Kerstin Radde-Antweiler (Ed.)
Being Virtually Real?

Virtual Worlds from a Cultural Studies' Perspective.

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Ritualdynamik

'INNER LISTENING' AS A BASIC PRINCIPLE FOR DEVELOPING IMMERSIVE VIRTUAL WORLDS

LUDMIL DURIDANOV & SIMEON SIMOFF

Octavus sanctos omnes docet esse beatos
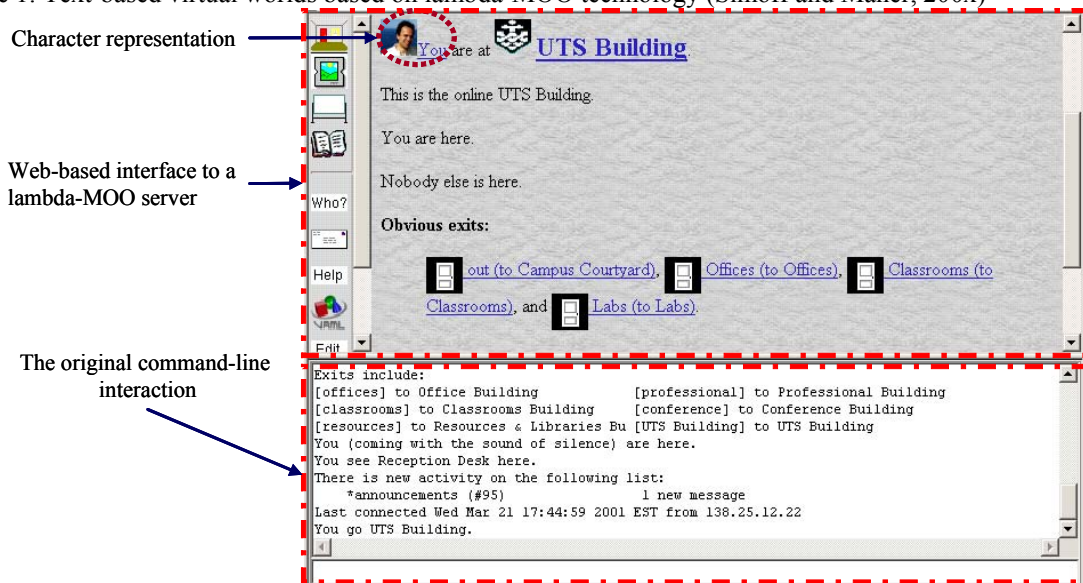*("The Octave is teaching all saints to be illuminated"- French inscription)*

Introduction

Gone are the days when the only people who spent time in computer-generated virtual worlds were curious academics and Internet nerds. Technologies, supporting those virtual worlds, spanned from the command-line (text-based) Lambda MOO-s to 3D virtual worlds with sophisticated rendering and interaction engines. Text-based virtual worlds required from their inhabitants rich imagination, in order to create the mental image of the virtual world, and excellent typing skills in order to interact there. As there are no visual forms fixed in any media, engagement in these worlds relies on the richness of the command language, which enables the range of activities that can be performed in the virtual spaces, and the language that participants use in their communication. The later has been utilised in language education. With the arrival of the Web, most of the text-based virtual worlds have been equipped with a visual counterpart – a Web-based multimedia front end, which offered an alternative interactive mode. Figure 1 illustrates the extended interface to a virtual university campus – a virtual world, driven by lambda-MOO engine[1]. When in many cases the "original" command-line interaction remained preferable to the limited visual experience, these interfaces made a step towards *immersing the human into the virtual world*. In addition to the image, shown in Figure 1, representations of characters and spaces include various other descriptive attributes (for example, a room can be described with words as "cosy, with soft ambient light"). These descriptions contribute to the creation of the mental virtual world, similar to the way we create abstract virtual worlds when reading a novel[2].

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[1] Simoff, S. J. and Maher, M. L. (2001). Loosely-integrated open virtual environments as places. *IEEE Learning Technology*, 3 (1), http://lttf.ieee.org/learn_tech/issues/january2001/index.html.
[2] Maher, M. L., Simoff, S.J and Cicognani A. (2000). *Understanding Virtual Design Studios*. Springer, London.

Figure 1: Text-based virtual worlds based on lambda-MOO technology (Simoff and Maher, 200x)

Character representation

Web-based interface to a
lambda-MOO server

The original command-line
interaction

When text-based virtual worlds were one of the earliest platforms supporting some of the first virtual communities, the 3D virtual worlds were the ones to make the change and create "parallel universes" of our existence. The space of these 3D virtual worlds is populated by residents, visitors and software bots – all immersed and represented by controlled entities called "avatars". Avatar is a Sanskrit word, which in Hindu mythology means "the descent of a deity to earth in a *visible form*[3]. Computing has borrowed this term to denote the *visible form* (*representation*) of a character, controlled either by a human or a software agent. Hence we have a graphical personification of a human, a computer or a computer process. Avatars are essential part of the embodiment and immersion of humans in 3D virtual worlds, as their visible dimensions scale to the other visual forms in the virtual world. They span from simple images to photorealistic 3D models as shown in Figure 2.

Figure 2: Representations of characters – the avatars, range from cartoon type to photo-realistic ones

Avatar
a 2D image

Avatar
a simple 3D model

Avatar
a photo-realistic
3D model

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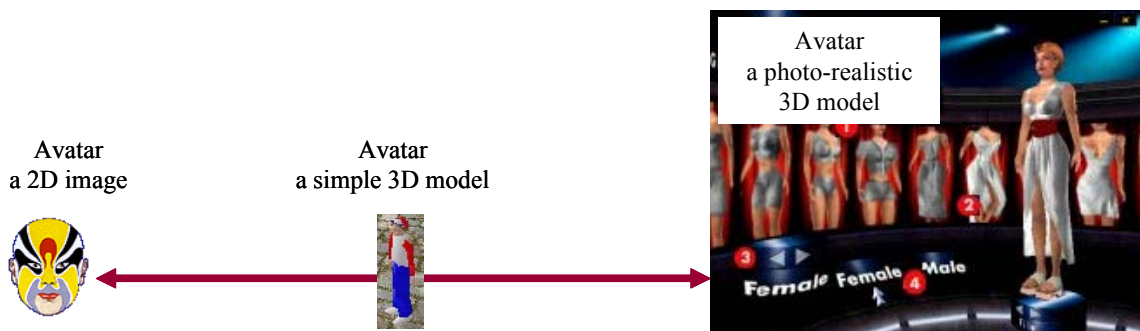
[3] *The Hutchison Concise Encyclopedia*, Hutchinson Press, London, p.78. Most famous are the ten Avatars of Vishnu.

Figure 3 relates diverse virtual worlds technologies in terms of their immersive capabilities. On the left-hand side are positioned the text-based virtual worlds. Towards the right-hand side, in the 2D and 3D worlds, increases the level of visual immersion. Today, worlds like SecondLife[4], Habbo Hotel[5] and Whyville[6], to name the few, are forming the above mentioned "parallel universes", where millions of real people spend increasing part of their life.

Figure 3: Immersion – from text descriptions to full-scale experiential immersion

Text-based virtual worlds	Web-interfaced text-based virtual worlds	2D virtual worlds	3D virtual worlds

Abstract forms   Fixation of the visual forms

Consistency of representations between different platforms   Richer representations that may vary with respect to platforms
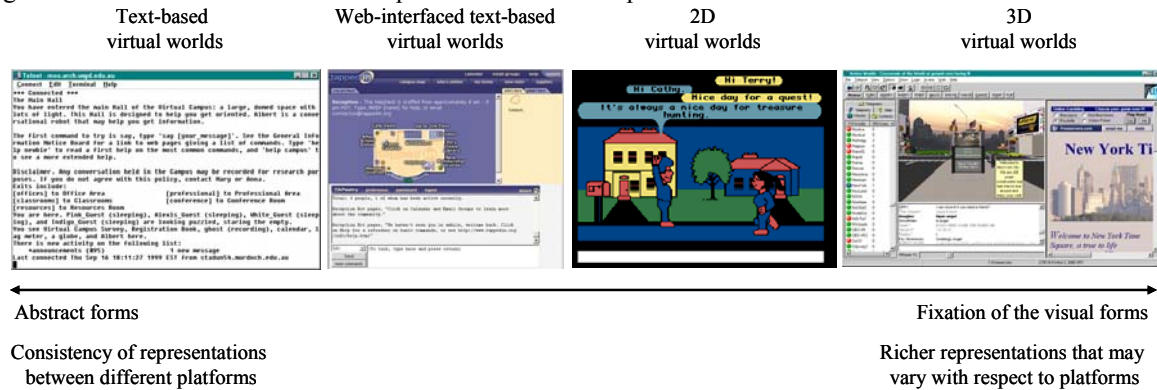
Starting with the pioneers in the field – ActiveWorlds[7], the emphasis in the development of virtual worlds has been on the visual aspects of the representations of objects and different "structures" in the visualised space of the world. Such bias in the research and development of virtual worlds is a result of the strong influence of architectural schools. As a rule architects focus on the visual aspects of their designs in the physical world in order to express, shape and communicate the artistic, social, emotional, and historical context of an environment. This has been the focus of the research in virtual architecture – a cross-disciplinary area at the intersection of computing technologies, convergent media and architecture. A part from the outcomes in the application of architectural principles to the design of virtual worlds and other simulated environments, virtual architecture also focused on rethinking interaction with (and within) the virtual worlds. However, it remained limitted to the visual aspects of the spaces.

Primarily, the goal of achieving immersion in distributed virtual worlds has been pursued with convincing 3D interactive graphics technology and the design approaches have been focused on the visualisation aspects. Consequently, the design of inhabited spaces in these environments has also focused on the systematic use of visual structures and arrangement of these visible forms in order to partition inhabited virtual spaces according to some principles

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[4] http://www.secondlife.com/ [as of 14 July 2007].
[5] http://www.habbo.com/ [as of 14 July 2007].
[6] http://www.whyville.net/.
[7] http://www.activeworlds.com/.

or/and metaphors. These approaches span from mimicking the reality (e.g. copies of the campuses of various universities, shopping malls) to futuristic designs of various functional spaces (e.g. conference, exhibition spaces). The sense of presence is achieved by chiefly engaging the human sense of sight.

Unlike sight, the sense of hearing/listening has been neglected in the implementation of a virtual world. Audio design has often been neglected and considered as the "poor relative" of graphics in immersive environments, regardless of considerable evidence on its immersive potential[8]. This trend is in part due to the technological limitations of computer networks and computer systems at the time, leading to a sacrifice of audio performance in the name of interactive graphics quality and speed. Hence, the audio or aural aspects of the immersion in virtual worlds remained out of the research focus until the recent years. Technologically, the developers of virtual worlds mimicked the way we hear the sound in the physical world – up to a certain distance from the source. Hence, this rule has been imposed for the interaction with other avatars. The idea is illustrated in **Figure 4**. Avatar P_6 is the "audio" source, avatars P_1, P_2 and P_3 are within the hearing range, hence they can "hear" P_6, when P_4 and P_5 are out of reach and can not "hear" P_6. The words "audio" and "hear" are in quotation marks, as this model includes also the text-based chat-type communication in the world.

Figure 4: A common for most virtual worlds "sound" dissemination model
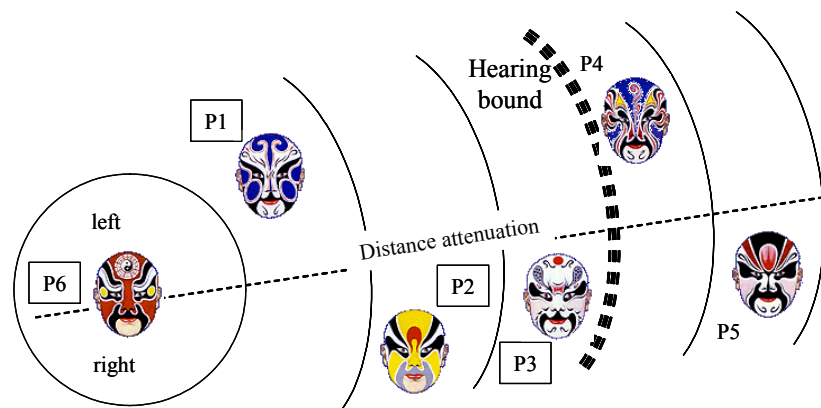
Nowadays the technological constraints on computer systems have diminished and recent virtual worlds technologies come with high fidelity, immersive audio in high quality

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[8] Moore, Brian C.J. (1997), *An Introduction to the Psychology of Hearing*. New York: AP Academic Press.

graphically intensive virtual spaces. The research in sound design focused on the enhancement of the sense of presence in virtual worlds[9]

Relevant to our research is the work in aural architecture[10] – a result of the integration of a multi-disciplinary research, including architecture, music, acoustics, evolution, anthropology, cognitive psychology, audio engineering, to name the few. It takes the view that humans experience spaces through all perception channels, including listening. We are able to navigate a room in the dark, to "hear" the largeness in size of a cathedral hall and the emptiness of a room. The unique acoustic features of religious spaces acquire symbolic meaning. On the other hand, citing Floyd Toole, Vice President of Acoustical Engineering, Harman International Industries, the authors also show "that our sense of the space of sound has largely been lost in the vast library of recorded music". In summary, the authors, Barry Blesser and Linda-Ruth Salter, claim that accidentally or intentionally, we all function as aural architects, hence *every environment has an aural architecture*.

With the increase of the influence and impact of 3D virtual worlds, the careful setup of immersive environments, both in terms of spatial and audio design is becoming crucial to the comfort of humans and the success of the immersive environment in the field of its use. For example, Sun Microsystems, pioneers and leaders in developing collaborative systems have taken virtual worlds on board for their next generation collaborative systems. "The spatial layout of the 3D world coupled with the immersive audio provides strong cognitive cues that enhance collaboration. … With the 3D spatial cues, each person can get an immediate sense of what the other collaborators can and cannot see."[11]

Taking these developments on board, we develop the concept of "*inner listening*", explore its principles, its relations with the visual and auditory components of the design of immersive virtual worlds and its potential in the design of inhabited spaces in these worlds. This work complements the work in aural architecture, as it explores the relations between the audio design of the *outer* (with respect to the human and representing it avatar) *space* [which is a result and has an impact on the aural architecture of the virtual world] and human *inner space*[12], influenced by inner listening. In this paper we focus on the psychological phenomenon of *synchronicity* of 'inner listening' (a notion coined by psychoanalyst Carl G. Jung /in cooperation with atomic physicist Wolfgang Pauli/ – whose scientific research is

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[9] Serafin, Stefania and Serafin, Giovanni (2004): Sound design to enhance presence in photorealistic virtual reality. In *Proceedings of ICAD 04-Tenth Meeting of the International Conference on Auditory Display*, Sydney, Australia, July 6-9, 2004.

[10] Blesser, Barry and Salter, Linda-Ruth (2006): *Spaces Speak, Are You Listening?: Experiencing Aural Architecture*, MIT Press.

[11] MPK20: Sun's Virtual Workplace, http://research.sun.com/projects/mc/mpk20.html.

[12] Barrow, John D. (2000) *Between Inner Space and Outer Space*, Oxford University Press, Oxford.

recognized too in Buddhist, Hindu and Tibetan tradition). Aiming to come along to the proper essence of the key phenomenon in theory and practice we use a 'two steps' holistic approach, started in our earlier works.

An overview of the research approach

As a *first step* we extort *transreligious* functional issues to 'inner listening' from the *mystic experience* of the 'collective invocation of God', known as '*merkabah*'[13] in Jewish Mysticism, as '*dhikr*'[14] of mystic Islamic brotherhoods (such as Shādhiliyya, Rahmāniyya, Sid-Bono and others), as '*nembutsu*'[15] in *Jōdo* Buddhist circles or as '*monologistos*' of the early Christian Desert Fathers[16] and of the Hesychasts[17] /14th century/, echoed in the medieval West as 'the third mode to pray'[18] of the Jesuits (postulated by Ignatius de Loyola).

We explore the interpretation of the ecstatic 'opening of a door' to a virtual dimension, well known as Paradise (hebr. *pardes kushta* 'Paradise of Righteousness') or a place where the souls should be saved (through 'inner hearing' of harmonically balanced energy within a *Virtual World* – often consigned in religious terms as "heavenly singing" of angelic choirs). We explore how a 'door opening' functioned efficiently in past centuries, so that we can apply it into *immersive virtual environments*. Oscillatory vibrations (*octaves*), twice as fast as a keynote or half as fast of it, build usually overtones which **harmonic interaction** "enlightens" the saints, as carved by French Cluny monks. We follow Italian tenor and composer Roberto Laneri in questioning the phenomenon – how long one should be entrained to hold a note till it is supposed to introduce oneself in a virtual space as if it (the note) were

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[13] Scholem, Gerschom G. (1960): *Jewish Gnosticism, Merkabah Mysticism and Talmudic Tradition*, New York: The Jewish Theological Seminary; idem (1961): *Major Trends in Jewish Mysticism*, New York.

[14] Gardet, Louis (1952): "Un problème de mystique comparée: la mention du nom divin (dhikr) dans la mystique musulmane." In: *Revue Thomiste* 52, 642-679; 53, 197-216.

[15] Cf. Blum, Mark (2002): *The Origins and Development of the Pure land Buddhism*. Oxford & New York: Oxford University Press; and the fundamental work Coates, Harper Havelock & Ryugaku Ishizuka (1925): *Honen the Buddhist Saint: his Life and Teaching*. Kyoto: Chionin.

[16] For the 'heart prayer' to Jesus see the small collection as edited by Gouillard, Jean (1957): *Kleine Philokalie zum Gebet des Herzens*. Zürich: Thomas Verlag; and the contributions of Ware, Kallistos, Gillet, Lev and Behr-Sigel, Élisabeth as retrieved on http://www.pagesorthodoxes.net/coeur/coeur-c.htm (last seen on April 12, 2007).

[17] Cf. the writings of 14th Century authority and initiator of the movement, Bishop of Thessaloniki: Grégoire Palamas (1973): *Défense des saints hésychastes*. Introduction, texte critique, traduction et notes par Jean Meyendorff. Louvain : Spicilegium Sacrum Lovaniense; Meyendorff, John (1974) : *St. Gregory Palamas and Orthodox Spirituality*. St. Vladimir's Seminary; and the analysis in depth of Hausherr, Irénée (1927): *La méthode d'oraison hésychaste*. (Orientalia Christiana, IX-2), Rome.

[18] Called *versellement du «Pater»* by Massignon, Louis (1922): *Essai sur les origines du lexique technique de la mystique musulmane*. Paris: Paul Geuthner, 42.

"illuminated from within" – via *inner hearing* of harmonic overtones ("supersounds") – recognized by the followers of Pythagoras as a *harmonically* transposed *monochord*:

> "The first step is to hold the note for a long time and observe it. One takes the note and regards it as if under a microscope. A drop of water may not reveal much about itself at first glance, but when looked at more closely it contains the universe. This is mainly a question of *perception*, of *contemplation* – *not* of *taking action*. The note is just, as if it were, ***virtually illuminated* from within**"[19] (*italics* and **bold** by the authors).

The above mentioned dilemma is how to interpret different mystical clues which have been looking for an efficient way of 'endless invocation of God's name' (sometimes accompanied with real musical intonation, instruments and dancing), which inherent oscillations 'open the door' to a *virtual dimension*.

On the *second step* extracted essential features are converted into relevant profiles of a balanced visual-aural architecture for immersive virtual worlds. This step is beyond the scope of this paper.

Further we develop the first step in details. We take a holistic approach to the knowledge base and follow an analogy of the "train of thought" analysis[20]. We approach the historical experience as a **twofold framework** disclosing the *mystic paths* of access to a *synchronicity of 'inner hearing'* as a **research object** and as a **methodological turn**. For this reason we are interested not only in the final results – usually extracted with rationalist rigidity – but are also concerned with the ability to collect further details which expound the cues of the perception process.

From the above listed variety of religious aspects we concentrate our attention on two universalistic main trends (10.-13. century), crossing the dogmatic boundaries of the monotheistic religions to a modern "heretical" asset, based on Judeo-Islamic and Buddhist mystics, esp. Persian and Arab Sūfīs and Chinese-Japanese Buddhist *Jōdo* ('Pure Land') circles.

Related audio-visual patterns in Judeo-Islamic traditions

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[19] Laneri's statement as quoted by Berendt, Joachim-Ernst (1985): *Das Dritte Ohr: Vom Hören der Welt.* Reinbek bei Hamburg: Rowohlt Verlag, 303. [= Berendt (1988): *The Third Ear: On Listening to the World.* Engl. translation by Nevill, Tim. Longmead et al., Element Books, 157].

[20] Galloway, John and Simoff, Simeon J. (2005). Digging in the details: A case study in network data mining. In P. Kantor, G. Muresan, F. Roberts, D. D. Zeng, F-Y Wang, H. Chen, R. C. Merkle (eds) *Intelligence and Security Informatics*, IEEE International Conference on Intelligence and Security Informatics, ISI 2005, Atlanta, GA, USA, May 2005, Springer, Heidelberg, pp. 14-26.

We begin with an anecdote from the Lesser Hekhaloth, related to the Talmudic story of the ascension of the four (which became popular in the first Christian centuries), because these revelation books disclose in depth the ecstatic moment – described religiously as "ascent of the soul". Through the warnings of R. Akiba to his three companions about the dangerous *way up* through seven palaces and seven heavens (called *'Araboth*) we pick up a first *ecstatic* pattern:

> "When you come to the *place* of the pure marble plates, do not say 'Water, water!' For it is said: He that telleth lies shall not tarry in my sight."[21]
> So heavenly ascension or "entering the Paradise" could succeed only "by means of a sacred name" in the Jewish apocalyptic tradition and Merkabah mystics:
> "At the gate of the sixth palace it seemed as though hundreds of thousands of waves of water were storming against him, and yet there was not a drop of water, only the ethereal glitter of the marble plates with which the palace was tessellated."[22]

In the Greater Hekhaloth, esp. in the Slavic book of Enoch, written by a Hellenic Jew, Adam is carried up to the third Heaven[23] and had a vision of God on his Throne-Chariot (*ma'aseh merkabah*). The visualized pattern of the ecstatic phenomenon we are focussed on is disclosed too in the legend of the rise of Elijah to Heaven[24] as well as revealed by Ezekiel's vision of YHWH riding on the Throne-Chariot (*zefiyat ha-Merkabah)* – above the highest Heaven – when leaving the doomed Temple of Jerusalem.[25] And those who fell under the strange hallucination imagine themselves entering the Heavenly Chariot and floating through the air, are called *Yorede Merkabah*. In this Chariot they (the hallucinating people) are suggested to ascend to Heavens, where in the dazzling light surrounding them they behold the innermost secrets of all things, otherwise invisible and impenetrable[26].

After winning a visualization pattern of an ascent via incantation of a secret name of God – presented as the great "seal" between Heaven and Earth (*Azbogah*) – up to the last *eight* Heaven[27] as a *Virtual World*, revealed by the prophets of Babylonic scripture as "gatekeepers", we simply turn our attention to a second more elaborated transreligious vision with a strong Islamic frame of reference[28]. Stepping on the older spiritual tradition, known as 'heart prayer to Jesus' in the practice of the desert monks, *dhikr* had become an ejaculatory

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[21] Scholem, Gerschom G. (1961): *Major Trends in Jewish Mysticism*, New York, 52-53.

[22] Scholem, Gerschom G. (1960): *Jewish Gnosticism, Merkabah Mysticism and Talmudic Tradition*, New York: The Jewish Theological Seminary, 14.

[23] Cf. Life of Adam and Eve, chap. 25.

[24] See II Kings 2, 11; Enoch 70, 2; 72, 5; 73, 2.

[25] Kohler, Kaufmann (1904): "Merkabah." In: *The Jewish Encyclopaedia*. New York & London: Funk and Wagnalls Company, 498-500.

[26] See Zech. 6, 1-8.

[27] For a divination of the *Ogdoas* as a dynamic energy principle in the Greater Hekhaloth and later Kabbala Renaissance (esp. from 14th Century on) see Scholem 1960, 65-72.

[28] Cf. Koran 18, 24; 33, 41.

litany – a "recollection of God" – tirelessly repeated (*khafī* 'silent' and *djalī* 'aloud'). Opposed to the discursive and meditative character of *fikr*, "the garden of *dhikr*" had been inherently brought in relation with the ecstatic act of the nocturnal *mi'rādj* ('ascension') of Mohammad – by important spiritual figures as al-Hallādj (one of the exemplary spiritual masters and saints in 9th century Caliphate of Baghdad). In the Muslim brotherhoods (*tarika*) there is a tradition of solitary *dhikr* (aloud or whispered) and a collective one. The first (*dhikr al-khawāss*) is preferred by several *confréries* – such as *Shādhiliyya, Khalwatiyya, Darqāwā* etc. – reserved for advanced adepts on the spiritual way of "retirement with God (Allah)", in which virtual space they are absorbed in utterances "in the solitude of the desert".[29] We concentrate on the "preparatory" collective *dhikr*, which is as old as the solitary one; its societal *break through* as a liturgical group shaping in the 13th – 14th century is due to the dangers of seclusion in "perfect solitude" (stressed by other brotherhoods – such as *Rahmāniyya* etc.). The highly recommended "sessions" (*hadra*) or "circles" (*halqa*), aiming for a *respiratory rhythm balance* and a *physical posture training* during the *dhikr* recitation, betray a *transreligious* interactive ("heretical") asset, where the political exclusivity of monotheistic religious pietism and aversion against "other Gods" is smoothed down; therefore a mixed Indo-Iranian recurrence among the "whirling dervishes" (a popular name of the fraternity of *Mawlawiyya*) from the Anatolian metropolis Konya as well as an Indian ritualistic interplay with Turco-Mongol shaman fingerprints have been stressed already by a Mongol ex-functionary al-Simnānī (13th – 14th century). A pre-modern interactive cluster of a *Virtual World* is herewith disclosed, which has not only *modernizing* ideological reasons, but is technically applicable to *virtual (visual and aural) architecture* for immersive virtual environments as well, under the "heretical imperative" of nowadays (following the suitable term of sociologist Peter Berger)[30].

The "sessions" generally begin with the recitation of Koran verses and prayers (*hizb*)[31], composed by the founder of the brotherhood, often accompanied by a "spiritual oratorio" (*samā*) – an ecstatic form of musical "hearing" also popular as "dancing". In the Sūfī

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[29] Cf. 11th Century prominent reformer and university professor al-Ghazzālī (*Ihyā' ūlum al-dīn* 3, 16-17; partial translation by MacDonald, Duncan Black: "Emotional religion in Islam as affected by music and singing." In: *Journal of the Royal Asiatic Society* 1901, 195-252, 705-48; 1902, 1-28, 195-252) – himself well known as "the evidence of Islam" – whose theological discussion granted a Sunnite orthodox reputation to Islamic mystics.

[30] Cf. Berger, Peter (1980): The Heretical Imperative. New York.

[31] The most popular of these groups of 'invocations to God' (*al-hizb al-saghīr*), composed by al-Shādhilī (1258), "could have been saved Baghdad from the Mongol invasion" (as reported by al-Shādhilī), because creating with its talismanic character a virtual "resident shield". (Ibn Battūta /1304-77/ described it in detail: *Voyages d'Ibn Batouta* (Arabic text) I, 40-44; Engl. translation by Gibb, H. A. R., I 25-27; for a detailed discussion of some terms see Horten, M. (1928): "Philologische Nachprüfung von Übersetzungsversuchen mystischer Texte des Hallāǧ 922 †." In: *Zeitschrift der Deutschen Morgenländischen Gesellschaft* N. F. VII, Band 82, 23-41.

framework of Islamic mysticism *samā'* is opposed to the notion of reason (*'aql*) and is to be considered as "the nourishment of the soul", a devotional practice inducing emotional transports of energy (*tawādjud*), states of grace (*ahwāl*), of trance or ecstasy (*wadjd*) and even revelations. These manifestations are often concomitant with movements, physical agitation or dance, individual and collective (as visualized on several Persian miniatures). Certain *Shaykhs* – such as al-Suhrawardī (12th – 13th century) – highlight the fluent energetic boundaries between the fields of dance, ecstasy and *samā'*. According to them "it is not *samā'* and dance which arouses ecstasy, but ecstasy which arouses the dance", or properly said, "*samā'* is a revealing instrument that supplies only what (kind of oscillatory vibrations)[32] are brought to it by the hearer" (i.e. a main bridge of 'inner listening'). The specific sense of the term *samā* suggests that it is actually *listening*, which is spiritual, and could be applied to any musical sound, natural and artificial, i.e. audible and non audible sounds of a "hidden (virtual) world", acquiring access to knowledge beyond ecstasy (as stressed by 11th – 12th century spiritual masters, such as Rūzbihān al-Baqlī, Gīsū Derāz et al.). It is like going up a *musical ladder*, but the real essence of oscillatory movements (of a "dance") is in hearing them 'in silence' as well. Al-Djunayd (9th – 10th century Baghdad Sūfī) decribed how an old Shaykh even not being dancing, is hearing in an 'inner way' the harmonic vibrations of dancing, referring to a matching evidence of Islamic framework:

> "You see the mountain and you believe it isn't moving, but it gives rise to the clouds above it"[33]

Much later, a 16th century prominent astronomer Johannes Becker comments the same mystic phenomenon of "silent hearing" of the harmonic intervals between the stars as follows:

> "Give some air to the Heaven and there will be a **real** music sounding out"[34] (bold– by the authors).

It is the lack of condensed air between Pythagorean "heavenly spheres" that "pushes" oneself to perceive it mystically, i.e. to hear the star pulsations "silently". Al-Djunayd, delivers also the methodological tool for a holistic approach:

> "The default of ecstasy is not detrimental for someone who is appropriating the **plenitude of science**"[35] (bold – by the authors).

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[32] Allocation in brackets – by us.
[33] See the quoted reference in the Koran (27, 88) and a comparative view by Molé, Marijan (1963): "Les danses sacrées en Islam". In: *Les Danses sacrées.* (Sources Orientales VI). Paris Seuil, 258.
[34] Cf. Berendt 1985, 232. (= Engl. translation 1988, 126; slightly changed by us)
[35] Cf. op. cit. (Molé 1963, 258)

The only way a **mystic access** is to be differentiated from an **esoteric** one is the functional priority of following (the mystic path to) further investigations aiming for a *complete picture* of the phenomena, what is especially important in our search of an auditory and visually balanced *virtual architecture*. So, we have to face some details in the description of mystical experience, depicting an **energetic field phenomenon**. The recitation of *dhikr* presupposes a mental preparation. This is the aim of afore mentioned *hizb* (and *wird*) in the "sessions". First here should be referred to the well known "abandon of the world that leads to ascetic life" as an intention of the heart (*niyya*); the latter to be "purified" (i.e. "opening a door" to a *pure* virtual space) before starting a 'heart prayer'. Renouncement of the world (*zuhd*), as emphasized by al-Shiblī[36], is restricted to a "rejection of ambitions to appropriate everything that doesn't belong to oneself" (i.e. to one's personal energy levels) and is regarded as a general base for a "joyful exchange" (of energy) between two "actors" at least, aiming the ideal shape of 'synchronicity'. The Shaykh is a 'dynamic interface', regulating the spiritual disposition in the "circle" of the collective *dhikr*. Let's look now at the authentic description by Mawlawī Shāh Walī:

> "The beginner is invited to close his eyes and to place an image of his Shaykh before his mind; he has to keep his mouth firmly shut, his tongue pressed against the roof of his mouth; his teeth tight against each other, and hold his breathe. Then, with a great force, accompany the Shaykh in the reciting of *dhikr* with his heart (not with his tongue, or properly said "till a unity of both is reached"); he must retain his breath patiently, so within one respiration he shall invoke it three times and by these means allow his heart to be impressed by the meditative *dhikr*. The heart in this manner is kept constantly occupied with the idea of the Most High God. The heart is a subtle part of the human frame and apt to wander after worldly concerns, so that the easier mode of arriving at the proceeding is to compress the breath, and keep the mouth firmly closed with the tongue forced against the lips. The heart is shaped like the cone of a fir-three. Let the *Lā* be upward, the *Ilāha* to the right, and the whole *lā ilāh illā 'llāh* be formed upon the fir-cone, and through it pass to all the members of the whole frame and they feel its warmness."[37]

The repetition of a customary formula – the "first *shahāda*" (could be regarded as an interface): *lā ilāh illā 'llāh* ("there is no other deity than God") – is in a *connective* (not "exclusivist") context symbolising the only "cone" of the mystical energy circles "opening" the door to another virtual dimension. Nothing must be allowed to distract one's attention

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[36] Quoted in a 10th Century synthesis of the Sūfī doctrine (*tasawwuf*) by a prominent Hanafī jurist and spiritual master of Islam, see his doctrinal work: Abū Bakr al-Kalābādhī (1981): *Traité du soufisme (Kitab al-Ta'arruf li-Madhhab Ahl al-Tasawwuf). Les Maîtres et les Étapes*: traduit de l'arabe et présenté par Deladrière, Roger. Paris: Sindbad, 101.

[37] Engl. translation in Hughes, Thomas Patrick (1896²): *A Dictionary of Islam*. London: W. H. Allen & Co., 704; for further classification of details see Gramlich, Richard (1976): *Die schiitischen Derwischorden Persiens (Teil 2 Glaube und Lehre)*. Wiesbaden: Franz Steiner Verlag GmbH, 395-403

from the *dhikr* so that ultimately a "unity with God" (*Tauhīd*) to be retained by its medium. In the *Shādhilī* method, as later resumed, is stressed over the **spiral 'opening of energy'** from left downwards to right upwards:

> "One begins reciting *from the* **left** side of the chest, the niche containing ***the lamp light of the heart***, i.e. the *focus of the spiritual light*. One continues by passing from the **lower** part of the chest on the **right upwards** *to the upper part*, and so on to the initial position, having thus described **a circle**.[38]

In 19th century sources – such as the comparative descriptions of Bāsh Tarzī[39] or al-Sanūsī[40] – is offered a comparative picture with relevant details of the explored procedure, such as accompanying the utterance with following posture movements. Following Bāsh Tarzī:

> "One strikes first the chest with the head where the cone-shaped ("corporeal") heart is, saying *Allāh* with the head inclined over the navel; second, he raises the head to the level of the brain pronouncing the *hamza*; third, turning on the level of the "secret navel", he pronounces the remainder formula *llāh*."

At the first step, the recitation is "**with an effort** to place the One (God) mentioned into the heart" according to the exact modes of physical posture and utterance as led by the Shaykh. The second step to follow is an **effortless** one with a visualization of it, as portrayed by contemporaries such as al-Ghazzālī and Ibn 'Atā' Allāh of Alexandria; at this stage the disciples "leave off the movement of the tongue and see the word **as if it were flowing over it** (**bold** by us)".[41] Ibn 'Atā' Allāh describes the third step as "the arrival of the inmost being" (*sirr*) as "if one leaves off the *dhikr*, but it does not leave oneself, and the whole being of the Sūfī becomes a tongue uttering *dhikr*, just sounds of voices and rhythm within the periphery of the head"[42], thus no duality must remain. The third stage recalls of the Buddhist *nembutsu*. The interpretative recurrence of the Shādhilī master of Alexandria discloses in a Koranic framework unexpectedly an auditory key dimension to a *Virtual World*, accompanied with a visual component. The human being ("son of Adam") is seen in a nearly biblical perspective as a "mixture of all substances, noble and base, from each the hearing of sounds is coming".[43]

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[38] Engl. translation of *Ibn 'Iyād*'s quotation by Gardet, Louis (1991): "Dhikr." In: *The Encyclopaedia of Islam. New Edition.* Vol. II, 224.

[39] *Kitāb al-minah al-rabbāniyya.*

[40] The works of Muhammad al-Sanūsi pretend to give an essential summary after comparing around 40 mystical orders, because the *Hallādjiyya* should have taken the essential features from all the orders existing up to them.

[41] Cf. al-Ghazzālī's *Ihyā' 'ulūm al-dīn* /Arabic ed. (1933), Cairo/ and the already cited Engl. translation by MacDonald 1901, 1902.

[42] Cf. Ibn 'Atā' Allāh (*Miftāh al-falāh wa-misbāh*, 6); Engl. transl. by Gardet, Louis: op. cit. 1991, 225; cf. a good French transl. of Geoffroy, Eric (1998): *La sagesse des maîtres soufis*. Paris: Grasset.

[43] Cf. op. cit. (*Ihyā'*, 3, 17).

The *dhikr* is "liberating" **harmonic overtone vibrations** as a **switching interface** between a *real* and a *virtual* world. The *dhikr* of the heart resembles "the buzzing of the bees, accompanied by intermittent luminous and coloured phenomena". Al-Ghazzālī depicts the concomitant visual components as follows:

> "The lights appear and pass like a flash of lightning and sometimes last, sometimes not; sometimes follow each other different from one another, sometimes blend into a single mood as gleams of truth, released by God's good will."[44]

The picture, delivered under the pen of *Ibn 'Atā' Allāh*, offers a complementary visualization of the same energetic field:

> "The fire of *dhikr* does not go out and its lights do not flee … You always see lights going up and others going down; the fire around you is bright, very hot and it flames."[45]

Related audio-visual patterns in Buddhist traditions

Similar ways go Yoga and Buddhist disciples to attain their "illumination from within" as well as 14th century Hesychasts aiming to be enlightened within the "uncreated Tabor light".[46]

We come nearer to explore the repetitive invocation of the sacred name of Buddha – *Amida* – *nembutsu* (an abbreviation for *Namu-Amida-Butsu*), a key phenomenon, which serves as a spiritual and energetic bridge to enter the 'Pure Land'. An efficient strategy pretending to get "soul salvation for everyone" developed by 8th – 13th century spiritual masters, the most efficient one elaborated by Hōnen (12th – 13th century). Its destination is not only to meet the happy few "spiritual giants", but the "weak people". So it concentrates upon the special moment of birth (*ōjō*) after a bodily death; a perfect enlightenment follows after a long period in the "life beyond". *Ōjō* is to be prepared by endless incantations (= literally *mantras*) of Buddha's name, aiming to set oneself away from the life-and-death transmigration cycle, delivering the stepping into "Eternal Land". In the second of the four Tendai practices, following the eminent patriarchs Dengyō, Jīkaku and Shōnin (8th-11th century), *nembutsu* has a simple task to assist a high attainment of reflections upon Amida (Buddha) – the "unceasingly calling" of his name and the accompanied meditative ecstasy, in which the mind has to attain a state of unification (Sanskrit *Yoga*) with the objects upon

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[44] Cf. op. cit. (*Ihyā'*, 3, 16).
[45] Cf. op. cit. (*Miftāh*, 6).
[46] Cf. Lossky, Vladimir (1990): *Essai sur la théologie mystique de l'Église d'Orient*. Paris: Cerf, 6-7.

meditated[47] and to enable fixing one's gaze upon the mystical presence of Amida (i.e. all Buddhas). After his return from China Jikaku introduced a peculiar kind of *musical intonations* as a balance to the practiced *visualizing picture* of "Buddha's majestic form" in mind; this means to concentrate in a well balanced way upon him, "who will welcome us" via "inflicting" an **energetic bridge** in the "Land of Bliss". We face here a concept challenging the Sūfī ascetic "retirement of the world", which presents the *conditio sine qua non* to perceive an overall pattern in depth: "Before starting one has to get rid of all thoughts and sentiments which interfere **the fullest apprehension of the truth**". An 11th-12th century Buddhist patriarch Ryōnin exposes his vision of the birth in the 'Pure Land' in detail, which **pluralistic** accent and **democratic** prospects correspond to our times:

> "One man is identical with all and all with one. One religious practice is the same as all others, and all others the same as any of them. This is what explains the experience of birth into the Pure Land by reliance of Amida's power. All living beings are included in one thought. It is because of a mutual interaction between all things, including the Buddhas themselves, that if one calls upon Amida's sacred name once, it has the same virtue as if he did it a million times."[48]

A turning point of Tendai and Kegon conception is the vanishing opposition between subjective and objective perception in the *yoga* state. All distinctions to be made between objects – *interpenetrating each other* – appear in their "ultimate analysis" to be a mental illusion; therefore the objects feint only superficially to be non-identical. Another 11th-12th century spiritual master Kakuban leads to the **light energy** essential transformation via *nembutsu*:

> "Amida is only another name for the greater Sun Buddha (= Sanskrit *Vairocana* 'all illuminated'). If a man will but repeat the three syllables of Amida's name, his sins that have been accumulating from time immemorial are extinguished. The Pure Land of a mystic adornment is nothing but the great Sun Buddha's Palace; and the Land of Perfect Bliss is **the Land of Amida's heart**."

The core of an ascetic search of **light energy** is an immanent part of the Buddhist theological doctrine. The place of a *virtual* world should not be beyond this *real* one, because the body of a person is already the space itself of a *virtual* field (of energy):

> "Amida is but an intellectual faculty of the great Sun Buddha, who is the substance of Amida's person. The land of mystic adornment is coextensive with the Land of Perfect Bliss, and the latter is really the former under a special aspect. Amida's Pure Land is really everywhere, so that *the place where we meditate* upon him *is **verily his own land***.

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[47] Cf. loc. cit. (Coates & Ishizuka 1925, 709).
[48] Cf. the commented English translation in Coates & Ishizuka (1925): op. cit., 39.

> When we come to realize the truth of this, we *do not need to leave this present fleeting world* at all to get to the Pure Land, but *we are already there*. And in our present bodies and persons, just as we are, we are assimilated to Amida, and he to the greatest Sun Buddha, whose we are and from whom we derive our being." This is the path of meditation by which, *just as we are, we attain Buddhahood* (**bold** and *italics* – by us)."[49]

Assigning an efficiency progress in the elaborated dissociation of *nembutsu* from all the preparatory meditative stages in 11th-12th century teachings of Yōkwan (a contemporary of al-Ghazzālī), we have to stress these stages, because they will play a major role in our strategies to prepare individuals – who could be "all sentient beings" – for the interaction with the interfaces of *virtual environment*s, they will step in with their own energy (at least 12%):

> "All sentient beings have being going through the transmigratory round for endless time, and although the Buddhas have repeatedly appeared and attempted their salvation, the fact is we are all here still, wandering in the mazes of birth and death as common mortals. At last we have now brought *face to face* with Amida and his original Vow, and are *like men* longing **to cross a stream** who have **found a ferry**. As, however we reflect upon passing of the days and nights, and how quickly we are drawing near to the land of shadows, we must make haste and seek deliverance with all our hearts, and, forsaking everything else, earnestly lift up voices and invoke the sacred name …"[50]

The great merit of the spiritual renewal of older Buddhist paths to access the 'Pure Land' by a 12th-13th century master Hōnen Shōnin is *firstly* a stressing of its major role in human life to the 'illumination from within' and *secondly* an efficient simplification of Buddhist pluralism of rules and rituals, how to follow primarily the "way of insight" to the 'Pure Land'. The latter is highlighting the difference between an energy streaming of the stages of meditation and the independent religious practice of *nembutsu* relevant till enlightenment in the "Paradise beyond" is to be attained. His criticism towards older sects resumes explicitly an older ethical '10 stages' base component, of 9th century Kōbō Daishi's teachings. We summarize the 10 points, because of their key importance as a precondition for a balanced interactivity within *3D virtual environments* (skipped by VR designers in a different way)[51]. A convenient program of mental training has to attune the interaction ***Individual – Virtual***

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[49] Cf. op. cit., 39-40.

[50] Cf. op. cit., 40-41.

[51] Cf. William Gibson's notion "Cyberspace" in his baroque novel *Neuromancer* (1984); illustrative works such as Rheingold, H. (1991): *Virtual Reality*. New York: Summit Books; the famous anthology of Benedict, Michael (1991): *Cyberspace: First Steps*. Cambridge & London: MIT Press; or historic approaches like Wertheim, Margaret (1999): *The Pearly Gates of Cyberspace: a History of Space from Dante to the Internet*. London: Virago Press; and Zaleski, Jeff (1997): *The Soul of Cyberspace: How New Technology Is Changing Our Spiritual Lives*. New York: Harper Collins Publishers; where highlighted reflections on religious experience, even being essential, do not induce a turning point to an overall concept of 'virtual reality' like Michael Heim's "Erotic Ontology of Cyberspace" or Nicole Stenger's "Mind as a Leaking Rainbow".

World, tending to elaborate specific nuances of "heart sensibility" – a Buddhist metaphor reminding of the concept of its "ancestors" and "contemporaries" (Jewish Patriarchs, Desert Fathers, Hesychasts, Sūfīs etc.):

1. "The heart of a sheep", i.e. ignorant of the Law and longing for the satisfaction of appetite and lust – a life of mere animal passion, belonging to three evil paths. (*Shura* = Sanskrit *Asura*)
2. "The heart of a stupid child", i.e. of one who has just been awakened to a sense of moral duty – a life with social sanctions, based on the five cardinal virtues: benevolence, justice, courtesy, wisdom and sincerity. (Confucius)
3. "The heart of an infant", i.e. a spontaneous longing for a birth in the *heavenly Virtual World*, but after the manner of a heretic. (Laotze)
4. "The heart of one who sees nothing but the five elements" and denies the existence of the soul, i.e. the ego is to be non-existent. (*Shōmon* '1st stage of *Hīnayāna*')
5. "The heart from which the seed (= the original sin of *karma*) has been removed", i.e. discovering and exerting the root of evil *karma*, till getting completely rid of it. (*Engaku* ' '2nd stage of *Hīnayāna*')
6. "The heart which makes the welfare of others its aim", i.e. which has already entered *the Greater Vehicle* of altruistic life. (*Hossō*)
7. "The illuminated heart", which has transcended all illusion such as the transmigration of birth and death; a process of denial of all adventitious qualities and attaining a state known as "nothingness", i.e. the absence of everything but reality itself, powerless to be defined or described. (*Sanron*).
8. "The heart which has entered upon the one true and middle way", having transcended the state of related and of absolute being, i.e. the "ultimate reality" of a *noumenal* world, identified with the experience of the *phenomenal* one. (*Tendai*)
9. "The heart in which everything is realized" as having no independent nature of its own; its existence results from the relations to the other things, as well as to the absolute one. (*Kegon*)
10. "The heart which rises completely above exoteric doctrine", or what is taught about the incarnate Buddha, and "enters into the very heart of absolute Buddha", being blessed with all the adornments. (*Shingon*)[52]

We have now to go back to the Golden Age of Hindu and Buddhist Tantrism[53] as a frame of reference for the energy dynamics of *Mandala* as a **group interaction principle** via *nembutsu*, aiming to expose a *mental tool* that is to be implied in an overall pattern of *virtual architecture*. *Tantra* means 'continuity of development', so that life experience becomes clearer and clearer and energy could be visualized. Every insight becomes a confirmation. The inherently perceived symbolism becomes naturally relevant rather than a fascinating imposture from outside. The *Mandala* principle (Sanskrit 'society, group or association') means regarding human experience as **a natural process of interdependence of all phenomena** in a "complete union with the universal energy". It implies – in the Tantric

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[52] Cf. a comparative analysis of Honen's synthesis and older 10 stages commentaries in Coates & Ishizuka (1925), op. cit., 169.
[53] Cf. Wayman, Alex (1974): *The Buddhist Tantras*. London: Routeledge & Kegan Paul.

version – that the patterns are "in a continual cycle of experience without partiality" in one's perspective. Assumed in Tantric tradition *Mandala* is empirically "translated" in late 50ies quantum physics as a **holographic pattern**. Einstein's follower David Bohm (supported by neuroscientist Karl Pribram) coined the term of 'undivided wholeness' of the universe:

> "A quantum multi-body system cannot really be divided into parts existing independently of one another. We must reject the classical idea of world's reducibility. Relativity and quantum mechanics have strongly suggested that the world cannot be analysed into separate and independently existing parts. Moreover, each part somehow involves all the others: contains them and enfolds them. In this sense, a common set of basic concepts has been established. This fact suggests that the sphere of ordinary material life and the sphere of mystical experience have a certain *shared order* and that this will allow a fruitful relationship between them."[54]

The chanting and recitation of *Mantras* – syllables used for 'mind protection' – activates and accelerates a spiritual energy, promoting harmonic oscillations in all part of the human body. The invocation is often accompanied by visualization and symbolic hand gestures (*mudra*). The beginner is gradually converted into a "living centre of spiritual vibration" and this proceeds in a **multi-channel communication system**[55] as follows from the following formula:

> "Six aspects of mantras:
> A Rishi or a seer;
> A raga or melody;
> The Devata or presiding Deity;
> A bija or seed sound;
> The Shakti or power; and
> A Kilaka or pillar."[56]

The *first level* is depicting the act of visualizing of "incoming energy". The **Rishis** have been "opened to the revelation of Mantras" through their intuitive perceptive sensibility. They could recognize their own efficiency as *channels* "for the flow of grace, knowledge and power from the Divine". The Mantras are transmitted from generation to generation, from Guru to disciple, increasing their power into a vast reservoir of energy.

The *second one* is an audible one. The **raga** ('melody') is a sound sequence, often without harmony. It is of primary importance not to change the *raga* and its key, because *vibratory oscillations* – on which the sound is based – are an integral part of the Mantra, corresponding

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[54] Cf. Bohm's and Pribram's positions in the anthology of Wilber, Ken (1982): *The Holographic Paradigm and other Paradoxes: Exploring the leadding Edge of Science.* Boulder & London: Shambhala.
[55] Cf. an analytic interaction approach, outlined by Poyatos, Fernando (1983): "Language and nonverbal systems in the structure of face-to-face interaction". In: *Language and Communication* 3/2, 129-140.
[56] Cf. an English translation and a good commentary by Chitkara, M.G. (2002): *Encyclopaedia of Buddhism: A World faith. Main Currents in Buddhism.* Vol. XI. New Delhi: A. P. H. Publishing Corporation, 166-172.

to the Pythagorean *monochord*. Two aspects of the *sonic level* are to be differentiated. The first one being an **audible expression**, and the second one being a **subtle sound essence** (*shabda* or *vach*), which carries a meaning "arising from the eternal Spirit". An important point is the bridge between sonic expression and its visual outline. When a spoken word is "perfectly sounded within" (= "illuminated from within"), it contacts with the power that manifests it as an image. The practice of Mantra Yoga for a long period of time prepares an "audiovisual fusion", because it makes one aware of sounds actually *creating images*, and on the reverse, certain images have *inherent sound vibrations*.

On the *third level*, as much as sounds give rise to *definite forms*, repeated chanting of God's name gradually builds up a special manifestation of the dominant deity (**the Devata**) and acts as a *focus* to concentrate this influence, which penetrates and becomes a *centre of consciousness* for the disciple. The *Devata* is a "higher source of energy" for the participant. He perceives a particular facet of the many reflected rays of light through this diamond (*vach*), which accompanies the individual on his spiritual path to share the "Cosmic intelligence".

The *fourth level* is concerning our *audiovisual synchronicity interaction*. Within a seed (*bija*) is hidden the key of the natural self-generating growth of spiritual energy of Mantra. The seeds have only a functional meaning and act directly on the "nerve tubes of the astral body" (*nadis*). They vibrate in the Chakras along the spine, acting *as a subtle message* releasing blockages and allowing the kundalini energy to flow freely. In this process *name*and *form* of the sound are merged and cannot be dissociated.

The *last level* we have to discuss is the pillar (*killaka*), which is the driving force and persistence of the disciple – the "energy thread" joining the individual to the Guru, to the Deity and all become one. In Tantric Buddhism the pillar is also the strength of belief that the achieved knowledge is accumulated and remains even after one's bodily death and will reappear, because it is in a *Mantra energy channel*. It depends upon *how pure a channel* you have made of yourself, to what extent an ideal has been realized to set one's ego aside, "connected" within a multi-dimensional balance of "virtual" energy, which makes oneself "feel natural" in a shared *virtual environment*.

Conclusions

In this paper we have expounded the essential features of the Merkabah, Sūfī and Buddhist patterns concerning an aspired auditory (and visual) *virtual dimension* independently from one another. The study has shown a historical reservoir of tested opportunities, responding to several instances of our required asset of mental tools, serving for facilitation of an efficient group interaction – findings that are expected to provide coherent and consistent basis for the development of the virtual (visual and aural) architecture principles for the design of the next generation virtual worlds. Our study followed the focus of the mystical approach of "serial happenings" in Eastern traditions, esp. leading to the point of how to access a virtual dimension. The historical output of these "heretic fusions" has been synthesised in the contemporary basic principle of 'inner listening', as a step towards the development of harmonious and inspiring virtual worlds. The huge interest in virtual worlds, in particular the phenomenon of Second Life attracts also research companies, which explore the relations between real life perceptions and the life in a virtual world. Gartner[57] recent study formulated the five laws for virtual worlds. Overall, people are attracted to virtual worlds as a place where one can train and experience changes in identity, fitting their individual identities to what they would like to be. In virtual worlds it is easy to form, but it requires significant effort to keep that form alive. Our research aims at facilitating the creation of the individual form, keeping the emerged form and supporting its eventual evolution.

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[57] Pettey, Christy (2007): *Gartner Says 80 Percent of Active Internet Users Will Have A "Second Life" in the Virtual World by the End of 2011*, Gartner Media Relations, http://www.gartner.com/it/page.jsp?id=503861.

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