# A PERSONAL COMPUTER FOR CHILDREN OF ALL AGES
### ALAN C. KAY

"To know the world one must construct it." – PAVESE

**WHAT?** → The emergence of (personal, portable, information manipulators) and their effects when used by both children and adults.

AIDS IN → The formation of skills concerning thinking, strategies and tactics, planning, observation of causal chains, debugging and refinement etc.

## PERSONAL COMPUTER

MEDIUM → For containing and expressing arbitrary symbolic notions

COLLECTION OF → Useful tools for manipulating these structures

OWNED BY | Users → ABILITY TO | Add new tools to the repertoire

- active rather than passive
- controllable by the child rather than the networks
- convey excitement of thought and creation

### COMPONENTS OF THE DYNABOOK
as envisioned in 1972
- display
- keyboard
- file storage
- processor
- storage → size and costs

## MOORE'S TALKING TYPEWRITER

WHAT? → A crystallisation of those ideas into a device.

LED TO INSIGHTS

PROVIDES → Into the abilities and inclinations of the young child.

PRODUCTIVE ENVIRONMENT — WHAT? → An environment which is immediately responsive to the child's activities and allows him to gain a model of himself

A (safe and correct environment) where the child can assume any role without social or physical hurt.

STUDIED BY → Newell and Simon, Papert and Minsky, Moore and Anderson, [Piaget, Bruner, Hunt & Kagan].

INFLUENCED THE NOTIONS WHICH LED TO → Laptops of today

- delay a message indefinitely
- transduce the message into other messages
- represent transductions themselves as messages

|| Where things that are learned can be used as part of new ideas.

MEMORY
PROCESSING
PROCEDURES → LANGUAGE CONSISTS OF

## PROCESS — CONSISTS OF → activities

(1) Memory association (giving names to objects and classes)

(2) retrieving objects and classes by supplying the name under which they had been previously stored.

HAS → state (a set of relations having only to do with it which changes as time (defined as interactions with other objects) passes.

"Idea that user is also a process..." (The process is PASSIVATED until the next time he joins the dynabook when his state is ACTIVATED. Why didn't this come into being?)

→ The idea of the device being given away and only the content being used.

both "objects" and "actors" are just different aspects of the notion of process.

DATA → changes "slowly"
FUNCTION → changes "rapidly" is a process that...

## PAPERT'S WORK

WHAT? → CAI (Computer Aided Intuition or Instruction)

USING → The language LOGO

TO → Allows text, graphics, music etc. to be under control of a child's programs.

IS AN → ALGORITHM → Fairly informal and not necessarily logically consistent.

Knowledge is retained as a series of operational models, each of which is somewhat ad-hoc and need not be logically consistent with the others.

## STAGES OF LEARNING
(1) Sensorimotor (Enactive)
(2) Pre-operational
(3) Concrete operational (Iconic)
(4) Formal (Symbolic)
Multi v. conservation hypotheses

Reflexive / Reversibility / Discrepancy
Novelty / Object Conservation
Speech starts / Conserved
Inversion / Reciprocity

## TEACHING MACHINE
WILL BE

## CHILD → "Verb" rather than a "noun".
- An actor rather than an object.
- Acquire a model of his surrounding environment

HOW? IS TRYING TO

**DynaBook** | Ztblink ← PRESENT DAY
ARE → Website on the internet / application with scholarly articles.

## TOOL → Aids manipulation of a medium
REGARDED AS A COMPUTER

"Children learn by doing and much of alienation in modern education comes from the great philosophical distance between the kinds of things children can do and much of 20th century adult behaviours."

## PIAGET'S FUNDAMENTAL NOTIONS
WHAT? FIRST NOTION

SECOND NOTION

Development proceeds in a sequence of stages each one building on the past, yet showing dramatic differences in ability to apprehend, generalize and predict causal relations.

Much thinking is nonverbal and iconic. (Language does not seem to be the mistress of thought, but rather the handmaiden.)

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READING : WEEK 6