Research Techniques

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Research?

- what is it?
- should you be doing it?
- how do you do it?

Definitions of research

"Systematic investigationtowards increasing the sum of knowledge"

(Chambers 20th Century Dictionary)

"an endeavour to discover new or collate old facts etc. by the scientifi study of a subject or by a course of critical investigation."

(The Concise Oxford Dictionary)

Types of research

- the scientist
- the social scientist
- the historian
- the journalist

? R & D

The project

- integrative
- independent
- interesting
- intellectually challenging
- ? innovative

  not necessary but good

it is wise to learn from
your own mistakes

it is shrewd to learn from
other people's mistakes

Other people's work

- what they write

  books, articles, manuals

- what they say

  interviews, discussion

- what they make

  software, organisations

Finding references

- keyword searches
- backward: bibliographies
- forward: citation indexes
- what's available

Filtering references

be selective!

- keywords (unreliable)
- abstracts
- skim read
- citation count

Recording references

what

- details (title etc.)
- keywords (your own)
- mini abstract
- key points

where

- card index
- word processor file
- standard database
- bibliographic db

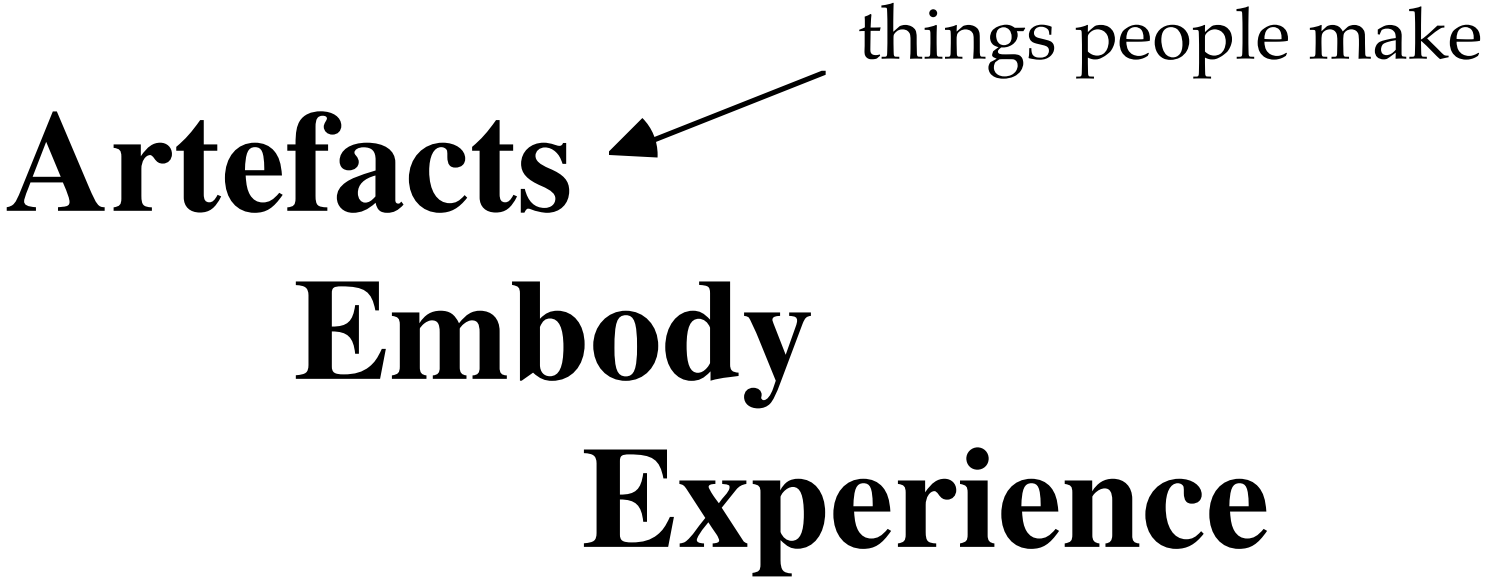
Talking to people – who

- client
- supervisor
- other staff
- friends and contacts

Talking to people – what

- you don't know what you're doing

professional — does it
academic — knows about it


things people make
Artefacts
Embody
Experience

- what is good about it?
  why is it good?
- what is bad about it?
  why is it bad?
- why do it this way?

Artefacts Embody Theories

e.g., mouse $\Rightarrow$ hand/eye control better than typing

deep understanding helps

- combine ideas

  avoid the crocaphants

- change context

  e.g., interfaces for the blind

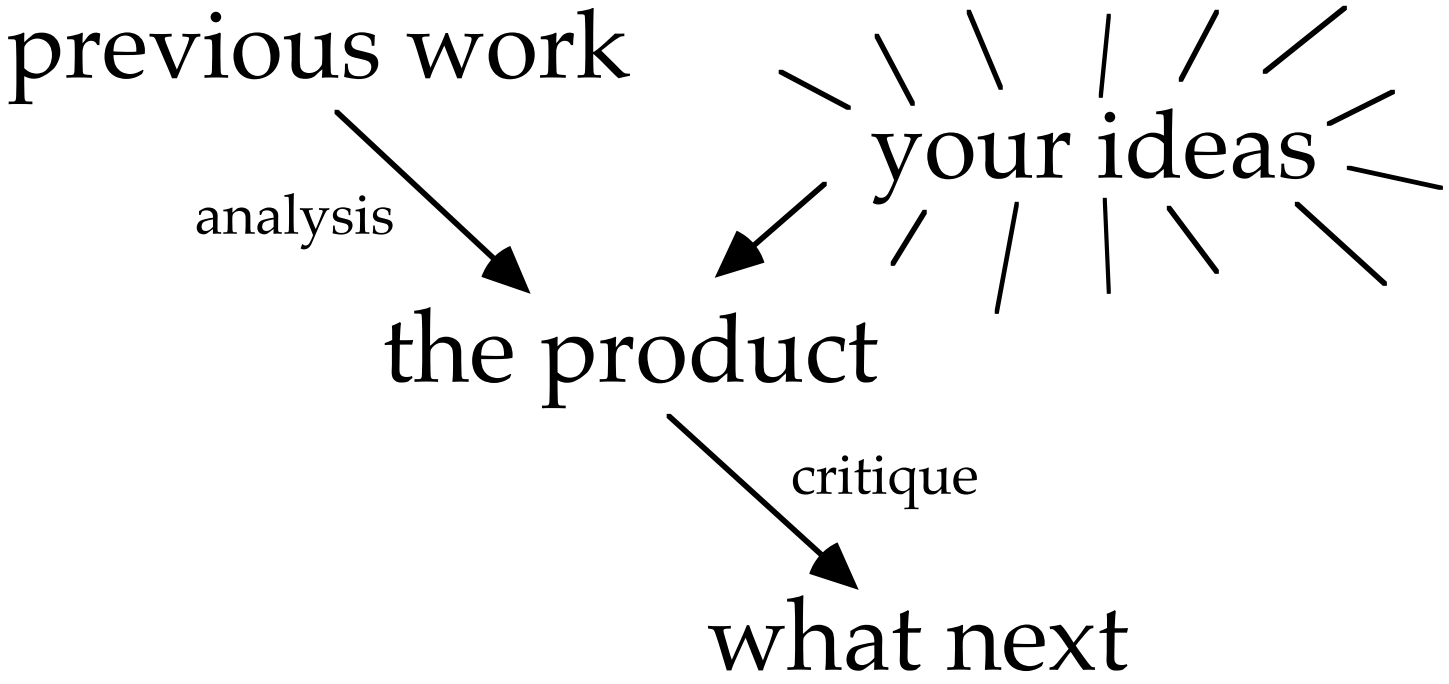
- improve and correct

Artefacts Embody Assumptions

solutions depend on context

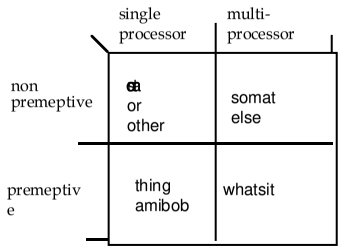
e.g., speed vs. space for algorithms

Your own work

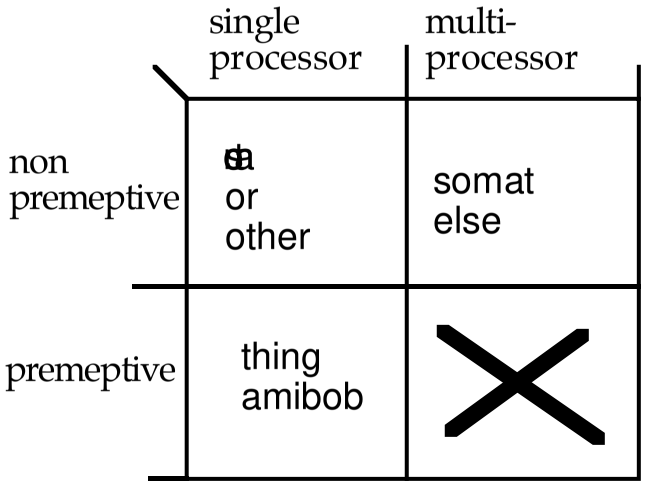


Analyse existing work

- classify
- taxonomise
- multiple perspectives
- matrices



Understand your context

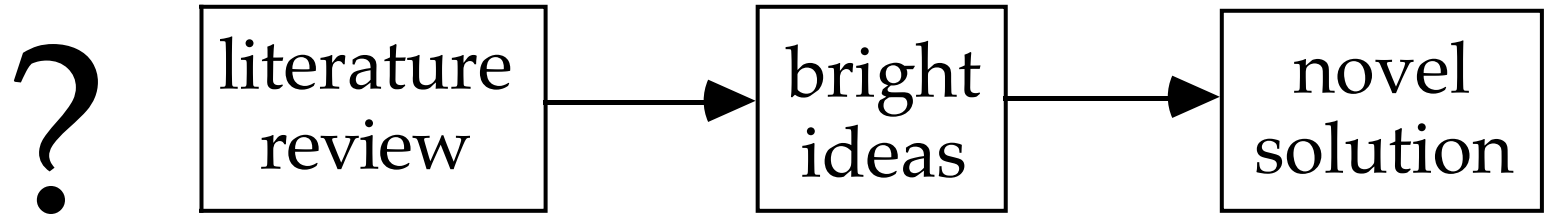


matching solution?

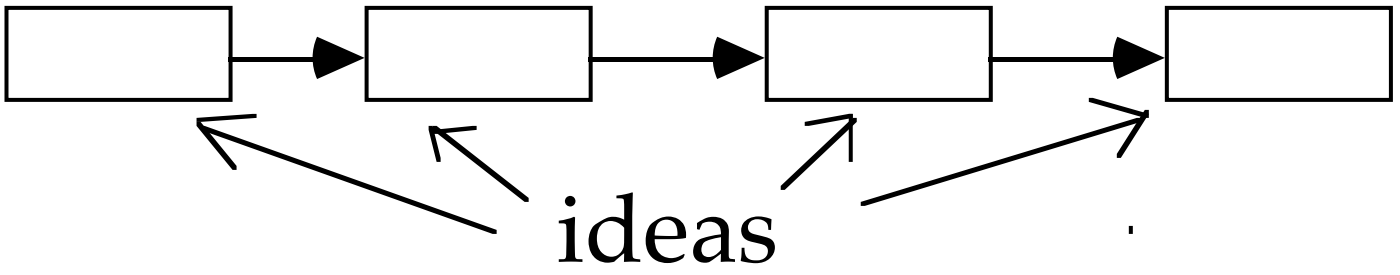
yes — then use it

no — synthesise

Planning for innovation



Don't rely on it!



Finding new ideas

- abstraction
- analogy
- lateral thinking
- challenge yourself
- silly ideas

e.g., the munchman interface

Evaluation

- testing
- simulation
- proof
- statistical
- anecdotal

Critique – the good

good points

- say what they are!
- what is novel, interesting?
- how does it relate to theory?

Critique – the bad

what is wrong and why

- resource limitations
- ran out of time
- lack of experience
- hindsight