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2016

<https://doi.org/10.25969/mediarep/13411>

Veröffentlichungsversion / published version

Sammelbandbeitrag / collection article

### **Empfohlene Zitierung / Suggested Citation:**

Verkerk, Maarten J.: Design of Wisdom Coaches for End-Of-Life Discussions – Mixed Reality, Complexity, Morality, and Normativity. In: Liisa Janssens (Hg.): *The Art of Ethics in the Information Society*. Amsterdam: Amsterdam University Press 2016, S. 138–143. DOI: <https://doi.org/10.25969/mediarep/13411>.

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# DESIGN OF WISDOM COACHES FOR END-OF-LIFE DISCUSSIONS

## MIXED REALITY, COMPLEXITY, MORALITY, AND NORMATIVITY

Maarten J. Verkerk<sup>1</sup>

Under influence of modern technology, the face of Western healthcare changes radically. The application of new medical technologies in combination with genetic information and Big Data disruptively transform the whole healthcare chain. A promising area of new healthcare technologies is the field of augmented reality, virtual reality, and gamification. In this field some aspects of reality are augmented, other aspects are virtualised, and in some cases gaming concepts are applied. In this article the fields of augmented reality and virtual reality will be called 'mixed realities'.

The phenomenon of mixed realities is not a futuristic invention of science fiction, but mixed reality is already used in today's healthcare; for example, nurses can find veins more easily with a mixed reality approach, by using a handheld scanner they can determine the position of the veins in the arm or hand of the patient. This information is converted to an image of the veins and projected on the skin of the patient. This application makes it easier to succeed piercing the vein on a first try. Another application is the use of Google Glass to support young mothers in breastfeeding. Mothers receive step-by-step instructions as they begin learning to breastfeed. Additionally, they can video call a nurse or counsellor who can view the process through the Glass's camera and give the mother immediate feedback and suggestions. Another important application of mixed realities is the field of surgery. Without any doubt, we stand on the eve of a revolutionary development that will influence every aspect of human life.

The development of mixed realities in the field of healthcare raises many moral and philosophical questions. Such as, what is the status of mixed realities? How do humans relate to mixed realities? What moral questions and objections arise? How to relate the aesthetic aspect to the healthcare aspect? How are mixed realities embedded in social relationships? And so on.

In this chapter we will investigate these types of questions in view of the development of a wisdom coach that supports frail elderly and/or their beloved to address emotions, moral problems, and existential questions at the end of life.

### What is a Mixed Reality?

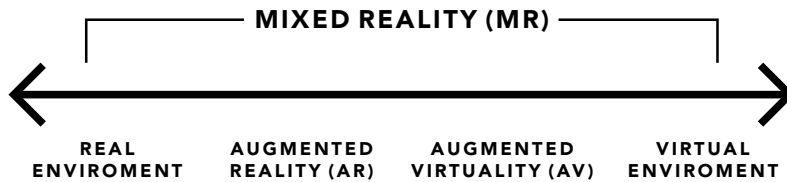
The idea of a mixed reality is visualised in many science fiction movies. For example, in *The Matrix* both the real and virtual world are present and in *Minority Report* an augmented reality supports the officials to prevent crimes. Paul Milgram et al. define a mixed reality as an intermediate state on the continuum of the real world and the virtual world.<sup>2</sup> Human beings experience the real world directly or indirectly (for example, through monitors and phones). One pole of this continuum is the real world that exists solely of real objects, such as humans, animals, trees, cars, houses, tools, and so on. The other pole of this continuum is the virtual world that consists solely of virtual objects that can be experienced by monitors, phones, or immersives. An immersive is a system that generates a three-dimensional image that appears to surround the user. An augmented reality is always a mediated reality and therefore a 'reduced' reality. We experience the real reality with all our senses. However, mixed realities are mediated by technological artefacts and they appeal to a limited number of senses, mostly the eye and the ear. Finally, mixed realities are always embodied in technological artefacts whereas the senses are embodied in a biological body.

Within this framework it is straightforward to define a mixed reality environment as one in which real world and virtual world objects are presented together within a single display, that is, anywhere between the extrema of the real-virtual continuum. We speak about an augmented

<sup>1</sup> I would like to thank Teun Aalbers, Karin Alfenaar, Rozemarijn van Bruchem, Jan Jonk, Willem-Jan Renger, Lavender She, Jan Peter de Vries, Michiel van Well, and Esmé Wiegman for the stimu-

lating discussions.  
<sup>2</sup> Paul Milgram et al. 1994.

reality when this mixture is more to the real pole and about an augmented virtual world when it is more to the virtual pole, see Figure 1 From these definitions augmented reality can be defined as a live or direct view on the real world, which is augmented by computer-generated input such as video, graphics, verbal instructions, sound, or GPS-data. Presently, augmented reality is embedded in monitors, phones, and so on. In the future it could be integrated in glasses, headsets, or digital contact lenses. A similar definition can be formulated for augmented virtual worlds.



139 • Figure 1: Real - Virtual continuum in according to Milgram et al. (1994).

### The Meaning of Dying

A frequently asked question is 'what is the meaning of life?' Yet hardly anyone in Western society asks the question what is, or can be, the meaning of *dying*. More often than not, dying is seen an unpleasant consequence of living, it makes the living uncomfortable and at a loss for words, thus discussions about 'the end' are preferably avoided. Moreover, we do not believe that dying has any meaning so the expressions 'meaning of dying' is experienced as a contradiction in terminus. In practice, we hide death behind white doors and patients die in loneliness.<sup>3</sup> The question of the meaning of dying is an existential question. It touches our deepest beliefs about what it means to be human, a mortal human. While we try to add meaning to our lives we rarely think about how we would like to die, what we need to say, achieve, or complete before we feel at peace with our approaching departure.

The meaning of dying concerns taking leave of beloved, reflecting on our lives, but also finding comfort in each other, both the deceasing and the living. The question regarding the meaning of dying also can be called a 'slow question'. That means that it takes time to address and to readdress this question. Every person involved in this process will have a different timeline.

These matters and questions should be taken into consideration by the wisdom coach who guides the end-of-life discussion.

### End-Of-Life Discussions

Despite, or because of, the feeling of discomfort, end-of-life discussions that revolve around the meaning of dying have become increasingly important in healthcare. One of the reasons is that the possibilities of modern medical technologies exceed the bodily capacities of frail patients. In present-day healthcare, often (life-prolonging) treatments are given of which the negative side effects outweigh the health benefits.<sup>4</sup> These treatments – often indicated as 'overtreatments' – lead to an increase or lengthening of the patient's suffering.

Boer et al. have conducted an exploratory investigation on the phenomenon of overtreatment.<sup>5</sup> They propose two approaches to deliver appropriate care and to prevent overtreatment. First, at the core of the end-of-life discussions should be the meaning of dying and *not* medical technology. Second, three supporting values become apparent after we place the meaning of dying at the centre of the discussions:

1. Respect for autonomy: optimal consideration for the patient's wishes;
2. Non-maleficence: refrain from doing harm;
3. Beneficence: make every effort to promote people's wellbeing, including protecting their lives.

<sup>3</sup> Elias 1985.

<sup>4</sup> Kaufman 2005; Boer et al. 2013.

<sup>5</sup> Boer et al. 2013.

A challenging question is: how to implement this approach – from now on indicated as the meaning approach – in healthcare? This question can be divided in two subquestions. First, what are the areas where healthcare and frail elderly (and their beloved) ‘touch’ each other? This has to be established to foster the assumption of the meaning-approach. Second, how can we embody this approach? In this article I address only the idea of a mixed reality approach complemented with gaming principles.

### Explorations in Designing a Wisdom Coach

A wisdom coach who guides the end-of-life discussions has to cope with plurality with respect to a variety of worldviews and religions. Can a wisdom coach address the whole field? Or should the coach limit himself to a first exploration and then hand the care to pastors, priests, imams, or other coaches for specific support? The aesthetic design (or, the presentation and visibility) of the wisdom coach appears to be very critical. On the one hand, the design has to be nearly absent from the scene in order to prevent people from being too aware and, possibly, scared off by the application. On the other hand the visibility and presentation of the coach has a large invitation-al effect and holds the key to a successful trajectory. Furthermore, dying is a social process that involves family and friends. The social aspect raises many questions. How do the different people involved interact? Can the coach repair broken dialogues? Are relatives and caretakers allowed to continue to ask the patient questions (via the coach) even when he has indicated he does not wish to answer them?

How should the wisdom coach address the matters of autonomy, non-maleficence, and beneficence? Is the coach allowed to raise questions? For example, when all parties involved focus on medical questions, is the system allowed to raise existential questions?

All these considerations show that the design of a wisdom coach is a big challenge. The coach needs to be very ‘empathic’ with respect to the mood of every participant and has to address questions that are often not asked. For that reason, it is expected that principles of mixed reality and gamification could be suitable approaches. Figure 2 gives an example of a design: a life tree whose size and shape changes under influence of all dialogues and a background that changes depending on the mood of the user. The users can ask each other questions by writing a letter and pinning it to a virtual tree, which can then be read by the other(s).

### Philosophical Analysis

The first exploration of the role of the wisdom coach clearly shows that it is a complex matter. At the very least, religious, aesthetic, social, moral, and medical aspects play a role in troubling the waters. This observation raises the question (1) whether this list of aspects is complete, (2) how these aspects relate to each other, and (3) how to prevent one aspect dominating the others. To address these questions I would like to make use of the work of the Dutch philosopher Herman Dooyeweerd (1894-1977).<sup>6</sup>

Dooyeweerd makes a distinction between ‘wholes’, ‘aspects’ and ‘dimensions’.<sup>7</sup> A ‘whole’ is a complete ‘unity’, ‘system’, or ‘entity’ with an own character or identity. Examples of wholes are human beings and animals, trees and bushes, stones and grains of sand. All these wholes are present in the natural environment and have an own identity. Technological artefacts are also wholes; examples are monitors, phones, hospitals, and churches. These artefacts also have different functions and have an own identity. So, our first conclusion is that there are different kinds of wholes and every whole has its own identity.<sup>8</sup>

Dooyeweerd showed in his theory of modal aspects that ‘wholes’ function in a number of different aspects or dimensions. For example, a human being needs food (biological dimension), perceives the environment (sensitive dimension), interacts with other people (social dimension), buy goods in a shop (economical dimension), enjoys art (aesthetical dimension), shows ethical behaviour (moral dimension), and does or does not believe in a transcendent God (spiritual or religious dimension). Dooyeweerd distinguishes fifteen different modes, see Figure 3. By means of an in-depth philosophical analysis he argues that all these dimensions have their own character that

<sup>6</sup> His concepts regarding technological artefacts have been used by Verkerk et al. 2016.

<sup>7</sup> Dooyeweerd 1969.

<sup>8</sup> Verkerk et al. 2016: 89-105.

expresses itself in its own dynamics, mechanisms, and laws or norms. For example, the nature of the economic aspect is quite different from the nature of the spiritual aspect. The dynamics of the social interaction are quite different from the subtleties of enjoying art. Finally, the biological laws that determine the digestion of food are quite different from the norms for moral behaviour. In other words, every dimension has its own nature and cannot be reduced to other dimensions.<sup>9</sup>

Technological artefacts are also wholes that function in different aspects. For example, a wisdom coach has a physical dimension (the mediating technology consists of materials with specific properties) and a social dimension (facilitates social interactions between users). It also functions in the economic dimension (price) and in the aesthetic dimension (beauty of the design of mixed reality). It also functions in the juridical dimension (intellectual property) and in the spiritual dimension (providing hope and trust).<sup>10</sup>

The theory of modal aspects can be used to refine our considerations on the identity of technological artefacts. Let us compare two different electronic coaches: a coach to choose the cheapest airplane tickets and a wisdom coach. The design of a coach for airplane tickets can only be understood from its economic function. The whole website is designed in such a way that users are informed about prices and conditions and are seduced to buy a ticket via this website. Here, the economical aspect determines the identity of a coach for airplane tickets. The design of a wisdom coach only can be understood from its spiritual or religious function: to address existential questions, to contemplate the meaning of dying, and to comfort each other. Here, the spiritual or religious dimension determines the identity of a wisdom coach.<sup>11</sup> The aspect or dimension that characterises the identity of an artefact is called the 'qualifying aspect'.

This qualifying function plays a leading role in the design of technological artefacts; or rather, the spiritual or religious function of the wisdom coach guides, or discloses, all other aspects. For example, the designer is not at full liberty to design his aesthetic position but this aspect has to be carefully designed in such a way that it serves its existential function. The same thought applies to the social aspect; the interaction of all users has to be designed in such a way that end-of-life discussions will happen.

To summarise, we started by establishing that a wisdom coach is a complex system. Our philosophical analysis shows that a wisdom coach is characterised by a total of fifteen aspects. All these aspects, which have their own nature and character, have to be taken into account in the design process. Additionally, this analysis revealed the importance of the so-called qualifying function that leads or directs the design of the artefact. In the case of wisdom coaches, the spiritual or religious aspect has to guide or disclose all other aspects.

### Mixed Conclusions

Mixed realities combined with genetic information and big data will induce radical changes in healthcare. This development raises many moral and philosophical questions. These questions are

<b>Spiritual: devotion, trust, transcendence</b>
<b>Moral: love, care</b>
<b>Juridical: justice, guilt</b>
<b>Esthetical: beauty, harmony</b>
<b>Economic: scarcity, exchange</b>
<b>Social: interaction, intercourse</b>
<b>Linguistic: symbolic meaning</b>
<b>Power: shaping, influence</b>
<b>Logical: analytical, rational</b>
<b>Psychological: perception, emotions</b>
<b>Biotic: growth, decay, reproduction</b>
<b>Physical: energy, interaction, process</b>
<b>Kinematical: movement</b>
<b>Spatial: space</b>
<b>Numerical: quantity</b>

141 • Figure 3: The fifteen modal aspects as proposed by the philosopher Dooyeweerd (1969).

9 Verkerk et al. 2016: 62-85.  
 10 Verkerk et al. 2016: 89-105.  
 11 Verkerk et al. 2016: 89-105.

investigated in view of the development of a wisdom coach for end-of-life dialogues. The following conclusions are drawn:

1. Mixed realities are always mediated realities.
2. Mixed realities are complex. Its complexity can be unravelled by the philosophy developed by Herman Dooyeweerd. It is shown that a complete description has to address the fifteen different aspects and that each aspect has its own nature and normativity.
3. The design of mixed realities in end-of-life discussions has to be guided by the spiritual or religious aspect.

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