THE INFORMATION RETRIEVAL COMPLEX: Some speculations, analyaea, and proposals for full-purpoae aystems for the retrieval, diaplay and integration of data.

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We will treat of s number of topica here, with the hope thst they will all turn out to be aignificsntly related in the end. The firat ia information retrievsl.

if only that you should obtsin it;
that you know aomething about,

Information retrieval is the problem of finding information/thst you

of which you
know is somewhere but/don't hsve full command. The simplest information

reference
retrieval syatem ia a/book; bigger syatems sre full bookshelves snd libraries.

Teaching systems are aets of materials-- sentences or chaptera

tom read, pictures to look st-- which bave been arranged in aome way to show
will speak of "programming" a macbine but "arranging" materials.)
(We mean to include "programmed learning" here, but to avoid confusion/
or explain aomething to aomeone./ A book is slso auch s teaching aystem; but so

a d & vocab in flashcards,
is a map in the aand, or s set of lecture notea.

Display systems sre the mechanical side of showing aomebody aomething. Thus s map room, sn automobile daahboard and a motion-picture theater are all display systema.

A diaplay configuration is some way of tying together things to be diaplayed. By this definition, the tbermometer on a poster advertising a fund drive ia

we are the "Dis Ed" can make available to Students,
a diaplay configuration, snd ao is s prepared outline banded out st the beginning of a lecture course.

A data-integration aystem is a set of devicea and procedurea for sesking understandable and uaable relationshipa in data. Thua sn sccountant's

working
anslyais pad and an author'a/outline srs dats-integration systems. So are the sutbor's file cards, hia deak top, and probably hia wsll and floor.

Current reaearch in information retrievsl is oriented to means by which practicing scientiats may find specislized materiala bearing on aome ressarch problem. While thia ia extremely important, we think it is too narrowly conatrued. We ahsll

and
make a few general pointa sbout this,/ briefly aketch aome
programa which ariae from an alternative outlook. We will then

make
sttempt to tie this together philosophically, and then some rather draatic auggeationa for new hardware and directions of researcb.

Today's computera are fast snd capable. Tbey can perform hundreda of

comparing and snd
thousands of/aorting operationa, tranafer thouaands of words of written material from magnetic tape to magnetic

and inapect
tape, or printer, in aeconda. They can drive/many kinds of peripheral equipment and even display text on a acanning tube. That these abilities

ahould offer vaat inapiration to snyone diacouraged over library and indexing aystema ia obviousl. But there is an embarrasament of riches. There sre ao many different ways a computer can handle and offer written materisl

good general-purpoae are,
that the deaign of/systems baa been very alow. Tbe question being aaked/quite rightly, "What systems a would be most uaeful if everybody's latent, potential needa were known? And how msy these needa be ascertsined, considering that the people concerned have no inkling of the capacities of the machinea?"

This paper can only give some suggestions. To put it lightly, we favor the general elimination of paper.

First, we suggest carrying the use of information-retrieval systems to an earlier stage in the user's career: that is, to all general users of libraries for research and learning; second, to build fuller systems that will permit the user to use the machine for taking, storing and displaying his notes, and any other written or visual materials he might want in the future; third, to permit the gradual organization of these materials into display configurations of use to himself and others; and fourth, to provide positive facilities for making them easier to organize, and casting them in effective display configurations, and incorporating them in teaching-systems.

Let us discuss some programs which would have some of these features.

A word on the property of indefinite expansion, on which these systems take for granted. While it is true that the capacity of computer storage will always be finite, procedures are available for the attachment of new storage-space to any other storage-space if it becomes needed. That is, if the amount of magnetic tape originally allocated for indexing purposes runs out, new tape machines may be automatically strung onto this storage

this storage space automatically, and thereafter treated as a part of it, at least until it approaches the absolute capacity of the machine. We will assume that this absolute capacity is not approached, and that features of this kind are in operation. Thus for the present purposes we treat the storage capacity as indefinitely expandable.

I. System for storing, punching, and indexing.

1) The reading-and-writing program. Written material is stored on (at this stage we are indifferent as to punched cards.) whether it is a cathode ray tube, printer, typewriter; presumably not/ magnetic tape. It is read out into some feasible display device,/and someone reads it, some quantity at a time. into The user has a keyboard, which he may at any time enter/written material, which is stored on another tape. He is free to excerpt what he is reading, that is, commend that it be stored as well on his own input tape. He is also able to backtrack to previous material, although for this program we will assume that there has been no previous indexing of the material.

2) The Great Books program. This would place some collection of Great Books on magnetic tape drives, and permit the user to read or browse,/skipping forward or backwards in amounts on some feasible output device. He could also he chose.

3) The generalized text-indexing program. This is a machine which ~~and text-sequencing~~ operates colleterally with some stored text, like(1) or (2). The text is stored in measured amounts, like the pages or chapters of a book. On instruction by a user, these locations will be recorded as having some particular significance. For instance, the user may may subdvide the text to his own liking, using his own headings,/chapter titles and paragraph summaries; and these headings, stored in any order he wishes; now they are a part, though a perhaps on separate tapes, of the available texts. He may store points, that is, locations in the text where a certain type of - blocks, the inclusive locations, from beginning materials.

Some further capacities of this program are:

The machine will now present, on demand, portions of the full text strung together on the basis of the indexing. Thus an individual may have the index presented to him, and request that the material covered by certain headings. It will then be presented to him, on the reading device, in the order he requests it: if they are blocks of material, the blocks will follow one another; if they are merely "cutting-points," he will begin the next decides the command the machine to/ when he is (that began with a certain cutting-point) relevant part/is over.

The n-category program. This is a further indexing function whereby things may be "categorized" by an arranger according to whether they meet certain

criteria which interests him. In the "arrangement" phase, the items are presented to him by name or in full; he then informs the machine, by keyboard or otherwise, as to what categories they go into. There is no limitation on the number of things in a category, or the number of categories a thing may go into.

We call this the n-category program because the arranger may at any time begin a new category, and start assigning elements to that one as well. He may then backtrack and see if earlier material belongs in that category.

It should be pointed out that these categories have no content so far as the machine is concerned. They have meaning only to the arranger; the names he gives them are strictly relevant only to his purposes.

In the presentation phase, a user may ask the machine for a listing or presentation of the things in a given category, and they will be listed or presented to him.

We spoke of "things" rather than "texts" because this system would also keeping track of be of use for/things not stored in the machine, such as photographs, works of art, etc.

The two phases may of course be collapsed into one, so that arranger and user are in the same person at the same time.

It will be noted that this program takes over a number of functions for which card files are currently used; for example, the storage of newspaper articles by type, in which a given newspaper article falls into many categories. Even with hole-in-card systems, this is unwieldy to operate by hand.

FOR AFTER P. 7

4) The generslized text-psthway program. This program builds on (3), allowing the arranger not only to divide and the text and add msterial, but aiso to insert "pathwaya" for reading: thst ia, sequences in which he believes the material ought to be resd. The machine will so order the msterial on presenting it to the user.

It should bis noted that this in effect is very like the course reading list; save that it can be hooked to subject (3), which contains and presents the material.

5)

→ Jr) equivalent to the ontology — but more versatile.

If we expand this to a pathways as we did with categories, its versatility should be clear: the arranger can set up different collections of graphics material to be made available to people with different tasks and needs.

7a

6) Marginalia programs. These would permit users to key in their own comments, slong with brief statementa as to the kind of other user these comments might interest.

7) Generalized /Query snd testing facilities. This program will present the user with questiona, which he may answer/by pressing buttons marked one through five or by typing in words on a keyboard. An arranger may interpolate questiona in a text-pathway and have it branch, presenting different materisls depending on the user's answer.

This permits the integration of some of the previous programs with fully-prepared or partly-prepared materisls for "programed learning."

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It should be noted that this is effect is very like the course reading list, save that it can be hooked to system (5), which contains and presents the material.

5)

→ ... equivalent to the catalogs — but more versatile.

If we expand this to a pathways as we did with categories, its versatility should be clear: the arranger can set up different collections from the same universe of materials to be made available to people with different needs and interests.

7a

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CLASS II machines: those which permit more intricate systems for arrangement.

9) The outlining and outline-dressing program. (Snipped stuff from here)

The outlining program, therefore, does not force premature distinctions among points. Instead, the author types in his items and they are all assigned indeterminate status. Large numbers of these items are then arrayed before him, grouped or in succession, and he makes guesses as to which shall be major headings, which shall be minor points, and which shall be ignored. He may make any number of different items, filing them by name; on demand, the machine will show him a given outline-sketch and he can "rework" it, giving commands as to the order and importance of the points.

Only machine methods will permit a number of different outlines to have working status at once. Working with card files, and desk tops and fumbling fingers, he must "bet" on the success of one or two possible outlines.

With the improvement of an outline, it may be "dressed," somewhat like the decoration of a Christmas tree, with text materials he has stored as separate outlines. This makes the evolution from outline to text clearer and more explicit; no points get lost.

10) The sequentisl-string program. Thls is s mschine of gvwwvwvwvwv more use to the novelist or motion-picture editor than to the writer of exposltory prose. The novelist may use lt for the examinstion of single narrative lines-- say, the deveiopment of a glven chsracter-- sbstracted from the entire work. If He msy work on s number of these sequences singly, and then hsve them amaigamsted-- that is, vhvvvdvvh interiesved into a single string-- on commsnd.

11) The mxixpixm implicstion-program. This machine csn tske the writer's commands for the impiicstions of his idess snd operste on them to lesrn thelr compstibility. Let us ssy thst two of the ideas sre, "the hero wesrs a white hat" snd "the hero is mistsken for the viilain." The author thinks these two items sre incompatible (because the villain wears a black hat — but this is the writer's own bsings! ~~and tells the machine so.~~ The writer informs the machine that they are incompatible. vhvvvvvvvv The mschine can now keep xxxxx trsck, in different outiines snd sequentisl strings, of the compatibility of these items. inform the suthor when he has tried to pisce incompatibie items in the same tentstive string. ~~If, for the others hand~~, the hero's hat ~~vivivwly~~ being white requires thst he ride s pinto pony, the mschine ~~can inform the author of this fact.~~

csn remind the suthor, if ~~in a certain string the author directs~~ thst the hero wesr a white hat, thst ~~the pony thes has to be~~ a pinto ~~by his own instruction.~~ ~~Naturally these instructions are modifiable by the xxx author as his ideas develop.~~

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Some remarks about the type II programs.

The whole point of these programs is to help the author develop his ideas with greater intricacy. If they hamper him in any way they are not designed properly. We have tried to sketch a few formalizations of the work that authors generally perform informally.

We hope those programs would be useful to anyone seeking to try out different arrangements of things.

We have not gone into any detail on these operations, but we do not think that makes the descriptions vacuous. The problem of finding what operations are handy and helpful to arrangers of material is an empirical one, on which we have only made suggestions. The problem is one of preparing complex sequences of operations which are conceptually clear to the user, and which do not make any decisions for him. In a sense this is a problem of "designing" logical operations.

For instance, the compounding of "implication" and "sequence" operations described above leave several operations indeterminate. It is then up to the programmer to decide the most useful to work them out.

A few short examples should make this clear. Let us use this notation for compound commands by the author:

A → B	A implies B
A / B	A and B are contradictory, cannot appear together
A [and then] B	A precedes B
A → ( )	A implies (some compound)
( ) → A	(Some compound) implies A
A / ( )	A contradicts (some compound)
( ) / A	Some compound contradicts A.

Here are some ways the implication and sequence programs would obviously have to behave:

Now, here are some commands whose operation are not determinate by the scheme so far described. The programmer must however provide for them.

We are sure that

even extremely simple procedures along the lines we describe would make

considerably easier the task of some writers. Those who work to integrate

very large bodies of disparate text-- say, Tolatoi, who covered the floors of

his dacha with "noodles" of writing-- might find versatile checking and

recall functions a great help for doing just what they have been doing. Others, who start at the beginning

and proceed to the end, like James Fenimore Cooper, might have little use

for such things. (It is an amusing conjecture that in general the hack writers' work would tend to

at top speed without aid, whereas the good writers would be slowed by the

trivial mechanics of filing and comparing. But we emphasize, this is conjecture.)

These programs could be useful not merely for writing orderly text or novels, but

wherever anyone desires to compare qualitatively certain combinations of materials with complex implications or suggestions.

For instance,

useful to a motion-picture director

they might be

testing different possible arrangements in the editing of his film

It would be logically trivial to build

a machine which "tries out" certain

strings of shots, perhaps by generating a control-tape that prints them

when left in the right machine overnight with the negative.

The problem in editing film is essentially to find out what strings of shots, and occurrences within shots, are will produce a narrative or effect which is satisfactory.

To find the best such string is usually an impossible idea, because of the vast numbers of possible rearrangements and their detailed implications for other parts of the picture.

However, we think it is not too much to hope that the implication and narrative-sequence programs discussed above would broaden the director's grasp of the materials he is working with, improve quality and lower the cutting budget.

Similarly, the arranger of texts, preparing parts of books to be read with the use of type I programs, would be able

to test out different types of arrangments, developing them more fully and

more quickly, by the use of such programs. This would be of special interest

if he were trying to map a large number of pathways into the material,

for readers with different backgrounds

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TYPE III PROGRAMS: ayetems of display configuration.

In describing the type I and II programa, we have been quite fa vague about the means of displaying their output. A high-epeed printer or cathode-ray display would be adequate for type I, but aomewhat cramping for type II. It ie our general contention that

Let us now diacuss dieplay configuratione ae they are commonly uaed. Diagrame on the blackboard, periodic tables, axii colored overlaye for large mapa and p texte, all serve to help mental unification of diveree materials. The benzéne ring, the fourfold table, Pareonian intercbange diagrams, all eerve to ahow relations more tangibly than does text.

12) The n-space diagram program. (We now aaeume a dieplay dévice of higher versatility. It ehows text in at least two sizee, can change the relative positioning of different parts of the text, and aide-cuee such as their type-fonts and color; it aleo permits storing a number of dieplay componente-- boxee, lines and arrows-- which may be dieplayed in and around text, and labeled with text.) This program permits an arranger to set up diagrams of great complexity, which may a be seen in a number of inversions, and whose parts can be abetracted for study.

One such dieplay configuration would be the text-matrix. Rows and columns may be labelled with words or phraees, and short text blocks may be put in the celle. Some display inversione of the text-matrix would rearrange the rows and columns, and claar out the rows and columne that the user did not want to study at a particular moment. He might make a display query regarding a certain cell, which would bring forth an explanation of wby that thing wae in that cell.

Outlinee, and trees of text, would be other such display configurations. Certain outlines or diagrams "central," remaining fixed, with collateral and explanatory material appeared as "overlay," perhaps in a distinct color, explaining thie particular configuration in a given context.

Dieplay inversions are those changes in a dieplay which keep its substance constant. Other display operatione would change the dieplay while maintaining certain configurations, much the way sequential charts in science museums have running lights which call attention succeseively to different parts and connections.

By "n-epace" display configurations, we mean that the possible variations and inversions of a display are limitless. All sorts of chains and conditional arrangements can be prepared other to be shown to particular people at particular times.

Their utility ie determined by the kinds of diagrams and successive transitions which are most comprehensible to the user.

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7) General caretaking systems./ Means are needed for keeping track of whatever chaotic ensemble of texts and partially-ordered collateral materials have been assembled in storage. It will keep track of the "k. ds" of users for which arrangements have been make, in the arranger's terminology. The caretaking program will assemble and store information about it, such as: the total quantity of text; the different indexing-systems that have been stored; the different pathways that have been traced through it by arrangers, along with their lengths and what other information supplied by the arranger-- such as the material one should know beforehand in order to understand it. The caretaking program can also record all the arrangers and things that happen in the reading chronologically. This a user can keep track of all the things he has read & he wants to perform like searches; the state of an idea can be traced in the author's program, if he wants to know what he had in mind at an earlier time. In this category also go general lookup facilities which will find certain words in the text, prepare concordances by the occurrence of these words on demand, and so forth.

The caretaking program would also allow the user to monitor his own activities: telling him how far he has to go, how much he has done already, and what marginalia might interest him.

The caretaking program would also have provisions for such things as "inalubility"-- if a user works best by studying one text at closely without distraction, he would not be informed of others which arrangers think relevant; if he works best by comparisons and digressions, he would be repeatedly signalled as to the other materials available.

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9) Master control program. Many possible arrangers may want to put confidential materials in the machine; in this case some superordinate program is necessary to discriminate/users who may and may not see these materials. Similarly, the master-arrangers may not wish certain materials to be available except on completion of other steps. This machine would provide these safeguards.

GOES AFTER

We are not commenting on the desirability of such precautions. In this paper we deal only with possibilities. We need only add that the necessity of the world of information be made explicit.

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Philosophical statement.

These programs are related to a general philosophical model we have discussed at length elsewhere, that of the "schematic," or evolutionary referential network. Some of examples of the evolutionary referential network are a scientific theory; the beliefs in a man's mind; and the structure of a bureaucratic organization over time.

The general schematic model gives us some criteria for "unity," which was discussed above and will not be detailed now. We would like to discuss how some of the programs exemplify this model.

The n-category system allows categories to be built and change over time. This is similar to the problem of changing partions, and dimensions. The n-pathway program is a changing schematic of partially ordered materials, etc., etc. That display [illegible] qualities' column 4. [illegible] model is obvious.

It should be noticed now that certain obvious concepts which we have known in the fields of books and academics are bound to degenerate, merely because they are no longer so clearly applicable schematically. will degenerate
The book/as a distinct entity: both in the case of anthologies, which are now sets of pathways and commentary collateral to greater stored texts, for instance,
and for other books--/critical works which compare and unite the works of others, which will also begin as outlines, categories and pathways. The academic formality/which distinguished the finished book -modes
from the research reports memoranda and idea-fragments will be in part break down, partly from the ease of storing the new material and relating it to the old.

Summary of the programs. We have tried to point out some of the possibilities that exist for the imaginative development of the information-retrieval complex at all levels of use: not merely for finding s small, clearly defined set of items, as most retrieval projects hppe to do; but for making parts of a large collection of things available, comprehensible, and easy to work with.

When we advocated the elimination of paper we were serious. There are problems both of technological development and economics. However, the trend to satellite systems with multiple input and oupot stationa around a central computer makes the availability of an enormous/file to a large number of program and current users plausible as a coming development.

The unity of the programs we described should be evident by now. There is no reason they cannot all be a part of the same thing; they are certainly desirable if they can offer sny improvement over the methods now used; and we hope that by pointing out this unity, work on component parts can be better oriented to their eventual unification.

Last comments.

If these tasks seem Utopian or bizarre, we think they are no more so than the generalized tasks now available for computers-- for instance, their use to guide machine-shop operations merely on the basis of design specifications for the desired metal part. What has seemed most implausible to other people, when we have discussed these ideas, has been the adaptability of the machines to qualitative work. Our contention is that this is because few writers, for instance, have been interested in the systematization of their actual needs-- as they would recognize them if they understood possible machine capacity.

In a sense, it would be possible to begin writing the software for these programs tomorrow. However, this would be in several ways premature-- not because of the types of things available hardware can do today, but because of their current mal-adaptation to such uses. New peripheral equipment is needed that people can use handily, with less than back-breaking cost -- typewriter keyboards that will take one line and input it to the machine directly after it has been proofread; pleasanter economical display-systems that can be used on-line and present the material with bulk, clarity and the organizing aids of display described above.

Furthermore, and even more importantly, research is needed on the forms of organizing commands (for type II programs) and the types of display configuration that best mesh with human capacities. If these are to assume standardized, conventional forms-- and it seems obvious that they might, like the typewriter keyboard and the automobile dashboard-- the research should take place before any old set fall into usage. The only way to do this research is by writing software for existing machines and testing it-- on people who need to think, not about machines, but about ideas.

OF COURSE people can adapt. There will always be a "sameness" about human nature, there will always be social processes and social structure interwoven among whatever systems and conditions exist.

The disconcertment in thinking about human feelings of such future times, however, lies in this:

~~If~~ if we ~~cannot~~ feel that ~~we~~ we can care, or feel to care for ~~the~~ things ~~that have~~ ~~we like today~~ but mean the most to us, it is ~~different kinds~~ ~~impossible~~ to ~~be~~ envision such a future time, or to hope for it. ~~The question is this question~~

How will it come that ~~we~~ can care for a future ~~such~~ those living now? ~~Is this question the shortest~~ — that makes sense.

A Functionalist might merely say that "adaptive" actions will take place, ways will be found to structure gratification and loyalty — but this bypasses our question. For if these adaptations are not to be ~~quite~~ haphazard and frantic, the conditions of technology demand that we cope with thought and hope that involve details and preparation.

Besidea personsl fears of the fireball, though, there sre other conceptusl changes in the very notion of its possibility. In the days of "saturstion bombing" in World War II; for instance, and at Hiroshims and Nagssski, the destruction had some phenomenal meahing in human terms-- the maiming snd screams, the broken families. The concept of thermonuclear war is different; it considers the litersl annihilation of the blsat sres, which in terms would only mean the obliteration of consciousness of vast numbers of p the disappesrance of cities-- gone like Carthsge. The other effects, still

In some importsnt sense this is different. It is phenomenally more like consigning these people to the past thsn like killing them. The other ef of maiming snd sesring, etc., are difficult to relate to this centr Is the annihilstion of ten million in the center worse than the maiming million in the periphery? In this discussion we wish to point only conceptusl difficulty of assigning the old idess and sympathies to the new universe of the possible.

A relsted example is the esrthquske that destroyed s city in North Africs two yesrs ago. After s brief sesrch for survivors, the rubble was "disinfected" with poisonous msterial. Undoubtedly there were people still alive there; how is one to imagine it?

VIII

EVERCAST?

The availability of plausible doctrine
The unity of everything
My how the soul intertwingle with it all
& it would look human at these future times
PUT WE COGHTTA THINK HARD RIGHT NOW!

9'

In an earlier chapter we ~~So far we have~~ considered these things most mechanically, ~~as if the character of decisions~~ as if people and things could be dealt with in a ~~at least in a hypothetical~~ manner.

~~But~~ We dwelled on the spreading, intricate, distributive and implicit of explicit/decision ~~because it is important~~ in the world of their growing importance. What is even more important, however, is another set of changes that appear on the horizon: the concurrent

~~But we see as more important the changes in people~~ change in people and psychological climate. Some of these changes ~~that~~ are beginning, some are merely possible. ~~Our discussion will be speculative.~~ Here our discussion will be at its most speculative. But we ought to take a look at the ~~more related to the discussion in earlier chapters~~ more recent of human mind-systems and directions ~~sorting.~~ We want to look briefly at th

~~BNES~~: effect of changes things on personal a
~~BNES~~ ent values.

mainly about ... Three kinds
ideas & things —
inanimate ...
how betw things & people
to
characteristics of
that come in when
dealing w people ...

QE 1

THE BIG ENDLESS POINTS
1) All personality theory then special cases
2) Accounts for alt meanings/places in lett.
3) Shows how equivalences are possible from person to person having diff BGs & on diff trig-models

SAME or similar systems
1 RESULT E-STEP can be arrived at from all different routes & sequences

PERSONAL INTERLOCK
e.g.g.
COYOTE & Fellas
FRENCH EYE-USE

ISX - ACTH

MANNERS gibe & don't gibe
SMALL GESTURES
LOVEMAKING
" PERSONAL INTERCHG IS MECHANISM TO CONVERGE THEM but can't operate perfectly since there are abrupt evolutions & new givings w diff responses
NEW / INTERACTIVE PROPERTIES POP TO BEING

COHERENT REGULARITY
'Culture, demand'
= will be recognized & treated exploitable at level
consciously shaped?
Not necc the why not?

QE Gest & Mind-Systems

HEGELIAN ~~FORCE~~ PROGRESSION
TOWARD PERFECT FULFILLMENT OF SOME IDEA — of society e.g. — can be reasonable if we acknowledge that some such social ideal-types ~~exist~~ may not have a 'perfect' form, i.e. a sort of conceptual-real objt which is coherent & stable.
(BUT WHOSE HARMONIES & PERVERSIONS ALSO OF INTEREST — Peirce, Weber.)

The adequacy & stability of REIST 'systems' ... informal, cultural
" ROLE is such a funny

QE ISX

There need not be orientation to other proximate or 'absolute' goals ~~Rather, I see~~ (Peirce, Weber.) I don't see that either makes; moreover, shifts of orientation of desire are also a legitimate part of the game.

Transitions of possible dyads
stasis-to-stasis — depending greatly on sequence of dyad
— pre-existing commitments etc
Liaisons

POSSIBLE ADVOCACIES.

Clearly going to HAVE TO be much more planning in future — even if it is only to be leading decisions etc.

BUT KINDS OF PLANNING THAT MUST NOT TAKE PLACE? of what are they?

TMC

[illegible]

DOWNFALL OF PARTICULAR ADVOCACIES

- Whistopping (like trying to stop use of electricity through)
- Disarmament simpliciter

TMC WORK. PLANNING IN STRAN[illegible] STATE CURRENCIES

- is necessary. These are the alternatives. (eg. death or submission)
- is mainly a recursion of the problem to earlier and more manipulable stages. There will be more & more as things change so committees decide more? (Really - explicit treaties — reverted a couple steps.)
- Our luck is that the problems don't [illegible]

TMC

Access

Persistence of visible detail

Decision considerations not parallel.

The proliferation of cryptic decision cavities

WHO DECIDES
HOW & WHY?

PE BNW

COLLECTING ATTENTION
TO INSANE QUEX.
[Shall a gadget fail?]

COLLECTIVE INATTENTIONS
to pros. of greatest urgency —
Nuclear
Arms control
To
COMMUNISM VS CAPITALISM
When our best attentions are needed
in particular points

Focus of interest groups at moments on particular issues as & ... of the audience, with cyclical apathy, delays & remembrances of only publicity & the long public forgetting & [illegible] considerations...

CRUCIAL TO SCRUTINIZE
techniques of decision.
Put to referendum? How? Govt
significant Hearing? How?

III

Concurrent with the growth of generality and interconnectedness, we ~~At the same time we must~~ observe the dispersion of choices of every kind. Choices of the widest consequence are made daily, by everyone: government agencies, private organizations, eccentric millionaires. The climate in which they are made is drastically important.

Mass commitment, foray & fudging decisions.

'Political' reasons
for decision

Opportunity, expediency, popularity...

V

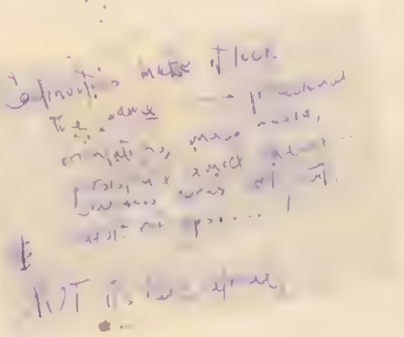
According to the sanguine view, public attention is focused on "basic" questions and professional competence governs "technical" questions. We believe this view to be as absurd as it is widespread. However, those who share this feeling with us generally believe that some solution exists in the informing of the public, or the improvement of communication. We are not sure of this either.

VI

What is the distinction between a basic question and a technical one? When decisions have such far-reaching interlockings with so many other different things, this distinction becomes schematically unclear. There are some contexts in which decisions can be called 'technical,' for their ~~do have~~ obscure purport and few consequences; thus in these contexts it is not a pointless distinction. But to assume its universal schematic applicability is groundless.

But this distinction is only one of the many schematics by which people will order their decisions; a vast number of characteristics and divisions will be adduced as causes for treating a decision-problem in a certain way, turning it over to a certain agency, or dismissing it entirely. An impending choice can be forced into any kind of mold, proprietary or professional conceptual scheme. To think otherwise would be to expect anyone, at any moment, to begin speculating on all the far-flung consequences and prospects for all the decisons and trends around him. Few people are like that. Even people who take on a sense of responsibility for distant things-- pacifists, for example-- find some way of limiting those things they oppose, and sharply delineating their ranges of concern and non-compliance. And practiced decision-makers, with particular outlooks and sets of mental involvements, are merely confused when questioned about the more far-flung consequences of their decision. It is understandable

that they will say, "Well, we don't consider that."



The philosophical problem of consciousness will return with full force when dealing with, say, the possibility of programming large-scale equipment to simulate the mind of a given person. At what point is it reasonable to say the machine is the person?

Few people would ask that about the senile in public homes today.

The progress of neurologicsl sc&ence and manipulation might foresee forms of brain-programming -- for example, where sn individual might rent out a portion of his brain to be used as a computer sdjunct for certain types of study. Assuming that some damsge wsa done to the existing memories, and the question of whether sn individusl hsd a "right" to do so would be somewhere between his right to be tattooed and his non-right to commit suicide.

The line between human and non-human will become indistinct on other fronts. A project is now in operation to send out radio messages to possible listeners on other planets. How sre we to treat them if found? And if dolphins and toothy whales have indeed the intelligence of man-- who will protect them, and what will we tell them? -- or will we just try to enlist them for hunting submarines?

There is a popular myth that ~~in this day~~ medical science is very close to making health a matter of simply ~~taking~~ there's a pill for it, with the moral universe left unchanged. In the words of ~~Time~~ toward patients ~~like~~ [illegible] or pain-killing ~~drugs~~ relief of the agonies ~~of the damned~~ [illegible] the spot of it.

The lines of ~~a~~ medical progress are now generally clear. ~~While there are occasional broad-front breakthroughs~~, such as the polio vaccine or ~~the~~ penicillin for syphilis, it is clear by now that most medical discoveries are specific and expensive. ~~It is possible to build~~ artificial lungs, hearts and kidneys ~~, and their~~ overhead cost is in the hundreds of dollars per hour. It is possible to keep certain types of patients alive for a ~~very very long~~ length of time despite ~~degenerative~~ the degenerative steps of their disease ~~for money~~. ~~It is likely~~ that ~~these~~ lines of development, ~~[illegible]~~ continued for ~~any~~ length of time, will bring about an interesting new ~~state of affairs: that~~ the human organism, or parts of it, can be kept alive for an exorbitant length of time, ~~at great cost.~~ ~~[illegible]~~

~~[illegible]~~ This should eventually develop into an explicit problem: just what is to be kept alive, and who will pay?

supported in some vehicle and nurtured by some solution, ~~might~~ may well be ~~able~~ to think ~~and talk. What then?~~ ~~Company~~ Coat, space, and the dispersion of relatives ~~[illegible]~~ will call the question: who cares? ~~[illegible]~~

~~In some ways the most urgent case will not be discussed here.)~~ When a thing is alive or dead, human or not, has been much clearer in the past than it is going to be in the future.

For example, the proliferation of things which are not alive, ~~and~~ or not particularly alive, but have the interactive properties of living things, and the feel of living things. Many objects have for a long time had the feel of living things-- automobile gearshifts, stubborn office machinery-- but their acquisition of the interactive properties of beings is something new. By this we mean the ability to calculate their effects of self-presentation, ~~the advantage of threats and~~ of cutting oneself off from communication, and so on. ~~(A "Action Center theory," as discussed in an earlier chapter.) That this applies to organizations as much as people should be clear, and organizations are not alive.~~ When large-scale computing facilities are tied together by wire, we may expect to see ~~many~~ machines bargaining for time and priority much as individuals do now. This development should make it much more of an academic question as to whether they have consciousness or not. For at that time we will find ourselves constrained -- or motivated-- to treat them personally as members of the community in some sense. Whether they do have consciousness is ~~a further~~ merely a philosophical confoundment, ~~as discussed below.~~

CERTAIN UNPLEASANT
[illegible]
of Tech- nig

The speed, capacity, and economy of machines make possible ranges of activity which had not been possible before. For instance, blacklists and greylists may be maintained by public and private organizations ~~to a much~~ with much more ease than before; ~~and~~ ~~address of extremist organizations~~ can prepare and maintain files and plans ~~for overthrow and subversion with far greater~~ in more clear-cut detail and realistic fashion, ~~and~~ ~~possible trouble-makers can be traced from employment~~. The movements of individuals — or, for instance, of particular cars in the highway system — may be ~~kept~~ traced ~~part~~ [illegible] racy.

the unity of and interlock of [illegible] ems
this may happen ~~so~~ without explicit attention, as a byproduct for which no one is responsible.

Norx

SLEEP PILLS