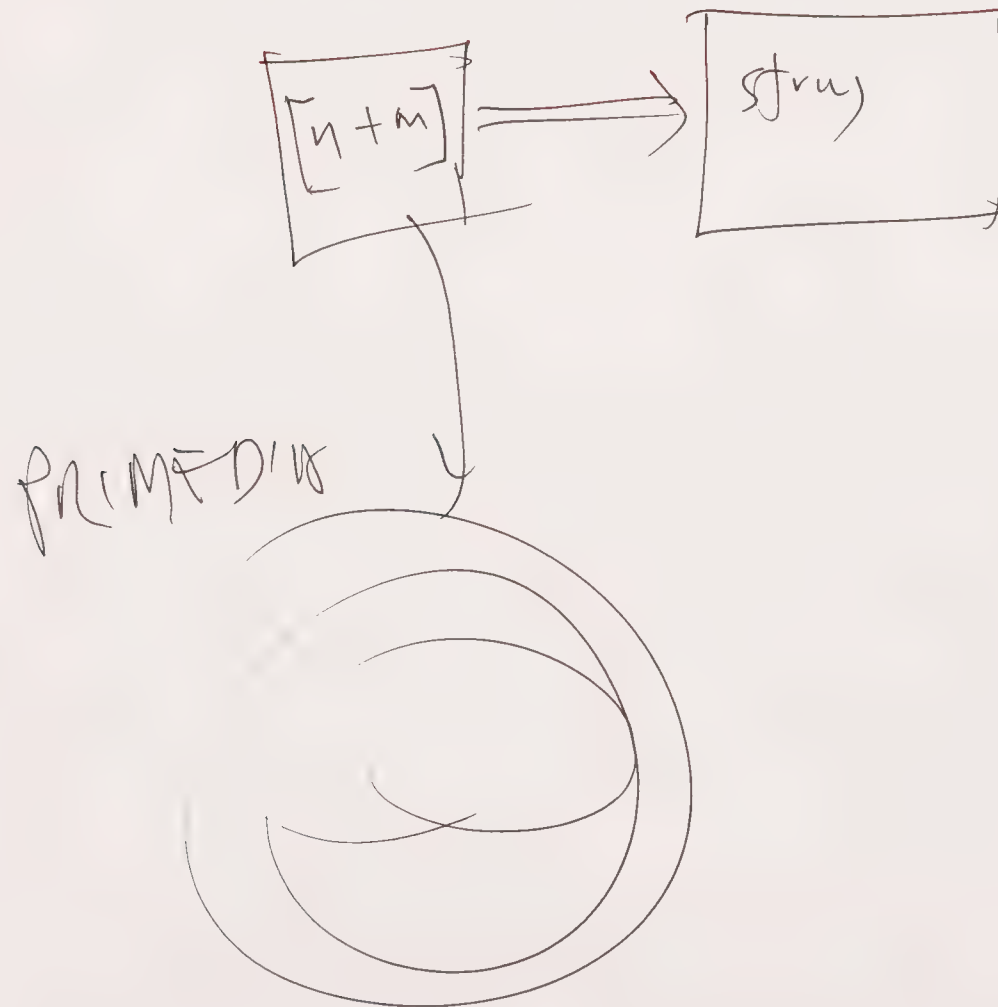
ZIGZAG WEB SERVER



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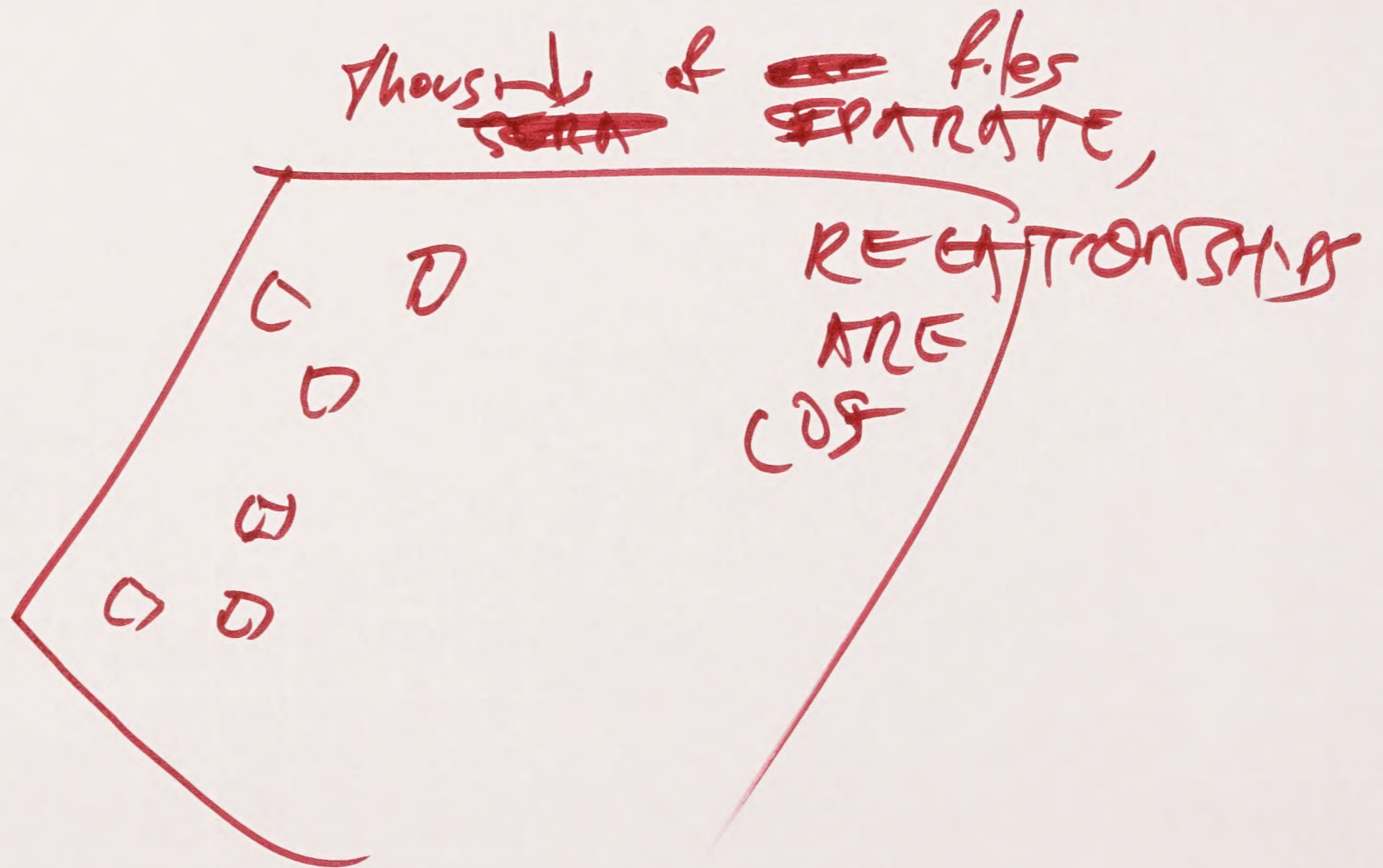
9

ZIGZAG + OSMIC



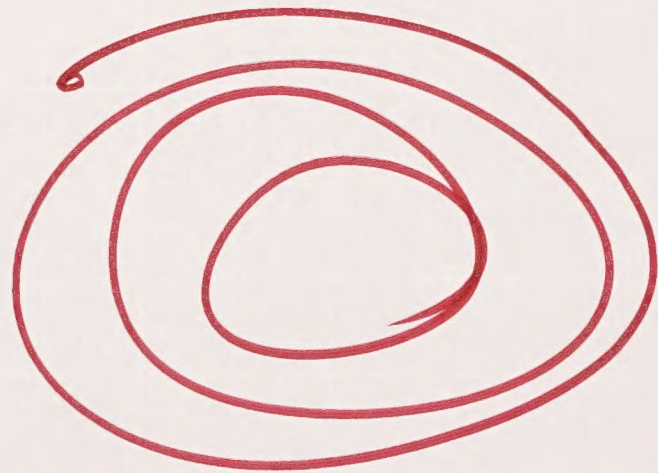
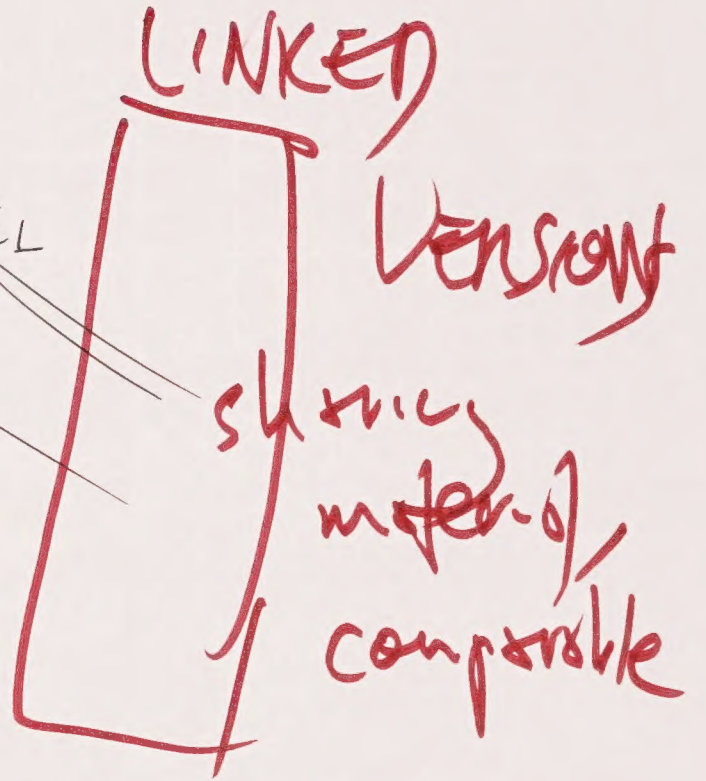
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TODAY'S IDIOTIC WORLD



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CORRECTION



Spool of
all your content

REQUIRES

ZZ PROGRAMS FOR MANIPULATION & VIEW



ZZ/BROWSER FUNCTIONS

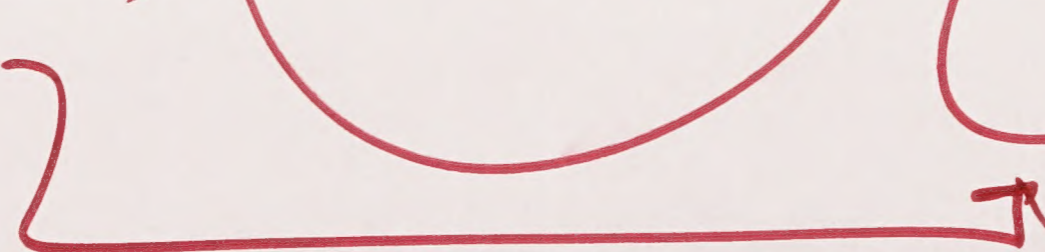


SAFE SPOOLING PROCEDURES

multiple sources



Email



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w

PLATFORM STABILIZATION (tentative)

DEVELOP IN ~~PERL~~ PERL (object-oriented)

