



GÖTEBORGS UNIVERSITET

STUDENT

0001-MYS

TENTAMEN

TIA301 Tentamen

Kurskod	--
Bedömningsform	DT
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i Welcome to examination!

This examination consists of open questions, sometimes referred to as 'essay questions'. It includes **7 questions**, each rewarded with a maximum of 3 points. The examination is limited to **2 hours**. To pass it you need **13 points** (60%)

The grading will focus on the overall capability to explain and apply ideas. It will assess whether (1) answers are logically coherent, whether (2) they are grounded in readings, lectures, and discussions, and, when applicable, that (3) answers engage the key concepts of the course.

It could be worth noting that longer answers are not necessarily better answers, since long texts increase the risk of ending up with inconsistencies.

1 HT23 Question 1

Laura reads about actor network theory (ANT). She likes the idea of humans and things shaping social phenomena together. However, she is puzzled by the principle of **generalized symmetry**. You need to help her. In your own words:

1. Explain how humans and material artefacts can be viewed/understood as identical, in terms of agency.
2. Describe how this principle is useful when analyzing how socio-technical systems (systems involving humans as well as technologies) behave and evolve.

Skriv in ditt svar här

Agency is understood as the capacity to act, influence, change and impact the environment and to have free will. This is most often applied to humans, but material agency has got a value too. Material agency can be understood by a network perspective where human and non-human agents create a network, and the network, the system, is what makes sense of material agency. It is important to understand the role of it rather than its individual agency. These two are seen as identical because of the generalized symmetry. This is because the ANT means that if you inject a human in the network, something will happen, there will occur a change because of perhaps the new knowledge, culture, experience etc. This will provide an output. Also, this can be applied with injecting a technology to the network such as a 3D printer. When injecting this, it will cause changed dynamics, new structures in the organization and even maybe people who have to quit because of the lack of knowledge to maintain this new technology. New revenues and business models emerge too as an example.

This principle is useful because when you are giving agency to materiality, you can see the interaction in the network with humans. Socio-technical system also evolves thanks to the identical effect that material agency has on the network as human agency. These two agents are powerful, but even more powerful when interacting and influencing each other and behaviours. These two agents are together able to create new dynamics, new business models, influence behaviour and norms that wouldn't be that tangible without this duo and interaction because of the effect and pace it has the capacity to impact. This is evolving and impacting behaviour in socio-technical systems.

Ord: 288

Besvarad.

2 HT23 Question 2

Kevin has read about operand and operant resources. He has understood that an operand is a resource that can be acted upon to get things done. This resonates well with him, since he sees technologies as tools. However, he finds **operant resources** mysterious.

Explain to Kevin what an operant resource is and how it is different from an operand. Also, explain why digital artifacts are more often considered as operant resources.

Skriv in ditt svar här

So operant resources are more active and generative than operand resources that act ON other resources, rather than UPON. This means that they have the capacity to initiate change, impact and influence their environment without any external control. Such resources are often seen as humans, since they are complex and can act by them selves and be so called active.

Digital artifacts are traditionally seen as operand resources but not anymore. Nowadays technology and digital artifacts are more leaning towards operant resources because of their complexity and the agency this provides. They have the capacity to influence and change behaviours in their environment. Example of this can be social media such as tiktok or instagram where we constantly are injected with data, information and algorithms that influence our every day life. It can be something like trends, thoughts, political voting etc. Digital artifacts are a huge part of a humans life and with that, it also has a huge impact on us.

Ord: 162

Besvarad.

3 HT23 Question 3

Simon is confused about the concept of **affordances**. He knows it focuses attention on meanings rather than attributes of digital artifacts. His problem is that affordances are defined in *relation* to an observer or user. If an affordance is a relative thing, it comes out as useless to him.

What did Simon miss about affordances? Explain to him why an affordance, although being defined in relation to an observer, can be useful to explain general aspects of material artifacts.

Skriv in ditt svar här

Affordances are defined as possibility to act, it shows and enlightens us about what we can do and how to do or manage the digital artifact. Affordances are based on digital materiality where the properties are very important, but also the design of it. This is very important to understand since the properties and design shapes the affordance and with that, the interpretation and interaktion between the digital artifact and the user. Example is for a developer or web page creator, it is important to understand digital materiality to be able to provide optimal affordances for the users and to be interpreted in the right way. Because, if the user doesn't understand or is poorly navigated, this will most likely lead to no value creation, both for the owner but also the user. The user will probably go to the competitor.

A chair for example can be explained as affording sitting. This is because of its design and properties. You as a human can choose to sit on this chair or not, but the affordance of sitting is still fixed. It does not change based on what you want to do with it. But what can change is the interpretation and interaction with the chair. Perhaps, you choose to stand and climb on the chair, the chair affords this in your interpretation but it still affords sitting as originally. Affordances can also change over time, so they don't have to be fixed for a life time. This is thanks to the von Neumann architecture, the anything machine. By understanding Reproducibility and programmability, there will most likely be new functions created, new affordances or even improved affordances that go along with user needs and wants.

Ord: 285

Besvarad.

4 HT23 Question 4

Sara knows that **reproducibility** refers to the capability of producing copies of a digital artifact, without triggering any marginal cost. However, she is confused about the consequences of it. The lecture she is following argues that reproducibility tends to make markets more diverse, i.e., including more niche products/services.

Explain to Sara why the reproducibility of digital technology tends to produce markets with more diversity.

Skriv in ditt svar här

So if we go back to von neumann architecture and the anything machine, this machine affords reproducibility thanks to how it is built and constructed. Reproducibility in that sense affords diversity as an aggregated affordance.

Reprpducability of digital technology tends to produce marktes with more diversity since it affords to reproduce and perhaps make copies of several different languages that include a larger audiance. Also, reproducability enables a global distribution since it is not triggering any marginal cost. This is also why niche products and services no longer end up in a corner and are hard to be seen, reproducability makes it possible to be as seen as popular products and services. One example is a library that most often shows the most popular books because of the revenue and because the seller knows that these books are selling and that the less popular books or niche books are going to take much space and not sell. But with reproducability, these books are able to be displayed as much as the other books, wihtout taking more or any space, and generating more revenue and selling. They can now be more seen. Even books in different forms are able to be produced bevause of reproducability. This can for example be e-books, pocket books, books that you can listen to etc. This includes different audiance, groups and business models.

Ord: 227

Besvarad.

5 HT23 Question 5

According to Jonathan Zittrain, **generativity** is found in “a technology’s overall capacity to produce unprompted [spontaneous] change driven by large, varied and uncoordinated audiences”. He also proposes that such generative capacity derives from four attributes of the technology.

What are the four attributes, and how do they make the technology generative?

Skriv in ditt svar här

The four generative attributes are:

Capacity of leverage: When a system/technology reduces as much effort as possible, it is seen as generative. Also, the more you can use this technology for, the more generative it is, the higher capacity for leverage it has. This is seen as generative since different usage enables creativity, ideas, perspectives etc. Tik tok is an example of this, it can be used for several different things such as showing dancing skills, cooking recepies, marketing, going live and interacting globally etc.

Capacity of accessability: This means that if a technology is accessable at hand, it will be more generative. Example here is also tiktok, this app has a high capacity of accessability since it can be reached by everyone who has a smartphone where they can download apps. This leads to a large audiance that can take a part of tiktok and contribute with increasing the capacity of leverage perhaps.

Capacity of adaptability: The more flexible a technology is, the more generative it is. This is very important because flexibility makes it easier to adapt to a changing environment or just to adapt to user needs and wants. Tiktok in this case has a capacity to adapt becuase of the algorithms. It is always going with the flow and following up on what is trending right now and what is relevant in the society or in the world. But also for user needs and wants, a user can choose how to interact with tikotk, how to post, what to post, which algorithms they want or dont etc. You can make your own profile custmomized.

capacity of ease of mastery: This is based on how easy it is to use the technology, digital arifact or system. And how easy it is to learn how to use it. This also has an impact on generativity. Example here is also tiktok. Tiktok is usually seen as very easy to master and use and it has very clear and structured affordances that makes it easy for the user to interpret and interact with. Tiktok is therefore being used by children, teenagers, adults but even elders. Another example is implementing the 3D printer, if this is being implemented but not easy to master or not easy to learn how to use it, it will not be generative at all, it will only be a cost.

Ord: 394

Besvarad.

6 HT23 Question 6

Elisabeth tries to understand how the concept of **boundary objects** can be useful in the context of design. The idea that boundary objects can take on different meanings in different contexts, yet be easy to recognize and put into action by various designers is appealing to her. However, to fully understand Elisabeth needs an illustration.

Pick an example of a digital design boundary object. Use that example to explain to Elisabeth how a boundary objects can be *plastic* enough to adapt to local needs and constraints and, at the same time *robust* enough to maintain a common identity across sites.

Skriv in ditt svar här

Boundary objects are seen like a bridge between different social worlds in that sense that they can communicate, cooperate, solve problems etc. These are to be seen as the reference point and something to recognize for all of the different social worlds, despite that it can be adaptable and used for several different purposes. This is where plasticity and robustness is coming up.

One example of a digital design boundary object is google docx documents. This is seen as a boundary object because it facilitates communication, cooperation etc. The plasticity of this object comes in here because it can be used for different purposes like taking notes on, using it for illustrating something, sharing, categorize different ideas in each document and maps. It can be used for different purposes, needs and wants to be able to reach a goal that you are working on and that is why google docx is adaptable, it is plastic in that sense.

But it is also robust since it still has its identity in that matter that just because you use google docx to illustrate something you are working on, it doesn't change the structure, affordance etc of it. It is recognizable for everyone who is using it, it is a reference point for the different social worlds.

Ord: 214

Besvarad.

7 HT23 Question 7

Explain the basic idea behind **ontological reversal** and reflect on the consequences of ontological reversal for the design of digital systems.

Skriv in ditt svar här

Ontological reversal is a theory of transdisciplinary perspectives. This theory describes that maybe the digital is more real than the physical. It describes the shift from traditionally thinking that physical stuff that are tangible and that have matter, are real and that digital artifacts are just representations of the real world. But the shift now is that the digital artifacts are what is real nowadays and not the physical. The example that can be provided for this expression is that say that you have a ticket, you buy a ticket and you get it to your phone. This ticket is considered real. If you print this ticket out, it will just be a copy of the e-ticket. It is useless in that sense that it can be thrown away since you still have the e-ticket. This physical ticket in that sense had to be a representation of the digital, the copy of the digital, and the digital is the original. This can also be referred to receipts you get after buying something. Yes, you get a receipt physically, but this receipt was originally made somewhere, which is in a system of 1 and 0. The receipt is just a copy of the digital.

Also, nowadays you first produce a digital product before the physical. You first simulate, design and create digitally to be able to make a prototype of what could be done physically. This is a changed dynamic in the organizations if we compare to what it is traditionally.

The consequences of this are that it is costminimizing to first create a product digitally since you are afforded to program, reproduce, edit etc which also creates a more generative and innovative output. You can test the product or service. One example is the car crash test. You can use what ever you want to simulate a car crash which would not be able in real life. This is effortless and doesn't cost as much as if we take cars and crash them. Other consequences of this is that some physical objects such as paper, tickets, cooking receipts and books, regular receipts are not going to be relevant anymore, this is more sustainable. Less trash.

The digital systems are maybe also forced to be more complex to keep up with this theory. Since we are almost doing everything digitally nowadays, this will lead to new and more creative outputs and understandings on how to make these systems more generative and innovative to be able to compete on the market. What can be digitalized such as tickets to be considered real but in a more complex structure.

Ord: 436

Besvarad.