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Understanding Everyday Use of the Computer: How Philosophy Can Be Practical

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Understanding Everyday Use of the Computer: How Philosophy Can Be Practical

Abstract

The issues which must be considered when attempting to understand the totality of behavior when a human uses a computer are both multifarious and diverse. We thus have difficulties in gaining insight into the meaning that use of the computer creates in our lives, particularly in everyday use. Such understanding is important because insight based on holistic understanding is our best hope for exploiting the God-created potentials for human flourishing that is part of the promise of computing technology. As computer and internet technologies continue to embed themselves in the fabric of our everyday living, the number and complexity of use situations grows, and all facets of these situations must be apprehended and appreciated in order to respond wisely and act normatively. In this presentation, I will summarize the Human Use of Computers Framework (HUCF) developed by Basden (2008), a tool for producing insight into complex everyday computer use situations, and show several examples of this framework in use. This will demonstrate how the HUCF can help prevent overlooking areas that are crucial for understanding the human experience of using the computer, and will exhibit the practical implications of a philosophically-based tool for understanding.

Keywords

technology, human behavior, philosophy, comprehension

Disciplines

Christianity | Computer Sciences

Comments

Presented at the ACMS (Association of Christians in the Mathematical Sciences) Biennial conference held in Ancaster, Ontario, in May 2015.

Understanding Everyday Use of the Computer: How Philosophy can be Practical

Nick Breems

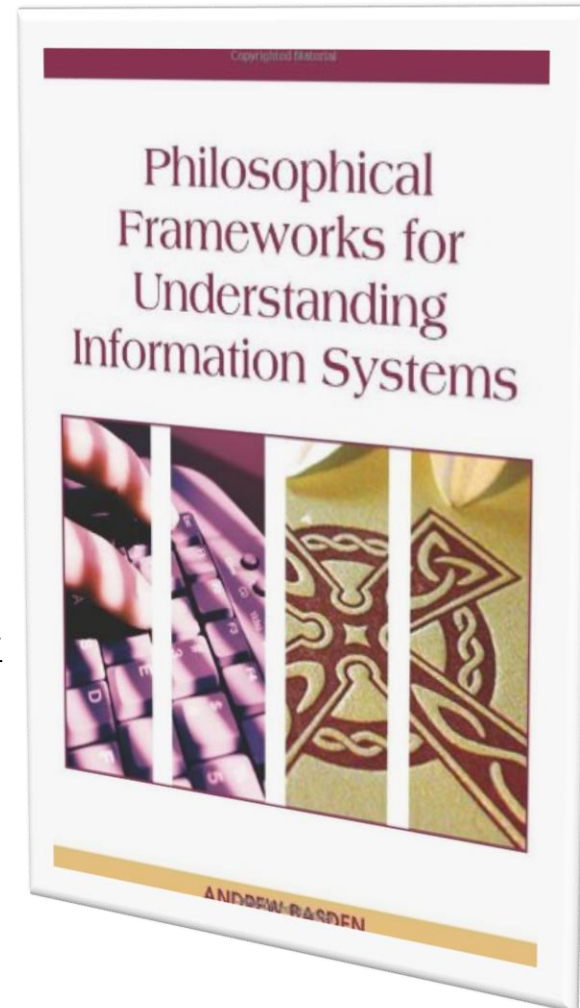
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Understanding Computer Use

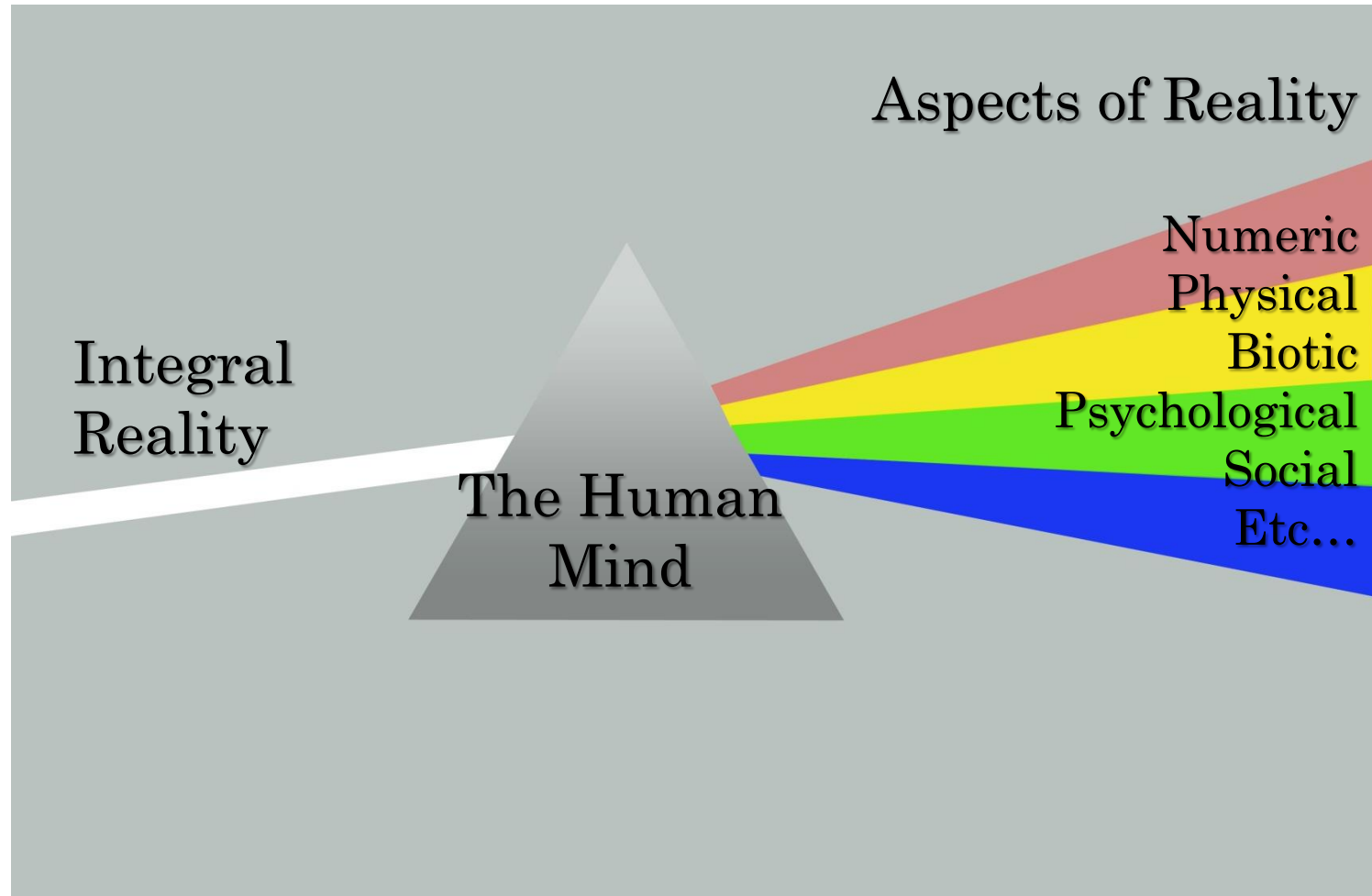
- Consider a graphics designer composing an advertisement for a company:
 - Physiological effects of ergonomics
 - Social interaction with coworkers affected by computer use
 - (Expected) Economic benefit of use
 - Aesthetic enjoyment of use
 - Physical presence, emotional distance
 - Picturing the information “stored in” the computer
 - Unexpected impacts
 - Legal considerations
 - Environmental considerations
 - Power relationships

Use of Philosophy to help Understand this Diversity

- Philosophy is a field which seeks to understand the coherence of our experienced diversity
- As such, it can be a very *practical* tool for understanding everyday life as lived.
- Using the ontology of 20th century Dutch philosopher Herman Dooyeweerd, Andrew Basden [2008] has developed a framework for understanding computer use – the HUCF
 - Human Use of Computers Framework



Dooyeweerd: Reality is Aspectual



List of aspects (according to Dooyeweerd)

- Quantitative (discrete amount)
- Spatial (continuous space)
- Kinematic (movement)
- Physical (energy & mass, forces)
- Biotic/Organic (life functions & organisms; flourishing)
- Sensitive/Psychic (senses, feelings, emotion)
- Analytical (distinction, conceptualization)
- Formative (shaping: history, culture, technology, goals)
- Lingual (meaning carried by symbols)
- Social ('we': sociality, relationships, roles, respect)
- Economic (frugal management of resources)
- Aesthetic (beauty, harmony, surprise, fun, play, enjoyment)
- Juridical (giving what is due; responsibilities & rights)
- Ethical (self-giving love, generosity)
- Pistic (vision, aspiration, trust, commitment, belief)

Human Use of Computers (HUC) Framework

- Developed by Andrew Basden (U of Salford, UK) based on work of Dooyeweerd
- Analyzes use of the computer in two dimensions:
 - Vertically: Among Dooyeweerd's aspects
 - Horizontally: Among the various things we're interacting with:
 - The actual computer
 - Including interface hardware/software
 - The content
 - What the program is about – represented on-screen or in our minds
 - Our everyday lives
 - The effect that the use of the computer has on our life as lived

Examples of HCI/EMC/HLC

- Example: A web browser
 - HCI Use the mouse to click links, scroll on page; read text and view pictures on screen
 - EMC Understand the content; recognize the linked structure
 - HLC Use the new information to make decisions
- Example: A car racing game
 - HCI Provide input with joystick; view scene on monitor
 - EMC Control the car, try to win the race
 - HLC Enjoy playing the game

Human /
Computer
Interaction
(HCI)

Engaging with
Meaningful
Content (EMC)

Human Living
with Computers
(HLC)

**Aspects of
reality**

Ex:

- Numeric
- Physical
- Psychological
- Lingual
- Social
- Aesthetic
- etc...



HUCF Analysis

- An analysis using the Human Use of Computers Framework involves thinking about meaningful kinds of functioning in:
 - Each of the three basic categories of functioning
 - Each of the 15 modal aspects of reality
- Result is a 45 cell table
 - Theoretically, humans are functioning in all cells at all times
 - Practically, not all cells are of equal importance, may omit some

Example of use: Mail-merge Gradebooks

- Gradebook for a college level course is stored in Excel
- “Mail-merge” feature of Word, Excel, and Outlook is used to send a custom grade report to students several times a semester.
 - Allows student is see at a glance how they’re doing, which assignments are missing, and how grade is calculated.
- Moodle (previous LMS software) had unsatisfactory flexibility for my grading style, so I continued using (and refining) this homemade solution until we adopted Canvas this academic year.



Adobe Acrobat
Document

Insights gained

- Note that the majority of cells are filled in.
 - Human functioning is fundamentally multi-aspectual – we would expect to see most cells filled in.
- Demonstrates usefulness for understanding the everyday task of using multiple simultaneous applications.
 - This is not common for ways of formally analyzing computer use.
- HCI functioning in Analytic through Juridical shows that mail merge process is not very intuitive
 - Can help understand not just that it is troublesome (which was obvious) but also point towards why the mail merge process is not easy to use.
- EMC functioning in Formative, Ethical, and Juridical shows how the grading process may be moving the education process in an unhelpful, grade-obsessed direction.
- Simply doing the analysis can be a powerful catalyst for introspection, and thus an opportunity to improve.

Use of Philosophy

- Thus we see a very *practical* tool for understanding, which came out of the very abstract world of Dooyeweerdian ontology.