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Epistemology of hallucinations and hearing voices: the contribution of constructivism and neurophenomenology²

Abstract

This review article focuses on the debate which is once again resurfacing in western culture : is hearing voices (»auditory verbal hallucinations« (AVH) in psychiatric vocabulary) a symptom of mental disorder or valuable resource? What is the appropriate reaction to voice hearers and their social context: endeavours to silence the voices with medication or acceptance and their utilization for recovery?

The author is contributing to this debate from the viewpoint of cybernetic or constructivist epistemology as it was defined by Gregory Bateson (1904-1980). After a short summary of the history of voice hearing the epistemological problems with the definition of AVH are presented. With neuroscientific discoveries and epidemiological data it is shown that we are all potential voice hearers. Then the neurophenomenological project is presented in a more detailed way, which could connect first- and third-person research of AVHs. Additionally this is explained with the presentation of possibilities for the coexistence of objectivist nomothetic, hermeneutic constructivist and transformative epistemology. The article concludes with a consideration of not only how this coexistence could be helpful for a better quality of response to voice hearers, but also in a broader sense for the development of science and correction of pathologies of epistemology which are threatening ourselves, our close relatives, society and indeed the whole ecology of our planet.

Key words: auditory verbal hallucinations, hearing voices, epistemology, cybernetics, constructivism, neurophenomenology, hermeneutics, reality, mental health

Introduction

Is hearing voices (»auditory verbal hallucinations« (AVH) in psychiatric vocabulary) a symptom of mental disorder or valuable resource? Are voice hearers potential psychiatric patients or mystics or only people with unusual experiences? What is the appropriate reaction to voice hearers and their social context: endeavours to silence the voices with medication or acceptance and their utilization for recovery?

This discussion has been continuing for thousands of years from Ancient Mesopotamia where hearing voices, particularly angry or mournful ones, was looked upon as a bad omen, up to the present day when in our culture and society objectivisation and medicalisation of this phenomena prevails. This has brought also pathologisation and an underestimation of the life experiences of voice hearers who in their treatment are not valued enough in the dominant medicine or psychiatric discourse as equal partners. Their subjective reality is not accepted as objective and credible.

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Epistemology of Gregory Bateson

The author is contributing to this debate from the viewpoint of cybernetic or constructivist epistemology as it was defined by Gregory Bateson (1904-1980) »as a branch of science combined with a branch of philosophy. As science, epistemology is the study of how particular organisms or aggregate of organisms 'know', 'think' and 'decide'. As philosophy, epistemology is the study of the necessary limits and other characteristics of the processes of knowing, thinking and deciding.« (Bateson & Bateson, 1987: 208)

From the end of the Second World War up until his death Bateson strived for a paradigmatic change in our way of thinking and in science overall, for the transition from objectivist (realistic) to cybernetic (constructivist) epistemology³ (Bateson, 1972, 2019; Keeney, 1985; Možina, 2019; Možina in Barnes, 2019; Petrovič, 2019; Šugman Bohinc, 2019; Tramonti, 2019). This shift is also of crucial importance for the development of a new mental health paradigm.

Bateson paid a lot of attention to the epistemological study of psychiatry (Ruesch & Bateson, 1951) and schizophrenia in connection with which he developed the »double bind theory« (Bateson, 1972, 2019; Berger, 1978; Možina, 2010) which is poorly understood even today because of its epistemological innovation. In his commentary to the new edition of John Thomas Perceval's (1803-1876) personal story about recovery from psychosis he pointed out that auditory hallucinations could be understood as part of the double bind experience and that they have self-healing potential, because they are a form of body and mind wisdom, which was confirmed in Perceval's process of recovery: »It is one thing to see the symptom (in our case voices, remark by M. M.) as part of a defense mechanism; it is quite another to conceive that the body or the mind contains, in some form, such wisdom that it can create that attack upon itself that will lead to a later resolution of the pathology.« (Bateson, 1962: xii)

Unfortunately the staff of the psychiatric hospital, where Perceval was admitted, understood his voices only as pathology (as his relatives did also) and unintentionally joined the double bind in a paradoxical way that contributed to Perceval's misery. Luckily he didn't break down, but instead he succeeded in making a creative leap from the double bind situation to a new level, where he reached a better quality of being which was not conformistic but socially engaged for the protection of mental patients, against a repressive psychiatric routine and against social oppression overall.

Bateson pointed out critically: »Perceval's voices were able to provide him with gross and painful caricatures of double-bind experience, but the hospitals could only simulate this

³ My endeavours in this direction in the area of mental health together with co-workers have been ongoing since the early 1990's in the context of different research and clinical projects, that were variously called »psychotherapy cybernetics« (Možina, 1993; Možina, 1994; Barnes, 1994, 2002; Možina & Barnes, 2019; Stritih, Možina & Tajnšek, 1993; Šugman Bohinc, 1998, 2000, 2003, 2005a), the development of »the science of complexity« and »participatory ethics« (Možina, 2004, 2009a; Možina & Kordeš, 1998; Jeriček, 2005; Kordeš, 2005ab; Možina & Kopal, 2005; Možina & Kordeš, 2005; Šugman Bohinc, 2005b), »constructivist epistemology« (Možina, 1991, 2010; Kordeš, 2004; 2010; Štajduhar, 2010; Šugman Bohinc, 2010), »a systemic approach« and »synergetics« in psychotherapy, social and pedagogic work (Možina & Šugman Bohinc, 2004; Možina, 2009b, 2013, 2020; Možina, Štajduhar, Kačič & Šugman Bohinc, 2011; Šugman Bohinc, 2011), »epistemic responsibility« (Miškulin, 2017), »a phenomenological approach« (Černigoj, 2005), »neurophenomenology« (Možina & Kordeš, 2005; Kordeš, 2010) and »existential science« (Černigoj, 2007).

experience out of clumsiness and hypocrisy. Then as now, the principal modes of treatment were such as to reduce the patient's sense of his own worth and responsibility. To the strait jackets, the cold tubs, and the isolation rooms of those days, modern institutional psychiatry has added the shock therapies and the tranquilizing drugs, but the principles of treatment are not much changed. Even in 1830, there was a strong desire on the part of the staff to keep the ward quiet, and even then there was a tendency to tell the patient as little as possible about decisions that concerned him and still less about the reasons for these decisions. All in all, much was done to increase the patient's sense of isolation and unworthiness, and he was provided with plenty of unexplained and painful experiences around which he could build delusional explanations.« (ibid.: xiii)

After a short summary of the history of voice hearing the epistemological problems with the definition of AVH are presented. With epidemiological data it is shown that we are all potential voice hearers. Then the neurophenomenological project is presented in a more detailed way, which could connect first- and third-person research of AVHs. Additionally this is explained with the presentation of possibilities for the coexistence of objectivist nomothetic, hermeneutic constructivist and transformative epistemology. The article concludes with a consideration about not only how this coexistence could be helpful for a better quality of response to voice hearers, but also in a broader sense for the development of science and correction of pathologies of epistemology which are threatening ourselves, our close relatives, society and indeed the whole ecology of our planet.

Short history of hearing voices from classical antiquity to the present day

Knowing about the history of hearing voices can help us a lot in the study of the epistemology of hallucinations because it can give us an insight into how social and cultural circumstances (especially politics, medicine and religion) have shaped the understanding of and our relations to this phenomenon.

»In both Classical Antiquity and early Christianity, the potential for voice-hearing to be seen as a sign of divine favour led to power (in the later case, the Church) mobilising against voice-hearers to keep a tight rein on the meaning of voice-hearing. The Christian Church, before, after and during the Middle Ages, did not automatically assume someone was possessed, or being spoken to by God or the Devil, if they heard voices. Christian thinkers had both naturalistic and supernatural explanations for voices, with biology being involved in both types of accounts. In St Augustine's influential distinction, externally located voices (corporeal locutions) and internally located voices (imaginative locutions) were thought more likely to be from demonic forces than voices heard but without any sound or words (spiritual/intellectual locutions) which were more likely to be divine. Women who heard voices and attempted to claim religious authority on the basis of these met with great resistance from the patriarchal religious establishment.« (McCarthy-Jones, 2012: 36-37)

»The new sense of self that began to develop from the sixteenth century onwards in the West was antithetical to the experience of hearing voices. The Reformation in the sixteenth century, and the emerging power vacuums in Europe, gave voice-hearers a chance to raise their voices and claim their own meanings. The sixteenth-century Spanish mystics developed a detailed phenomenological analysis of voices. In England, the advent of enthusiasts who heard divine voices and claimed religious authority on the basis of this, resulted in the Anglican Church unleashing medicine on voice-hearers. Voice-hearing lost its richer meaning and the medicalisation and pathologisation of the experience became dominant. Whereas Classical

Antiquity had argued voices occurred in sedate, chaste and intelligent souls, now physicians such as William Battie argued they resulted from factors such as gluttony and idleness. Whereas the educated elite accepted medical theories, the lay population remained less convinced, partly due to medicine's lack of efficacy in helping those distressed by hearing voices.« (McCarthy-Jones, 2012: 57)

»In the seventeenth century religion had begun to willingly transfer power to psychiatry vis-à-vis hearing voices, in order to medicalise religious dissenters' experiences of voice-hearing. At the start of the nineteenth century, this transfer was completed, with psychiatry assuming full authority over the voice-hearing discourse. Notably the first psychiatric treatments were born out of the Church's techniques for helping voice-hearers. Yet mysticism and spiritualism still allowed some voice-hearers to make their own sense of their experiences, outside of a biomedical paradigm.« (McCarthy-Jones, 2012: 95)

»World wars led to emphasis on the environmental causes of voices, and psychoanalysis brought back the concept that the content of voices was meaningful (although this was the psychoanalyst's meaning, rather than the voice-hearer's). Around 50,000 voice-hearers were killed in the Holocaust. The development of antipsychotic medications reaffirmed a biomedical view of AVHs as an endogenous brain disease, and the diagnosis of schizophrenia became synonymous with voice-hearing and a loss of hope. The Diagnostic and Statistical Manual of Mental Disorder (DSM) defined how voices related to pathology. The concept of sane voice-hearers was debated in mid-nineteenth century France, but had to wait until the postmodernist, post-colonialist discourses of the twentieth century became prominent before voice-hearers' were offered an opportunity to emancipate themselves on a large scale, through the Hearing Voices Movement. Most in the Hearing Voices Movement highlight trauma as a cause of many voices, assume the meaningfulness of the content of voices, and work directly with the voices themselves to reduce the voice-hearer's distress.« (McCarthy-Jones, 2012: 95-96)

One of the buds on the tree of knowledge that appeared at the beginning of the 1990's from the cybernetic epistemology background was »*neuropsychology*« (Varela, Thompson in Rosch, 1993; Varela, 1996; Peters, 2000; Gordon, 2013; Glezerman, 2013; Gallagher in dr., 2015.) This proposed an alternative model in cognitive science, an integration of phenomenological tradition (works of Husserl, Heidegger and Merleau-Ponty), the science of complexity (especially the theory of self-organization) and contemplation/meditation traditions (Buddhism).

This approach promises new discoveries about hallucinations, because it is »[...] blurring the traditional boundaries between perceptual categories. For example, from a philosophical perspective, illusions and hallucinations are classified as distinct; illusions, but not hallucinations, are linked to an external object. Similarly in the clinical domain, illusions are classified as distinct from hallucinations by virtue of a weaker association with mental illness. However, such categorical boundaries begin to appear less absolute when confronted with real clinical cases. Illusions and hallucinations typically co-occur within the same patient, and it is often difficult to categorize pathological visual experiences as either one or the other category. Such practical difficulties hint at the deeper problem revealed by imaging evidence. From the neurobiological perspective, hallucinations and illusions are more similar than different, both related to activity within the cortical territory of the eye's mind. If hallucinations and illusions are the same category of phenomena, the issue arises as to whether they each require a different theoretical account. The same issue applies to

differences between hallucinations, dream states, and normal visual percepts. One might argue that instead of a theory specific to hallucinations, we should be aiming for a theory that encompasses all eye's mind phenomena.« (Macpherson & Platchais, 2013: 59)

It is also interesting to analyze the historical roots of the term 'hallucination' (Rojcewicz & Rojcewicz in McCarthy-Jones, 2012: 22). The term 'hallucination' derives from the Latin verb *alucinari* or *hallucinari* ('to wander in mind, to talk idly, to rave'). *Alucinari* is a verb dating from classical times, used by philosophers such as Cicero and Seneca, yet is a relatively rare term. In classical Latin it is not documented prior to Cicero (106–43 BCE), nor after Columella (c. 60 AD). However, Aulus Gellius (c. 160 AD) reports that *alucinari* is derived from a Greek term meaning 'to be distraught, to be uneasy, to have no rest'.

It is also interesting to reflect on the relationship between the basic human experience of hearing and its intrinsic connection to carrying out orders. Hearing is a fundamentally passive experience. In hearing 'I am a receiver; the tones come at me and compel me'. In many languages the words 'hearing' and 'obedience' derive from the same root. In German, *hören* (hearing) is connected with *gehörchen* (obeying), just as the Greek term 'I hear' is related to the Greek term 'I obey'. Latin *oboedire* (to obey) comes from *ob-audire* (to listen from below), from *audire* (to hear). The Russian and Hebrew words for hearing and obeying are similarly related. In English, too, 'to listen to' can mean 'to obey'. It is therefore unsurprising that in hearing, obedience is foreshadowed. This is particularly interesting, given the high prevalence of voices which issue commands today (McCarthy-Jones, 2012: 22).

Difficulties with the definition of hallucination from the epistemological viewpoint

Difficulties with psychiatric definitions in the diagnostic systems DSM and ICD, which are based on naive realism, are discussed intensively (for example Liester, 1998ab; Aleman & de Haan, 1998; Pontes & Calazans, 2017) and can be understood much more easily if we look at them from the epistemological viewpoint (Berrios & Marková, 2012).

In the latest editions of DSM and ICD »hallucination is defined as a sensory perception in the absence of a corresponding external or somatic stimulus and described according to the sensory domain in which it occurs. Hallucinations may occur with or without insight into their hallucinatory nature. The absence of insight into a hallucination defines it as a psychotic symptom, that is, a hallucination for which reality testing is impaired. Hallucinations without insight are contrasted with hallucinations that the individual recognizes as unreal. Examples of hallucinations with preserved insight include the visual hallucinations of migraine aura, sleep transition-related hypnagogic (while falling asleep) and hypnopompic (while waking) hallucinations, and the hallucinated hearing of one's name being called that many psychiatrically and neurologically healthy individuals experience occasionally.« (Arciniegas, 2015: 717)

In this definition the meaning of »insight« remains unclear, but the consequences of »not having insight into a hallucination« have important social consequences. If the voice hearer is without insight, this automatically means pathology - that the hallucination is a psychotic symptom and that he or she is psychotic. There is an implicit message in this that there exists a *reality*, into which the psychotic voice hearer does not have insight but others, for example psychiatrists or the hearer's relatives, have. They would argue that their insight into this reality is more objective and right whereas the hearer's is subjectively distorted and wrong, especially because he or she does not have insight into the »pathological nature« of the

hallucination. The consequence is that the psychiatric treatment of voice hearers is based on the extinction of their voices with antipsychotic drugs and that psychiatrists are mostly not interested in what the voices are saying, or the relationship the hearers have to their voices or how they are dealing with them. The subjective experience of patients is generally disregarded because it is devoid of »insight«.

Many authors are trying their best to contribute to urgent changes in the rigid definitions of symptoms. Because of them the diagnostics of mental pathology has low validity and reliability (for example Tamminga, Sirovatka, Regier & van Os, 2010). A new understanding that differs from the standard psychiatric views of AVH has been developed by the Hearing Voices Movement (Romme & Escher, 1989; Corstens et al., 2009; Escher & Romme, 2012; Corstens, May & Longden, 2015; Škraban & Dekleva, 2019). In this approach it is called "hearing voices" and persons "voice-hearers" and it is conceptualized as a relatively universal human experience and as a phenomenon that should be destigmatised and socially normalised. So the word "hallucination" is avoided with its pathologising and objectivising connotations and social impacts. »The voices are understood and conceptualized as a meaningful and in principle a reasonable experience that often occurs after psychosocial traumas and particularly burdensome personal experience, which can carry information about this trauma, but in ways that may be symbolic, dissociated or implicit.« (Dekleva, 2015: 44-45)

Among researchers (Larøi et al., 2012) one of the definitions of AVH that is more appreciated than the existing definitions in DSM or ICD is Anthony David's empiricist-rationalistic definition: »A sensory experience which occurs in the absence of the corresponding external stimulation of the relevant sensory organ, has a sufficient sense of reality to resemble a veridical perception, over which the subject does not feel s/he has direct and voluntary control, and which occurs in the awake state.« (David, 2004: 108)

Unfortunately this definition is also full of ambiguities. For example, it is not clear what is a »sufficient resemblance« to veridical perception. Also problematic are the elements »in the absence of the corresponding external stimulation« and »absence of direct and voluntary control«. From the epistemological point of view the questions, what is the relationship between perception and hallucination, among external and internal stimuli and between reality and hallucination, remain open. And it is these questions I consider next.

Epistemological consequences of the discovery that in the functioning of the nervous system between perception and hallucination there is no difference

An important contribution to the study of these questions was a series of neurophysiological investigations on »What the Frog's Eye Tells the Frog's Brain« which began in the 1950's (Lettvin, Maturana, McCulloch & Pitts, 1959). They changed the conventional knowledge about perception and the representational paradigm because it was shown that it was not possible to distinguish between perception and hallucination in the operation of the nervous system as a closed network. This discovery later resulted in epistemological change and the formation of a new research approach/project, called »neurophenomenology«.

Although the experiments with the frog's visual perception were conceptualized in the frame of the objectivist model of perception and its representation in the brain, they have shown that »the frog's world is constructed not by the impacts and intensities but in terms of patterns, differences, ratios, and proportions.« (Barnes, 1994: 89)

In one of the experiments (Maturana & Varela, 1998: 104) they took a frog's larva and surgically rotated its optic nerve 180 degrees. When it reached maturity as a fully grown adult frog they covered its rotated eye and showed it a worm. The tongue went out and they saw that it made a perfect hit. They repeated the experiment, but next time covered the normal eye. In this case they saw that the frog shot out its tongue with a deviation of exactly 180 degrees. That is, if the prey was below and in front of the animal, the frog shot out its tongue backward and up. Each time they repeated the experiment, it made the same mistake: a deviation of 180 degrees. The frog shoots out its tongue as if the retinal zone where the image of the prey is formed were in its normal position: »The experiment reveals in a very dramatic way that, for the animal, there is no such thing as up and down, front and back, in reference to an outside world, as it exists in observer doing the study. There is only an *internal correlation* between the place where the retina receives a given perturbation and the muscular contractions that move the tongue, the mouth, the neck, and, in fact, the frog's entire body. In an animal with rotated eye, if we place the prey down and forward, we cause a visual perturbation to fall upward and back, in the zone of the retina which is normally down and in front. For the frog's nervous system this triggers a sensorymotor correlation between the position of the retina and the movement of the tongue, and not a computation on a world map as would appear reasonable to the observer.« (ibid.: 105)

For the functioning of our eye its structure is more important (for example how the eye is situated and how it is related to other structures of our nervous system) and what the brain tells the eye (for example the visual cortex and occipital lobe) than external stimuli. The same is true for our ears.

Brains aren't able to hear voices, but people are

Later Maturana and Varela offered by way of an analogy a submarine for the clarification of this constructivist understanding of perception and functioning of the nervous system: »Imagine a person who has always lived in a submarine. He has never left it and has been trained how to handle it. Now, we are standing on the shore and see the submarine gracefully surfacing. We then get on the radio and tell the navigator inside: 'Congratulations! You avoided the reefs and surfaced beautifully. You really know how to handle a submarine.' The navigator in the submarine, however, is perplexed: 'What's this about reefs and surfacing? All I did was push some levers and turn knobs and make certain relationships between indicators as I operated the levers and knobs. It was all done in a prescribed sequence which I'm used to. I didn't do any special maneuver, and on top of that, you talk to me about a submarine. You must be kidding!« (Maturana & Varela, 1998: 114)

What is true in this analogy for the submarine, is also true for the frog with its rotated eye and for every one of us, and yet we constantly *forget* that our nervous system is similar to the person in the submarine. And we *forget that we are forgetting*. We don't want to remember that the differences that are registered by various indicators are all that our nervous system »sees« or »hears«⁴.

⁴According to this constructivist model not only perception, but the whole of cognition could be conceptualized as emergent phenomena, which are the »consequence of continuous interaction between the system and its environment. The continuous interaction triggers bilateral perturbations; perturbations are considered problems – therefore the system uses its functional differentiation procedures to come up with a solution (if it doesn't have one handy already through its memory). Gradually the system becomes 'adapted' to its environment – that is it can confront the perturbations so as to survive. The resulting complexity of living systems is cognition produced by the history of bilateral perturbations within the system/environment schema.« (Wikipedia, 2009)

Our brains are not able to hear voices, neither external nor internal. But for our brain's functioning it is essential that we can experience ourselves as hearers and that we can be sure that we are hearing voices and that we can discern between external and internal voices. Because we aren't conscious and we can't imagine exactly how this miracle occurs that we can »perceive«, we most of the time imagine in oversimplified manner that our ear is a kind of funnel into which sounds are flowing from outside. With a similar ignorance we imagine that »hallucinations« are coming from inside. But all these are only our conceptions, in the constructivist vocabulary our »punctuations«⁵ in our descriptions, from the viewpoint of our brains everything that we hear are only perturbations.

If we now go back to the psychiatric definition of hallucination, we can turn it upside down. Based on neurophysiological discoveries we can change the statement »hallucination is a sensory perception in the absence of a corresponding external stimulus« to »sensory perception is a hallucination in the absence of a corresponding external stimulus«. Because we can't not hallucinate, it is true for everyone of us that hallucinatory experiences are more realistic than the actual environment that surrounds us. Are we therefore according to psychiatric criteria all insane?

We are all potential voice hearers

Not only neuroscientific discoveries but also epidemiological studies are showing that we are all potential voice hearers. We are dealing with a phenomenon that can be distributed among the general population on a continuum. Also from an evolutionary viewpoint we can infer that hearing voices manifested as a valuable resource that phylogenetically increased the adaptability of the human race to the environment and our capacity for survival.

Especially evident examples of resources are what are called »voices that save« (McCarthy-Jones, 2012: 176) that occur in situations of extreme stress. For example, the mountaineer Joe Simpson, after a horrific climbing accident, was forced to descend from the mountain Siula Grande with a broken leg by crawling for four days back to base camp. During the last stages of his infernal journey, he began to hear a voice which was 'clean and sharp and commanding' and which told him to 'Go on, keep going'.

»Epidemiological studies show that the prevalence of AVHs is quite high, certainly higher than the prevalence of psychiatric disorders, usually related to AVHs. There are many more people who have AVHs (which could also be very frequent and complex) and do not show any signs of psychiatric disorders and can be regarded as healthy. Studies on large nonclinical samples show that the life prevalence of AVHs is 8 to 40% (or even higher), usually higher for women than men and higher among young people than for older people.« (Dekleva, 2015: 44)

⁵ »The use of distinction to create indication is a way of defining 'punctuation'. Language is a tool for imposing distinctions upon our world. Given a language system, we make choices regarding patterns we discern. Thus a therapist can choose to indicate or punctuate his unit of treatment as an individual or a family organization or to see it from a perspective that makes the individual-family distinction irrelevant. The formal study of the ways people punctuate their experience becomes a method for identifying their epistemology. Their habitual patterns of punctuation presuppose epistemological premises for making distinctions.« (Keeney, 1985: 25)

The prevalence of hearing voices among children and adolescents is around 5 to 32% (McCarthy-Jones, 2012: 177). Studies also show a large heterogeneity, and continuity in the distribution of the phenomenon of AVHs regarding the frequency of their occurrence, time of occurrence, the location of their perceived physical location in space, the relationship with the person, their emotional valence, their contents and attributed origin.

Posey & Losch (in McCarthy-Jones, 2012: 174) examined experiences of hearing voices in a college student population, focusing on the experience of hearing a voice fully aloud 'as if someone had spoken'. Of the sample, 71% reported having heard a voice in some form (and it appears this was not in the H&H state). The most common single experience, reported by 39% of the sample, was hearing one's name being called when no-one was there. In addition, 11% reported that they had literally heard God's voice, and 11% had also heard voices which offered comfort or advice in situations similar to that of hearing a voice coming from the back seat of the car when driving. 5% had experiences like talking to a dead relative and hearing their voice respond.

In a recent Slovenian study data was collected through an internet survey, to which students of various study programmes in eight faculties of three universities in Slovenia were invited. Surveys were completed by a sample of 670 persons, among which women predominated, especially students of social sciences study programmes in the first half of their twenties. While 45.7% of respondents reported having experienced hearing voices, it was found that for 13.5% of all who responded to the survey it was a relatively common experience, not limited only to hearing their own thoughts. The majority of the voice-hearers welcomed their voices and accepted them positively; only 12% of voice-hearers experienced them as uncomfortable and would like to get rid of them. 7% of voice-hearers had already sought help or would like to get it (Dekleva, 2015: 43).

Very interesting results come from the recent study with 153 subjects where mixed qualitative quantitative methodology was used (Woods, Jones, Alderson-Day, Callard & Fernyhough, 2015). The study's findings call in to question the presumption that voice-hearing is always and exclusively an auditory experience. While many of the participants said that the voices they heard were similar to hearing somebody speaking in the same room, 10% of participants reported purely 'thought-like' voices with no acoustic properties, and a further 40% reported 'mixed' voices that had both thought-like and auditory characteristics. These findings challenge the view that hearing voices is necessarily a perceptual or auditory phenomenon, and may also have implications for future neuroscientific studies of what is happening in the brain when people 'hear' voices.

The study also found that changes in emotion and bodily sensations often accompany voice-hearing experiences. 66% of participants reported alterations in the way their body felt while hearing voices, such as feeling hot or tingling sensations in their hands and feet. Nearly 20% of participants experienced 'multi-sensory' voices, suggesting that their voices were 'perceived' simultaneously through more than one sensory modality. Interestingly, it was voices with effects on the body that were more likely to be abusive and violent and in some cases, were linked to previous experiences of trauma, such as bullying, neglect, and physical and sexual abuse.

Neurophenomenological building of the bridge between neurobiological research of AVHs and first-person research of voice hearers experiences

It was only in the 1990's that the cognitive scientist Francisco Varela (1946-2001) as the first in the world commenced a new research project, that he called *neurophenomenology* (Varela, Thompson & Rosch, 1993; Varela, 1996). The plan was to bridge ideas from systems theory, cognitive computationalism, and autopoiesis by combining first- and third-person methods in experimental research (Varela, 1996; Lutz & Thompson, 2003; Gordon, 2013; Černigoj, 2007; Kordeš, 2010; Vörös, 2013; Laughlin & Rock, 2013; Hall, 2016; Fernyhough, 2016; Steel et al., 2019). First-person methods refer to phenomenological lived experience, the contemplative study of attention, present-time consciousness, body image, volition, perception, intentionality, fringe, centre, and emotion associated with subjective mental states. Third-person methods refer to the analysis of neurophysiological data from the measurement of large-scale sensorimotor processes in the brain using fMRI, EEG, MEG, and cognitive testing (Varela & Shear, 1999; Petitmengin, 2009; Varela, Lachaux, Rodriguez & Martinerie, 2001; Blom & Sommer, 2012).

With regard to AVHs this means building a bridge between the neurobiological research of AVHs and the first-person research of voice hearers experiences (Knudson & Coyle, 2002; Woods, Jones, Alderson-Day, Callard & Fernyhough, 2015; Brglez, 2016; Škraban, 2017; Dekleva & Škraban, 2019). This demanding project regarding the present state of AVH research would follow two steps. In the first step it would be necessary to intensify the systematic first-person research of AVHs and then to connect third-person neurophysiological research (see table 1) to a hypothetical neuroanatomical model of AVHs (McCarthy-Jones, 2012: 222). This model can be built around impaired connectivity between frontal speech production areas and temporal/parietal regions involved in speech perception (with a potential modulatory role for the anterior cingulate), and impaired interhemispheric connectivity between auditory association areas.

Table 1. Summary of neurophysiological findings (McCarthy-Jones, 2012: 217)

METHODOLOGY	FINDINGS
Neuroimaging studies	Grey matter abnormalities in the STG (superior temporal gyrus) and IFG (inferior frontal gyrus)
	Hyperconnectivity in the arcuate fasciculus
	Functional activation during AVHs in the IFG, STG, insula, cingulate, cerebellum and supramarginal gyrus
	Activity immediately preceding AVHs in the parahippocampal cortex, insula and IFG
Lateralisation	Signalling abnormalities between left and right temporal lobes, or right hemisphere dysfunction
Transcranial magnetic stimulation (TMS)	Overactivity in temporoparietal junction
	Role for connectivity between Broca's and Wernicke's areas
Psychopharmacology	Increased mesolimbic D2 dopamine activity
Electrophysiology	Increase in coherence between right and left STG during AVHs
	Increase in EEG activity one second before AVH onset over right temporoparietal region
	Impaired communication (corollary discharge signal) between speech production and speech perception areas

More research is needed into such neural underpinnings using large samples and a variety of techniques, linking the specific phenomenological properties of AVHs to neural mechanisms. There is a need to build neurocognitive models to help us better understand AVHs. McCarthy-Jones (2012: 223-283) considers that in his opinion three psychological theories are the most promising and could be integrated into a common model: inner speech model, the model that connects AVHs with memories and hypervigilance model.

Just for illustration let's look at an interesting case study of Michael, with which Dodgson and Gordon (in McCarthy-Jones, 2012: 276) presented a case to illustrate their theory of hypervigilance. Michael presented with AVHs in which he heard people calling him a 'nonce' [slang for paedophile]. During his assessment, Michael disclosed that around the age of fifteen he had masturbated to a variety of sexual fantasies, one of which was about his younger sister, who at the time was about eight years old. On returning to his parental home, Michael became concerned that his previous sexual fantasies were highly inappropriate and suggested he was a paedophile, leading to intense shame. Later in life he became preoccupied by what he used to do, began to become anxious about what would happen if other people knew about these thoughts, and feared exposure. He became convinced that other people might think he was a paedophile and started to actively scan background noise from the street to see if anybody was calling him a 'nonce'. This increased his sleep deprivation and levels of arousal, which led to a vicious circle or open system where the psychotic systems exacerbated his distress, until he was eventually admitted to hospital.

One of the most important aspects of Dodgson & Gordon's model is the focus on a specific type of effect which it is proposed plays a role in the genesis of AVHs: shame. Shame can lead to people trying to cope with thoughts by trying not to think about the shame-inducing event. Yet attempting to suppress thoughts about an event can trigger intrusive thoughts, which can be experienced as an internal voice.

Steps to the coexistence of epistemologies

The initial question posed at the start of this article, whether hearing voices is a symptom of mental disorder or valuable resource, has taken us from questions, which are connected with psychiatric diagnostics and clinical practice, to asking ourselves about basic epistemological premises and the origins of knowledge. I would like to close this article with a further question as to whether coexistence between objectivist and constructivist paradigms is possible.

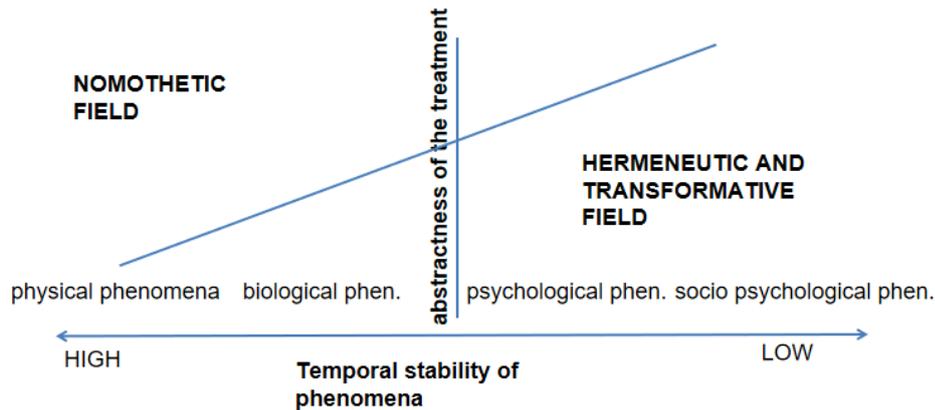
In addition to the neurophenomenological contribution regarding the coexistence of epistemologies, to answer this question it is helpful to use Stevens' (in Černigoj, 2007: 68-70) conceptualization of three epistemologies that could be used in psychology (see schema 1). *Nomothetic epistemology* is adequate for the study of behaviour rooted in our biological dispositions, *hermeneutic epistemology* for the study of behaviour founded on symbolic meanings, and *transformative epistemology* for the study of behaviour stemming from our capacity for reflexive awareness. Černigoj then interrelates these epistemologies using Gergen's (1973) idea about the continuum of the temporal stability of events supplemented with the dimension of the abstractness of their treatment. He presupposes that nomothetic treatment of temporally less stable events demands a higher level of abstraction and vice versa. This is very important for psychology, because it acknowledges the possibility of psychology being a nomothetic science, but at the same time warns about the necessity of complementing its findings with interpretive and phenomenological realizations.

Schema 1: The coexistence of different epistemologies (Černigoj, 2007: 72)

THE COEXISTENCE OF EPISTEMOLOGIES

(Gergen, 1973; Stevens, 1998; Černigoj, 2007)

- Gergen: continuum of historical stability of phenomena (their time stability)
- Stevens: nomothetic, hermeneutic and transformative epistemology



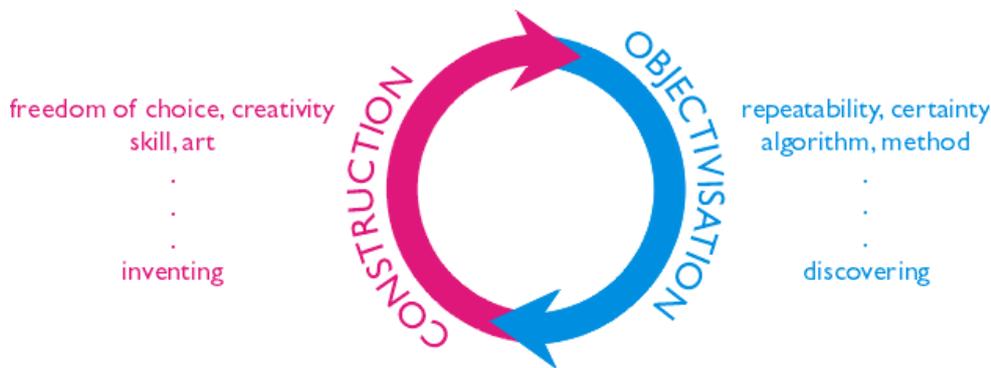
I think that this kind of epistemological thinking, such as Černigoj has proposed, could be helpful for the integration of knowledge about hallucinations and lead to better quality in the future research of AVHs. On one side we can investigate them as temporally more stable and less abstract biophysical phenomena, and on the other side as temporally less stable and more abstract socio psychological phenomena, where first-person hermeneutic and transformative epistemology will be helpful.

The problem is not objectivism by itself (Rand, 1990), but we will get into trouble if it is not embedded in the broader epistemological coordinate system, as was outlined by Černigoj. It reminds us that the problem arises if because of greater concreteness and stability of objectivist epistemology we forget that it is a social reality and that we attribute to its findings the status of independently existing reality. Neuroscientists may for example discover with the aid of fMRI that there is »an activity immediately preceding AVHs in the parahippocampal cortex, insula and inferior frontal gyrus« (see table 1). And they will attribute to this finding the status of objective reality and forget that it is their symbolic description of reality; that it is a metaphor of which they are also a part.

Similarly Kordeš (2004: 224-6) with his understanding of the circularity between construction and objectivisation (see schema 2) points out that objectivism is not a problem if we are able to adopt a constructivist standpoint, from which we can see objectivism (or realism) as a part of the circle of knowing. In the objectivisation part of the circle of knowing we may discover with the help of methodological procedures, rules and algorithms, which enable replication of our experiments, *something*, which we will assume exists as the *object* of our research. Temporarily we ascribe to it the status of existing reality which is independent of our knowing: »When objective way of knowing and acting fails, when we can't anymore trivialize and predict, we relinquish to the second part of the circle – to the part, where we decide, choose and actively cooperate with the world. Here the truth dissolves in the continually

changing *here and now*, in which our propositional knowledge is not helpful, but we can develop skill (or even art) of successful steering. Constructivism doesn't belong to the second, creative part of the circle, as the name is hinting, but to the whole circle.« (Kordeš, 2004: 225)

Schema 2: The circle of objectivisation and construction (Kordeš, 2004: 226)



Half of the circle is inclusion or inventing, half separation and discovering. The participatory position means that we are aware of the circle of knowing. In connection with AVH this means that we as therapists (or researchers) in dialogue with voice hearers can co-create therapeutic or research reality, so that we dance with them in the circle of knowing. At some moments it will seem to us that we have discovered something in them, in the therapeutic (research) relationship or context and that our discovery really exists, but then we will once again run up against the edges where the objectivist way of knowing fails. There we will no longer be able to trivialize and predict, because therapeutic (research) reality dissolves in the continually changing here and now.

The coexistence of epistemologies is also important for the development of a better quality of response to voice hearers in the context of a new mental health paradigm. Examples of good practice are the Hearing Voices Movement (Corstens et al., 2009; Corstens, May & Longden, 2015; Escher, S. & Romme, 2012; Hall, 2016; Dekleva & Škraban, 2019) and the Finnish »open dialogue« (Seikkula & Olson, 2017; Aaltonen, Seikkula & Lehtinen, 2011; Možina, 2017).

In conclusion I would like to mention Bateson's (1972, 2019) warning that we can't not have an epistemology and that we can only decide if we will again and again reflect on it or not. If we decide for 'not' then we are taking a risk that we will intensify our anxiety in the face of phenomena, such as hallucinations, which we so imperfectly understand and increase our need for certainty with attempts to control them. In doing this we will be acting in accordance with pathological epistemological premises which endanger ourselves, our relatives, society and indeed the whole ecology of our planet. This is unfortunately happening with astonishing speed because of »pathologies of epistemology« (Bateson: 2019: 489) which are ruling the world and are guiding us with certainty to the destruction of ecological balance and to the »collective suicide of mankind« (Eagleton, 2018).

If we decide for 'yes', then we step out onto a road, which is unpredictable, and uncertain, where in the best case we could develop »certainty into uncertainty« (Možina, 2010) and

»curiosity about the world of which we are part. The rewards of such work are not power, but beauty.« (Bateson: 2019: 286). This is unfortunately the less travelled road on which instead of attempting to control the hallucinations, which we still so imperfectly understand, we can keep our curiosity for the messages that they are delivering and that perhaps also with their help we could come to appreciate the beauty of the voice hearers' existence and also our own.

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