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Will the design of the human–product relationship follow user experience?

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Abstract: Today, user experience (UX) is an essential aspect of the design of digital, interactive products. Thirty years ago, however, things looked different. The focus was not on the experience but on the metaphor of the tool or medium. But how will the design of digital, interactive products develop over the next 30 years? How will the design of products and services change, and how will this influence the UX profession? One possibility is highlighted in particular: focussing on the relationship between the user and the product with elements such as emotional connections. Through relationships, the roles of artificial intelligence, humanity and ethics in the design process and the importance of sustainability and adaptation to changing working and learning environments become particularly relevant. In the future, designers must assume even greater responsibility for users, society and the environment.

1 Introduction

User experience (UX), or the user's perceptions and responses that result from the use and/or anticipated use of a system, product, or service,[1] is a widespread aspect of design in human–computer interaction. The specialised role of UX designers is implemented or at least known in many organisations that develop interactive products, and there is a corresponding need for competent personnel. The increasing importance of this aspect of design has also led to the development of a job profile that is still being refined today. In recent years, for example, the discipline of UX writing has established itself as a major component of UX design. UX writing describes the targeted formulation of the written word of user interfaces to support better usability and better recognition.[2] Another example of a relatively young discipline is UX strategy, which pertains to the alignment of an organisation with the aim of creating positive experiences for all stakeholders, including users.[3] These examples of new disciplines in the field of UX raise the question of which new disciplines will emerge in the coming 30 years. Any further development ultimately requires an adapted skills profile and novel, or least adapted, approaches compared to the current methods.

Parallel to the differentiation of the job profile, a more significant consideration of the motivation of UX professionals can be observed. Namely the focus on human needs is leading to human-centred product development, in which the needs of people are considered more important than before. UX professionals are committed to the well-being of people, which explains the increasing discussion about human-centred product development. Other design aspects, such as sustainability and meaningfulness, are being introduced into the discourse on product development.[4]

UX professionals, therefore, take responsibility for other people. In this context, the term 'user advocate' is often used when professionals describe their roles (e.g., [5,6]). The launch of ChatGPT and other artificial intelligence-supported conversational user interfaces already shows that further changes to the job description are imminent. New design aspects will emerge and be reflected in the development of interactive products. However, the question regarding the specific design aspect will become crucial.

To determine the design aspect for interactive products that will be relevant in the future, understanding the design aspects that had become relevant in the past is beneficial. The origins of interactive products date back for centuries, with the introduction of programmable looms in the 18th century representing a widely recognised, notable milestone.[7] These early innovations were ground-breaking, but usability was not at the forefront of their development. Their operation required precise and timely actions – the exact use of the pedals at specific heights to avoid incorrect thread selection and 'programming errors'. Such looms represented a leap in efficiency and effectiveness over previous methods. The pragmatic benefit was the leading design

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aspect of these types of programmable, interactive products. This is not surprising given that the cultural and technological developments, particularly in Europe, have influenced the product design of that period. Calvinist doctrine, for example, emphasised the holiness and fulfilment that came from one's vocation, a sentiment reflected in the product design philosophy of the time.[8] The predominant metaphor of the time was probably the tool: an instrument to fulfil a professional task or solve a particular problem. The focus was primarily on the pragmatic aspects of how an interactive product could achieve a work task efficiently and comfortably. Interactive products that differentiated themselves from others through hedonic factors were less common. What is now called 'user experience' was, therefore, not the primary driver of the design ethos in this historical context. The overarching goal was functional utility rather than the creation of an experience that was enjoyable or otherwise emotionally enriching.

Over time, the focus has shifted more towards the experience as a relevant design aspect. An explicit turning point cannot be identified. However, in the design of interactive digital products, various approaches to their development emerged towards the end of the 20th century. The discipline of human factors has been based on the assumption that rationality and logic dominate users' thinking, often excluding emotionality;[9] for instance, the human factors literature from this period mostly did not contain the words 'pleasure', 'fun', 'joy, or 'frustration'.[10] Russell[11] wrote 1998 about the User Experience Research group within Apple's research labs. Representing the other members of the research group, Russel viewed the creation of a useful and enriching user experience as a comprehensive goal that necessarily transcends the boundaries of specialisms. The relevance of the design of the user experience was therefore recognised by the designers of interactive products. For companies, the design of the user experience also became important as an additional feature of differentiation. If several products on the market solve problems almost equally well, then the non-pragmatic factors of the user experience can be decisive for a buyer's product selection.

2 More than the experience of one interaction

User experience refers to the users' perceptions and responses that result from the use and/or anticipated use of the product;[1] however, a temporal perspective in creating experiences is also involved because users generally have episodes of use and non-use.[12] In other words, they have a history in which they associate episodes of use with those of non-use and vice versa. Especially regarding the episodes of non-use, UX plays a role according to the definition through expectations and lingering reactions. However, as an actual UX is primarily reconstructed through memories, the shaping of memories is a top priority for some product designers. Experiences can shape memories[13] and may influence expectations.[14] At the same time, memories can also influence communication about UXs within people's social environment. Users talk to other (potential) users with their memories in mind and thus influence the expectations of others.[15] Memories are, therefore, significant for product developers, even more so than the actual experiences. Of course, a positive experience promotes a positive memory, but the actual goal is a positive memory overall.

Memories from many usage episodes add up, flow into each other, and enable the development of a relationship with the product.[1] A human–product relationship (i.e., the perceived relationship or connection between a person and the product) can develop from the repeated, remembered, and expected human–product interaction. This relationship may be described by a different set of attributes than user experience. Moments can emerge when people feel disappointed by a product. An email that is to be automatically sent at a time previously defined by the user but is eventually not sent illustrates such moments. The user has relied on the product and is now disappointed in the same way that they would be disappointed by another person. Another example of relationship-based issues arises when a beloved product is discontinued. The emotional impact of this separation is often evident in the discussions about discontinued products, such as Google Wave and XING Events. A person can feel the same as when an interpersonal relationship is severed.

3 Human–product relationship as a design aspect

A relationship between products and humans has constantly existed, as design is oriented towards human needs, although not necessarily those of the users but those of the producers. The reason is that humans design products for humans, and humans change their behaviour in the form of using new products; hence, products and humans

1 Koskinen and Battarbee[16] have mentioned that the relationship with a product develops over time as part of the consideration of user experience. However, the question regarding the extent to which relationship qualities play a role in this case was left open.

influence each other.[17] Thus far, the conscious design of the relationship between humans and interactive products has been under-researched and is rarely used in the design of interactive products. The assumption is that the human–product relationship will be an essential design aspect of digital products in the future; the issue of how this design aspect will be reflected in the everyday working life and the job profile of UX designers is therefore worthy of consideration.

Based on the concept of user episodes, UX designers will have to continue to create a collection, namely a story of positive experiences, which also builds an emotional bond and generates expectations between people in their social role as users and the product. The targeted development of such a relationship is still rare, even in practice, although some UX professionals perhaps already focus on the human–product relationship. Nonetheless, a key question arises: will the design of the human–product relationship renders UX design obsolete? The concept of user experience is likely to remain highly relevant in the future. Previous practices will remain important, but the human–product relationship will become highly significant for the design of some interactive products.

Initial approaches are evident in the design of products with dialogue interfaces that are difficult to plan, such as ChatGPT. These non-linear dialogue interfaces are the first burgeoning ideas where product designers must ask themselves how the relationship between humans and the product should be perceived by people. Such an approach simultaneously leads to a reflection on the effect of designed artefacts on this relationship. Nevertheless, similar to the topic of memory that requires good moments as a basis, product designers must realise that an effective UX is a basis for a sound relationship. Positive relationships between humans and products are unlikely without positive experiences.

The focus of UX design can move away from the individual moment of interaction and towards a longer-term user journey. Such a journey also includes targeted consideration of episodes of non-use. This must already be considered for some products today, as there are products that contact people of their own accord and ask for their attention, e.g. websites asking for a rating or mobile apps sending notifications. This events, which takes place outside of the interaction, can be expected and reflected on just as much as the actual use of the product itself. Over time, a kind of relationship expectation arises, for example, in the form of the expected reliability of current messages.

To shape this relationship and the associated expectations, product developers need to think about how the relationship should be perceived by people, especially in their social role as users. How people shape, formulate, feel and discuss their relationship with the product itself will also play a role. Designers should think more about how an emotional connection can be made possible that is also appropriate for the product in question. After all, it is very likely that not every product will be defined by its relationship in the distant future. However, for some product types like chatbots or virtual assistant the design of the relationship will be a high priority.

4 Products as partners

Different product types tend to have different metaphors[2] reflecting their relationship with the user. Whereas some frequently used metaphors for interactive systems today are, for example, the tool, the medium or similar, the metaphor of the partner will be used more regularly in the future. This metaphor harbours some new aspects that will be relevant in the interpretation of a product-designing profession, as it is no longer a ‘tool’ but a ‘partner’ that is being designed.

Even before the introduction of ChatGPT, the concept of a partner seemed inappropriate for most interactive systems. With voice assistants such as Siri, Alexa, and Cortana, which can be controlled by voice, users are sometimes expected to learn a unique language based on keywords and the syntactic structure of commands, even if the technological ‘understanding language’ already works reliably. Even with highly acclaimed systems such as ChatGPT, this case is still apparent, as can be observed, for example, in the emerging specialised discipline of prompt engineering, a requisite skill set for effectively conversing with large language models.[19] However, if it is assumed that the naturalness of communication with interactive systems will improve steadily over the coming years, the construction of a personality for the communication partner ‘system’ is not far off. People can have conversations with ChatGPT and subsequent systems that feel like communication with real people. Non-living things suddenly become thinking and actively performing beings, at least in the perception of users. This factor will also change the behaviour of users, as can be observed in some cases today. Some users give their robot vacuum cleaners pet names or say ‘please’ and ‘thank you’ when interacting with ChatGPT or other chatbots. As

2 Metaphors are analogies that help people to transfer characteristics and behaviour from a familiar area to a less known area. This transfer can also be helpful to learning an interactive product.[18]

soon as the systems provide added value beyond communication, for example, by solving everyday problems such as booking a hotel room and doing the household chores, relationship aspects such as reliability and good manners will be promoted or disrupted by designed artefacts of the system. Qualities that users expect from their relationships with people can thus also flow into the relationship with a product.

However, an essential aspect of interpersonal communication should not be ignored, which will also be found in the communication between the product and the user. Namely people have different values, and the difference between these individual values often results in conflict. Regardless of whether these are political opinions or personal convictions, people act according to individual values and principles, some of which they are not even aware of. If interactive products are made available to people via communication that is as natural as possible, product designers need to think about which values and principles the product itself should represent to enable a relationship in the intended form. This also includes the question of what personality the product should have. With voice assistants in particular, this can also influence the choice of voice and the vocabulary used. A highly individualised assessment must also be assumed here, which can already be seen today with voice assistants that allow the selection of a voice perceived as female, male or gender-neutral.[3]

The first approaches to shaping the personality, the values represented, and the principles of a product already exist. Particularly in the field of research on social robots, research approaches have involved the investigation of the extent to which interpersonal relationship models can (or should) also be applied to the human–system relationship[21] and how a long-term relationship with robots can be measured.[22] Social forms, social functions, and social contexts must be considered in the development of social robots.[23] A transfer to the development of chatbots, virtual avatars, or other dialogue-based generative artificial intelligence, for example, is certainly possible but still rare in practice. Other techniques have not been scientifically investigated. For example, so-called Product Pinocchio exercises[24] should help product teams to imagine what kind of individual a product would be. Team members imagine their product suddenly becoming a person and thus coming to life. The team must clarify the character of the product and its motives for action. Inherent characteristics of the product can be reflected in the imagination, for example, through clothing style, manners or even hobbies.

5 Changes to the UX profession

In the long term, new design aspects will also lead to a change in the occupational field. In the development of the professional field to date, the increasing specialisation of individual disciplines can be observed. A wide range of different specialisations already exist, for example, usability engineers, UX designers, UX managers and UX writers, some of which are relatively new professions. For example, a few years ago, there was no discussion of UX writing as a separate discipline. Today, some job advertisements specifically ask for UX writers.

The wide range of specialisations among UX professionals can lead to the design of the human–product relationship becoming a sub-discipline of UX professionals. However, it is also conceivable that a new umbrella discipline will emerge here that incorporates UX professionals, because other professional fields, such as brand management, customer relationship management, and customer experience design, will also play their part in shaping the relationship. A relationship designer will ultimately emerge somewhere and somehow, regardless of which profession is subordinate to which profession.

However, some challenges in integrating the new task of designing relationships into the process of designing interactive systems are expected to arise. The incorporation of UX as a design aspect into the product development process has yet to be fully completed. A universal blueprint for integrating UX into the organisational design of products is lacking, and many companies have not totally integrated UX. As this integration of UX into organisational activities is not yet complete, how this design aspect can be integrated is difficult to ascertain. Another approach to integrating relationship design could be through other disciplines such as product management; nonetheless, these disciplines have their own challenges of being fully implemented in organisational processes.[25]

Even in the future, it will not be quickly understood in organisations that everyone involved in product development is responsible for the relationship between the product and the users and that they all have an influence. This is not seen in UX today, and it will not be seen in relationship management in the future.

New skills that are currently unavailable to everyone are necessary. For example, the design of a partner can be driven forward using techniques from the fields of

3 Sutton[20] takes a deeper look at the attribution of gender in voice user interfaces and notes that it is not only the voice that leads to gender attribution. However, the attribution of a gender to the voice can be an important part of the projected personality, which leads to another relationships.

storytelling and character design, which are already being used in the development of novels, movies, and computer games. Non-linear systems simultaneously create a different need for quality management. As systems such as ChatGPT already exhibit non-linear behaviour, deterministic test procedures merely cover part of the usage scenarios. The special cases that can arise through user interactions and how the behaviour of users and the product can influence each other remain difficult to predict.

Individuals currently working in UX probably lack the necessary skills and techniques for these evolving roles. The introduction of new training programmes could be a response to this changing landscape. Over the last decade, the potential of building expertise in UX has become clear – a development that could not have been foreseen 30 years ago. Therefore, now might be the right time to think about the future. Additionally, existing training courses from other areas (e.g., character design in novel writing) will be possibly adapted to the newly emerging professional field and thus transfer existing techniques from other areas to the design of the human–product relationship.

It will also be necessary to keep an eye on the development of the various specialist disciplines, as the division and subsequent consolidation of these areas is to be expected. This phenomenon can also be observed in the field of UX, where numerous specialisations have emerged and continue to emerge. People enter and leave this field, which leads to the continuous development of the entire profession. A profession for relationship design could therefore arise, which is split into sub-disciplines beforehand, such as relationship design with products from different sectors or various use cases. However, too early fragmentation would increase the difficulty for the new profession to be recognised as such.

6 Conclusions

In the future, product designers will have to ask themselves questions that were previously rather unusual. These questions include how users should ideally describe their relationship with an interactive product. The aim of product design will be to create positive relationships by promoting positive experiences. Clarifying the identity and underlying values and principles of an interactive product will be necessary for this. This can be done, for example, by using creative methods such as the Product Pinocchio exercise to consider the values and goals a product stands for should it come to life. Efforts should also be made to expand the perception of a product beyond the ordinary and to take aspects such as interaction, environment and context into greater consideration.

The relationship, as a design aspect, could follow the user experience. However, relationship design could also become part of the UX profession. This primarily depends on the relevance of relationship design for the development of interactive products in the coming years and the specific people with professional backgrounds who will be responsible for designing the relationship.

Finally, it should be questioned whether a long-term relationship with a product is equally necessary for all products. It must be recognised that there are products for which a long-term relationship is of great importance, as well as those for which it is less relevant. For example, voice assistants on smartphones are likely to be highly important in the future, but they will be less important for interactive products with brief and rarely repeated usage episodes, such as an information terminal in a department store. This distinction is essential for the targeted development and design of interactive products and will characterise the new profession that may emerge, as well as new and adapted techniques for shaping relationships.

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