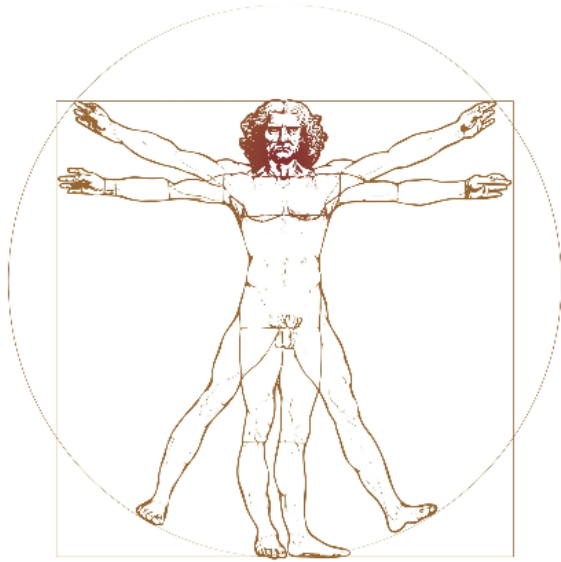


DESIGN AND HUMAN INTERACTION



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USER INTERFACE

- UI design would ideally require a multidisciplinary approach
- First step in defining the product's form factor
- Must comply to user needs, not designer ones

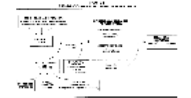
Vertical Product Development

USER INTERFACE

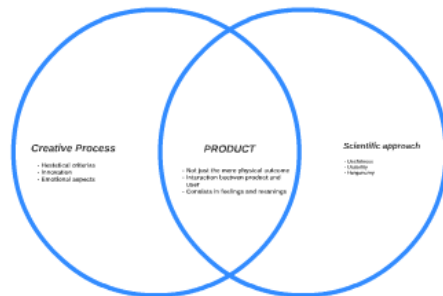


USER INTERFACE

- In the space where interaction between user and product happens
- It is characterized by IT, but it's meaning can be extended to physical interaction
- It is the implementation of its design that affects user of use and effectiveness of the product



PRODUCT DESIGN



USER INTERFACE

- The outcome of the action must be predictable
- Where possible, user must rely on a feedback
- Interaction must be coherent with desired action (analog vs digital)

USER INTERFACE

- Minimize unwanted outcomes
- Get rid of loops
- Implement a reward system (gamification)

To sum up:

- Focus on usability, effectiveness, pleasure, satisfaction, engagement, loyalty, retention, and repeat purchase
- Design for usability and usability metrics
- Design for usability and usability metrics
- Design for usability and usability metrics



USER INTERFACE

- Familiarity

stereotyped actions which are universally known (minimize new knowledges to acquire)

- Turn a key
- On/off switch

USER INTERFACE

- Manipulation and physical attributes

- Goal-coherence
- Ergonomics

- Contextual factors

Where is the product about to be used? Does it have a social meaning?

• **Manipulation**

• **Manipulation**

• **Manipulation**

The meaning and value of a product is determined by its relationship with the user

Norman, 2004



The user will in most cases be an human being

- Subjective aspects

- Market surveys
- Target mapping
- Individual differences

- Universal aspects

- Best practices
- Psychological criteria
- Social and cognitive aspects



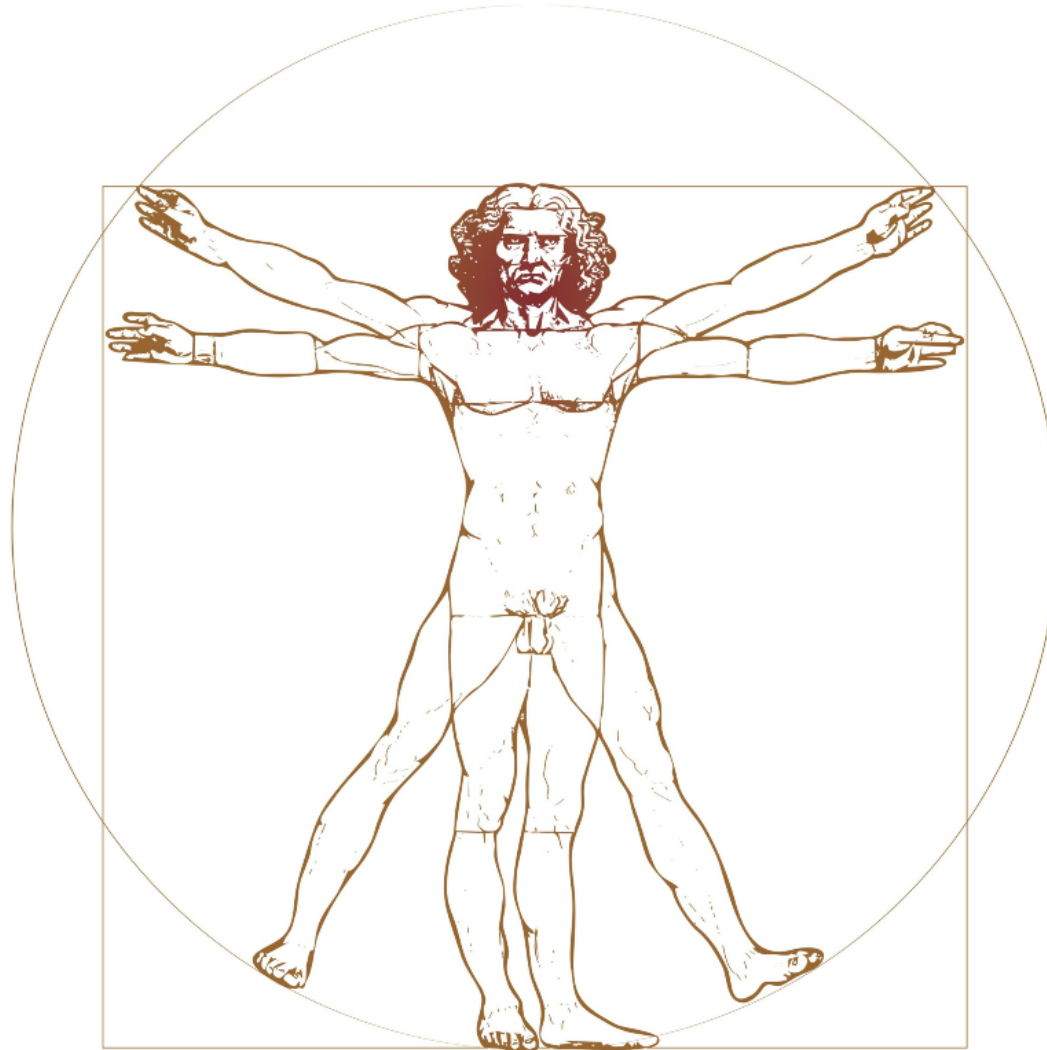
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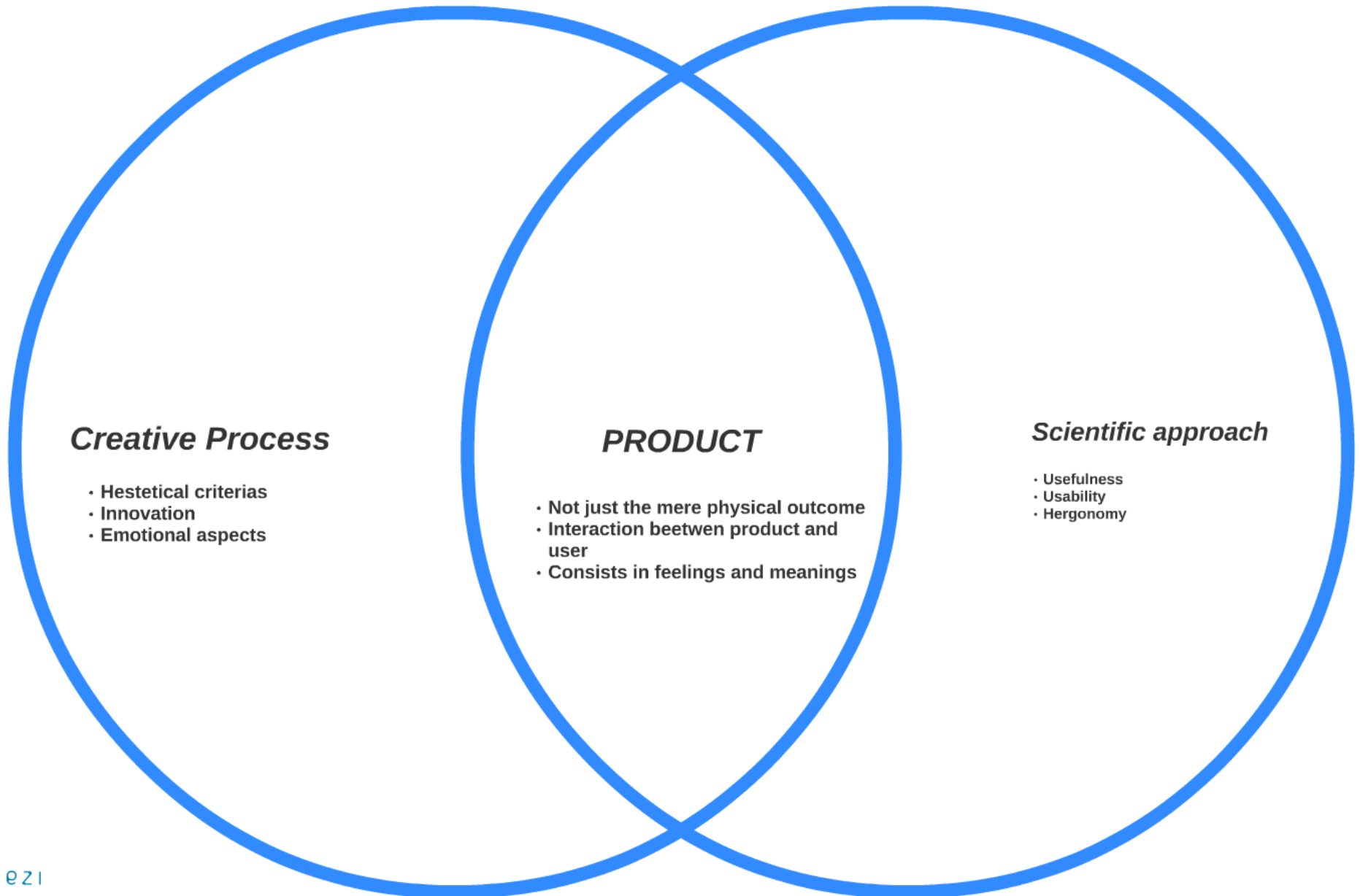
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DESIGN AND HUMAN INTERACTION



PRODUCT DESIGN



Creative Process

- Hestetical criterias
- Innovation
- Emotional aspects

PRODUCT

- Not just the mere physical outcome
- Interaction beetwen product and user
- Consists in feelings and meanings

Scientific approach

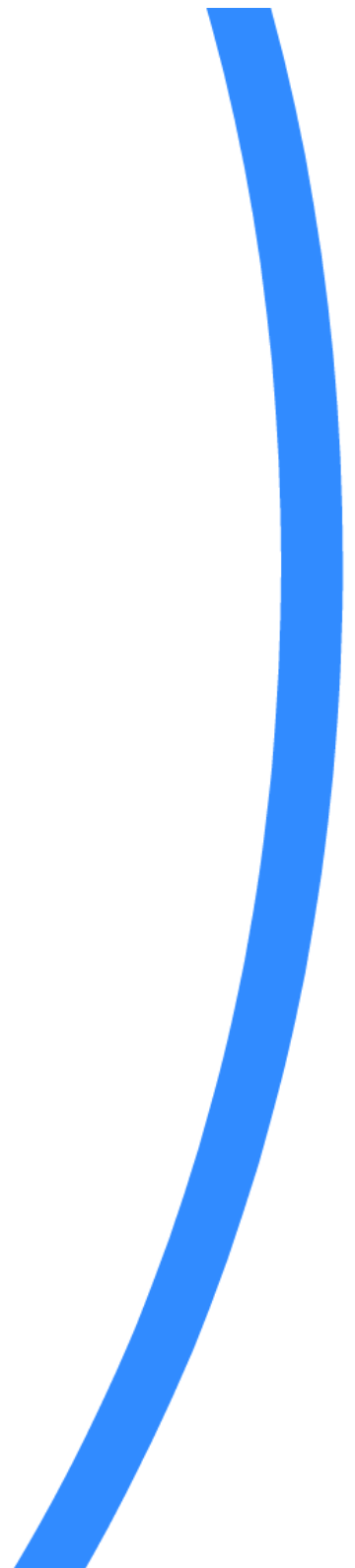
- Usefulness
- Usability
- Hergonomy

Creative Process

- **Hestetical criterias**
- **Innovation**
- **Emotional aspects**

Scientific approach

- **Usefulness**
- **Usability**
- **Hergonomy**



PRODUCT

- **Not just the mere physical outcome**
- **Interaction between product and user**
- **Consists in feelings and meanings**

The meaning and value of a product is determined by the its relationship with the user

Norman, 2004



VISCERAL

- Aesthetic qualities

Is it beautiful?

BEHAVIORAL

- Usability
- Hergonomy
- Practicality

Is it easy to use?

REFLECTIVE

- What does it mean to me?
- How does it contribute to my self-image?
- Does it evoke personal remembrances?

Do I like to own it?

- turn a
- on\of

The user will in most cases be an human being

- Subjective aspects

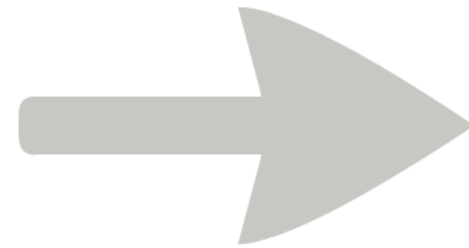
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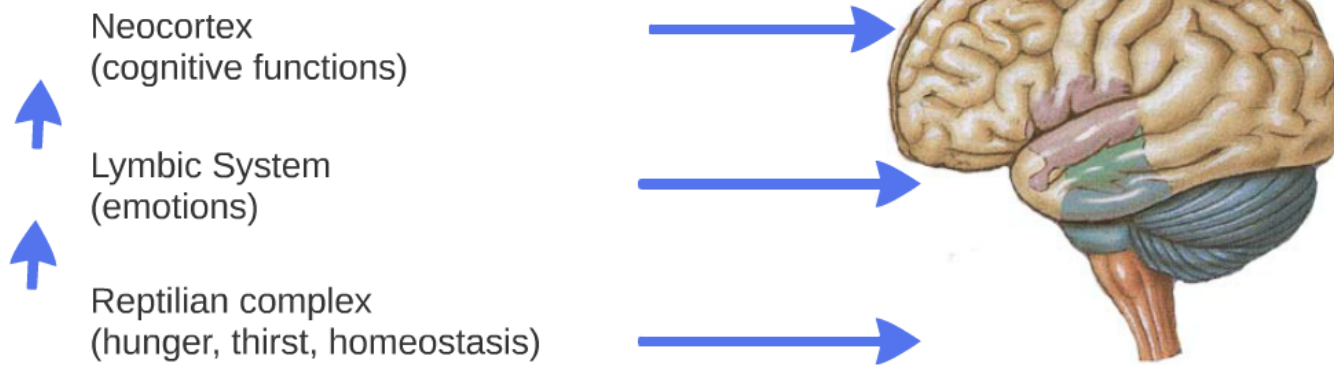
Psychological invariables

- Steady as target changes
- Empirical evidences
- Required as design boundaries



Human being isn't a (completely) rational animal

"Triune Brain", MacLean, 1970



Human being isn't a (completely) rational animal

Rational thoughts

Emotions

Primary needs

DECISION MAKING



- Elements directed towards the reptilian complex are generally more effective than "rational" elements
- Triggered reactions are predictable, since they pertain to universals, and cross-cultural
- Most used triggers are related to sex, shelter and nutrition

Fugate, (2007)

Costs\benefits analysis

Costs\benefits analysis

- Users tend to avoid risks and minimize efforts
- Required cognitive efforts are to be minimized, balancing benefits (features) and simplicity (ease of use)



Croxon L., Walton .E, O'Reilly J., Behrens T., Rushworth M. (2009)



Hick's Law

- More the options, more the time required to take a decision
- Designing a User Interface (UI), requires to set an optimal amount of options



WARM

COLD

Hick, 1952

1,2,3

Thermostat

1-20

Innate preferences

- Human being prefers certain stimulus categories
- These are most likely to trigger positive reactions
- These preferences seems to be innate, or at least acquired in early stages of life

Lewalsy, 1988

- According to gestalt theory, these preferences are related to order, simmetry, unity and harmony
- Cyclic repetitions of geometric patterns is generally appreciated

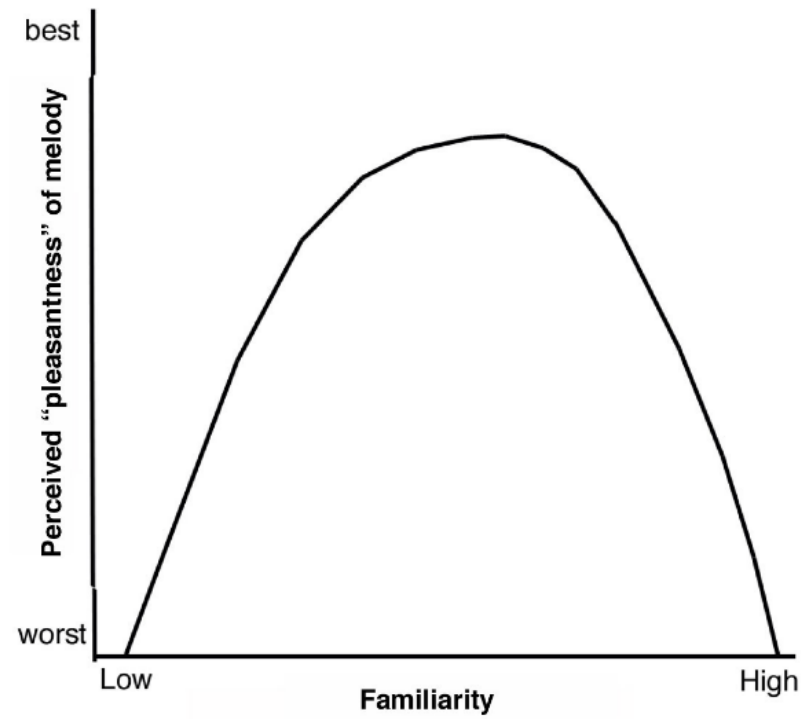
Papanek, 1984

Innate preferences

- Instead, an excessively unified pattern, with very few variations, tends to be perceived as boring
- Variety in design arouses an affective reaction
- Human being feels pleasure only with moderate arousals
- It is important to mix unified and varied patterns
- Too conventional objects cannot trigger enough arousal to feel perceived as attractive, while too complex objects triggers too much arousal

Berlyne, 1974

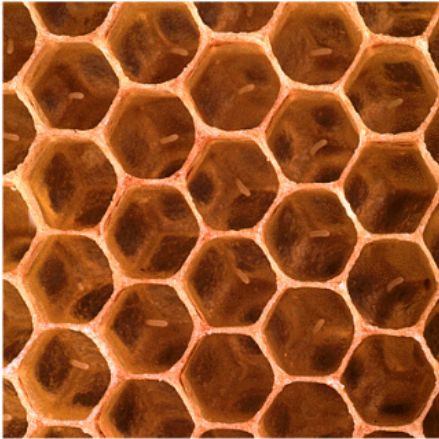
Innate preferences



Innate preferences

- Natural patterns are preferred

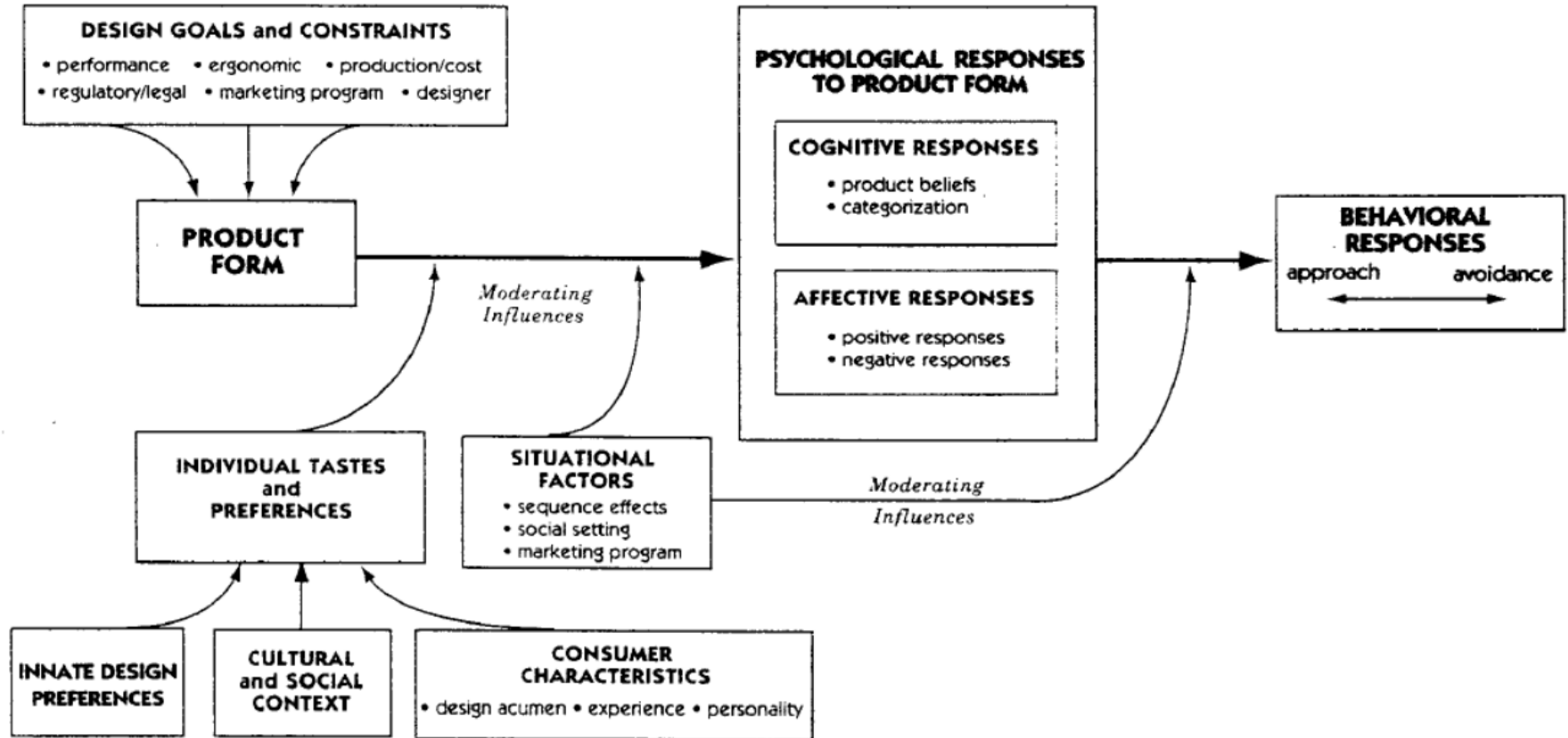
Mayall, 1968



To sum up:

- Trigger on primary or affective needs
- Evaluate cost and benefits in UI
- Optimal quantity and quality interaction options
- Mix of innovative and repetitive elements
- Balance
- Mime, where possible, natural patterns

FIGURE 1
A Model of Consumer Responses to Product Form



USER INTERFACE

- Is the space where interaction between user and product happens
- UI is commonly used in IT, but its meaning can be extended to physical scenarios
- Proper implementation of UI design rules affect ease of use and effectiveness of the product

USER INTERFACE



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