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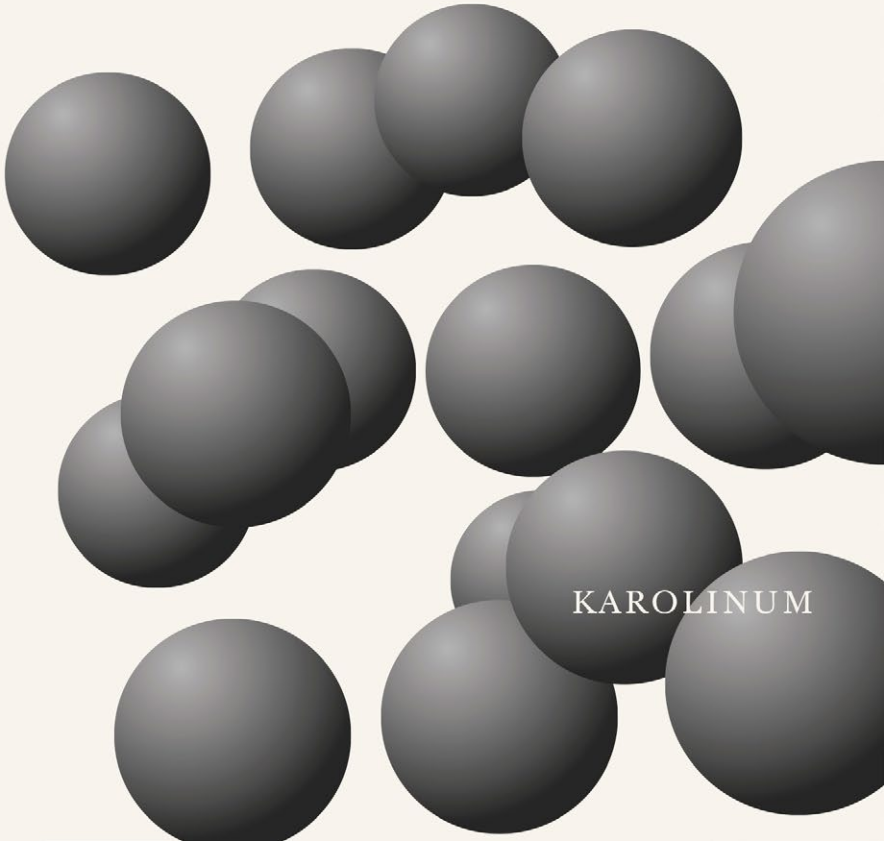
Man, Cultures, and Groups in a Quantum Perspective



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Quantum Anthropology
Man, Cultures, and Groups in a Quantum Perspective

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Dedicated to Richard

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Chapter 1
Introduction:
Why Quantum Anthropology?

We are living in a very exciting historical epoch. Quantum thoughts changed the leading paradigm of physics at the beginning of the twentieth century. And, during the next decades, the quantum revolution established a new science of quantum mechanics and contributed to the extension of our knowledge far beyond the classic, Newtonian understanding of the world. From this time on, quantum theory has been subjected to thousands of experimental verifications, and most of its basic principles have been confirmed until now. Perhaps it would not be an exaggeration to say that presently, no physicist has doubts about the quantum nature of our reality.

The quantum revolution has changed the thinking of physics and undermined the validity of classic physical laws. The logic of classic physics is no longer the only one. Behind the definiteness of the local objects of our everyday experience is "something" that behaves according to its own specific rules. And this "something" is an important component of our reality.

Before the birth of quantum theory, most scientific fields were more or less connected with the logic of classic, Newtonian mechanics. Paradigms of natural and even non-natural sciences were grounded in the classic "laws of nature", in the locality and direct causality of the behavior of definite objects. In accord with this paradigm, scientific methods have been developed and used in the research of the reality of our world. But, just as classic physics operated in a specific perspective, the methods of classic materialistic science were only able to explain just the part of reality bounded by this perspective.

Relativistic movements have proven to be an inevitable reaction to this disappointing state of our knowledge. Relativism has expanded in many scientific disciplines, from physics to the

humanities and social sciences. Despite of the fact that it brought about more questions and uncertainties than explanations, relativism foreshadows a new emerging scientific paradigm in which things appear differently according to different points of view, perspectives, or observers. It means that things exist, but the observer influences what they look like, and so there cannot be an absolute truth about their qualities.

Not even relativism, however, was able to explain all of the aspects of our reality. Something has still remained unexplained. And, at this time, the quantum revolution introduced a new paradigm and a new meta-ontology into science. Now, we are able to interpret and understand our reality in a different manner. In a manner offering a place for uncertainty, non-locality, and probability. Nowadays, quantum mechanics and quantum theory have gained the leading position in contemporary science, and have even started to influence other scientific disciplines.

Wendt (2015) courageously labeled the impacts of the quantum revolution on other scientific disciplines as even being a "paradigmatic change in the modern scientific worldview". The influence of the quantum revolution on the scientific worldview is evident, but the full impact on the field of sociocultural anthropology is yet to be revealed and adequately discussed. So far, the field of sociocultural anthropology has mostly neglected the important insights provided by research in quantum mechanics. This is not so surprising. One may seriously ask: How could the research of microparticles contribute in any way to anthropology? How are the findings of quantum mechanics related to contemporary anthropological issues? Why is it important to take into account the current findings of quantum research for the future development of anthropology?

Seeking the answers to these questions is one of the main tasks of this book. Man and culture are parts of our reality, and this reality is the same reality that has been proven to have a quantum nature. Of course, this simple statement carries with it many questions that consequently arise. And, the aim of this book is to show that such questions are rather not rhetorical questions, as well as that their possible answering may have serious implications for the future development of anthropological theory. We believe that one should be cautious until anthropology has greater experience with the application of quantum principles.

Until then, we may only postulate some possible implications and cautiously define issues that could be relevant for such interdisciplinary interaction.

At the beginning, the first thing to do is to posit a simple question, i.e. how physics and anthropology could be related? Such a question already addresses the main anthropological concerns. Man, culture, ontologies, human actions, agency, practices, and social life are general areas of interest in various fields of sociocultural anthropology. Without any doubt, anthropology is a science about man, and consequently we may ask if anthropological research could ever be unrelated to the physicality of man's being in the world?

We do not want to state that anthropological concerns should be focused merely on the material and biological aspects of man. We are "made" of matter and energy, and the whole our world is a world of information. And, it is this same world that the findings of both classic and quantum physics can be applied to. Matter, energy, and information are the three basic pillars of quantum theory. In this situation, ignoring new findings in physics would represent the risk of making anthropological concerns flat or even reductionist. The investigation of man without consideration of their basal substances, such as matter, energy, and information seems to be insufficient. The refusal or disregard of new findings from the field of quantum mechanics may even condemn anthropology to lose contact with the perpetually developing flow of scientific discoveries. We argue that anthropology should not shut itself into some inert box without noticing what happens around it. And we believe that something is definitely happening. At the very least, our bodies are physical, and yet these bodies are also closely related with the cultural domain of human existence. We cannot strictly separate the human actions performed by our physical bodies from the agency of cultural elements on the other hand. Just the intra-acting between agency and material bodies (Barad, 2007) has been very stimulating for developing many of the issues that will be discussed in this book. At the moment, however, we remain satisfied with the general notion that "anthropology has really something in common with physics".

If we accept this notion, another issue arises, namely what kind of relationship between anthropology and physics should

be adopted for the purpose of building a new quantum anthropology? One of the rather more extreme possibilities is to favor the assumption of the causal closure (or completeness) of physics:

> *"The idea is that because physics deals with the elementary constituents of reality, of which macroscopic phenomena are composed, everything in nature is ultimately just physics. This gives physics a foundational role with respect to other sciences … no entities, relationships, or processes posited in their inquiries should be inconsistent with the laws of physics."*
> (Wendt, 2015, p. 7–8)

Based on this citation, one may think that we aim to build an anthropology that is meant to be focused only on the investigation of the material world. But this is not the case. When we use the word "physics", we do not mean the classic, Newtonian physics that is applicable to the material domain of man. Quantum mechanics does not only explain phenomena that are observable by our senses as material entities. This may be a little bit surprising for those researchers who still hold an idea that physics is a natural science investigating solely material things and measuring their behaviors. But, in contrast to this idea, quantum mechanics works with the concept of wave functions, and also with the realm of the "nonempirical". This extension of focus makes quantum theory a perspective that is able to describe both empirical as well as nonempirical phenomena, and as such, it could be a science that may serve as a framework for building a new perspective of sociocultural anthropology. A perspective of anthropology that would be in dynamic interaction with the new findings in the field of quantum mechanics. Thus, we believe that quantum mechanics and quantum theory provide us with a suitable explanatory framework that can be utilized for the plausible interpretation of issues currently discussed in sociocultural anthropology.

Furthermore, the position of causal closure of physics would also elicit the impression that sociocultural anthropology should be built on the same basis as natural sciences. However, the causal closure of physics does not have to necessarily mean this. One thing is the scientific discourse of natural sciences with its methods and procedures of how knowledge should be acquired from

research, and the other thing is the character of reality in which man and culture exist. We state that we definitely will not follow the methods and procedures of natural sciences here. Sociocultural anthropology does not have a unified set of methodological procedures, but some kind of inherent methodology can be found through the decades of anthropological field research. It has been proven many times that sociocultural anthropology needs its own sensitive approaches for the investigation of sociocultural reality. We accept this long tradition of sociocultural anthropology and continue in this tradition. But, despite this, we believe that sociocultural anthropology also has the potential to be enriched with insights from the fields of quantum theory and quantum philosophy.

The claim of the causal closure of physics gave us the substantial incentive for recognizing the new discipline of quantum anthropology that is proposed in this book. The anthropological investigation of man should take into consideration the physical domain of reality and the physicality of human existence in the world. However, at the same time, the causal closure of physics does not mean the approval of principles of classic physicalism and Newtonian materialism. We strictly dissociate our proposed discipline from physicalism or classic materialism. Sociocultural anthropology has always been engaged particularly with the nonmaterial domain of human existence, and such research concerns could hardly be based on a background of classic, Newtonian physics. For this reason, anthropologists have often adopted positions in opposition to positivism and the natural sciences. But now, the paradigmatic shift in physics towards the quantum understanding of reality opens a new and radically different concept of reality. Moreover, quantum mechanics enables the analysis of anthropological issues that have previously been often criticized from the viewpoint of natural scientists in terms of that they are "impossible to be proved empirically". Paradoxically at present, only a science that has grown from the roots of the natural positivism of classic physics provides us with very sophisticated quantum explanations of non-observable, virtual phenomena. For these reasons, we believe that now is the time for ridding social and cultural anthropologists, as well as other researchers working in other "soft" social sciences or the humanities, of their fear of physics.

Perhaps surprisingly, quantum theory and quantum philosophy have many contact surfaces with contemporary thinking in sociocultural anthropology. Avoiding the situation where one would get the false impression that quantum logic is implanted into anthropology "forcibly" from the outside, we will present here the evidence that a continuity with the past anthropological tradition exists. We will show that quantum anthropology is not constructed artificially, but that this new discipline has naturally arisen in the flow of the long-lasting development of anthropological discourse. This continuity is very important, and we will therefore pay attention to it in the following text.

One can understand the birth of quantum anthropology as a natural outcome of the developments of anthropological discourse in the past century. Efforts to overcome ethnocentrism started at the beginning of twentieth century, which gave way to an increase in the popularity of cultural relativism in anthropology. The relativistic logic of cultural relativism mirrors the changes that occurred several years previously in physics, i.e. after Albert Einstein (1920 [1916]) formulated the first version of the theory of relativity. We do not want to speculate about the relationship between these two fundamental shifts in both anthropology and in physics, but relativism and the emic/etic perspective have arisen in the discipline and fundamentally shaped the further development of sociocultural anthropology for decades.

Another root of quantum anthropology may be seen in the emergence of constructivism in sociocultural anthropology. Very similarly to the key significance of the observer effect in quantum mechanics, social and cultural anthropologists have realized that only the researcher plays a key role in the construction of the social reality that he or she observes. Keeping in mind the position of a researcher, many constructivist, and later also deconstructivist, approaches have started to occupy the field, and we afford to state that these influences are still present in the discourse of sociocultural anthropology.

Also, the postmodern shift in anthropological discourse may be even understood as an extreme application of relativistic logic. The position that "everything is relative" is quite closely related to the idea that "nothing in anthropology can possibly be exactly defined". Taking a closer look at current influential

theories in anthropology, many traces of quantum and relativistic logic can be distinguished. The very recent "ontological turn" in sociocultural anthropology is mostly based on the relativism that is pronounced in a perspectival and comparative manner in this field (e.g., Alberti et al., 2011; Paleček and Risjord, 2012; Venkatesen, 2010; Viveiros de Castro, 2004).

Allow us to present several, maybe coincidental, parallels between quantum and anthropological thinking in the following text. Postmodern anthropological theory and standpoint theory (Baudrillard, 1995; Derrida, 1997 [1967]; Foucault, 1970; Lyotard, 1984; Rolin, 2009) have highlighted subjectivity, the individual's perspective, and inter-subjective discourses. This emphasis corresponds well with the observer effect in quantum mechanics. Another mark of the postmodern shift in anthropology was the skepticism targeted at science and at its potential to produce objective and universally valid knowledge. This standpoint also represents a mark of relativistic logic, which is applied in a relatively extreme manner during this period of anthropological inquiry.

In a similar vein, postmodern critical theory (Baudrillard, 1995; Foucault, 1970) highlighted the importance of the social construction of reality, and it relativized the stability of meaning over time. Meanings are suggested to be unstable due to the ongoing transformations of social structures. Here, a parallel with relativistic logic is able to be distinguished, as well. The postmodern critical theory further proposes that only local cultural manifestations are available to researchers in a particular time and space. This basal idea is analogical to the moment of observation in quantum theory – the external observer may only observe just the particular manifestation of particles in time and space, i.e. the entities that appear to the observer during their wave function collapses.

Furthermore, the concept of fields found in theory of practice (Bourdieu, 1977) is another example of coincidence between quantum and anthropological thinking. Fields such as religion, arts, or education are suggested to be structured social spaces existing in various cultural settings. But, when we are not satisfied with the understanding of fields merely as fashionable metaphors inspiring anthropological writings, we must seriously inquire after the real character of these fields. Do these fields have

a quantum nature? Are these fields informational spectra? Are these fields energies? Can material expressions of culture be considered products of the actualized agency of these fields? Such questions elicit new inquiry and conceptual questions. If quantum field theory currently explains the difference between classic and quantum fields, the fields proposed by theory of practice should somehow be connected with theoretical physics. Otherwise, such anthropological theory would suffer from the disconnection of its theoretical embeddedness from the physical world where man and agency do indeed operate.

Furthermore, the relationship between signs and meanings in Derrida's concept of deconstruction (1997 [1967]) is also an example of, maybe coincidental, emergence of similar thoughts in anthropology and quantum mechanics. This concept supposes that signs exist only in relation to each other. The meaning of one sign exists only in relation to another sign or sings. This contingency is analogical to the effect of quantum entanglement known well in quantum theory. Microparticles do not exist as separate entities, but are always entangled. The quantum state of each particle cannot be described independently of other particles. A similar logic is apparent in the relationality of meanings and signs.

Many other interesting parallels with quantum thinking can be found in ideas of the current "ontological turn" in sociocultural anthropology, also called ontological perspectivism or perspectival anthropology (Viveiros de Castro, 2004). The studies following the "ontological turn" suggested a shift of the internal logic of an anthropologist to some different cultural positionalities (Alberti et al., 2011; Venkatesen, 2010; Viveiros de Castro, 2004). Multiple realities, multiple ontologies, and multiple positions that people are taking are taken into account for the design of anthropological inquiry. This relativistic position is not far from some of the principal ideas of Einstein's theory of relativity (1920 [1916]).

Furthermore, the "ontological turn" also considers some points of probabilistic logic. For example, the self is understood as the nexus of a set of possible relationships (Paleček and Risjord, 2012). This conceptualization implicitly includes the assumption that the self may realize some of its possible connections with certain probabilities. Some connections are more probable and some less.

And finally, the theoretical principles of the "ontological turn" are also closely entangled with the idea of the observer effect in quantum theory. The anthropologist always interacts with the investigated material, i.e. with participants or material entities, and as such, he/she influences, for example, the participants' participation in interviews, and possibly also the participants' experience of alterity (Alberti et al., 2011). Another related example is much more connected to the agency of environment. Paleček and Risjord (2012) pointed out that thinking is partly constituted by interaction with things in the environment. So here we see how the observed (the objects in the environment) influences the observer (the observer's thinking). These examples have showed how the observer effect is included in the multi-layered character of anthropological investigation.

All of the aforementioned brief examples are only some of the instances where some parallels between quantum theory and contemporary anthropological theory can be found. It is not an exhaustive account, but these examples show us the underlying substrate from which the new anthropological theory is sprouting.

Under the circumstances of anthropological discourse at the end of the twentieth century, it is not surprising that a new wave of anthropologists inspired by quantum thinking has started to emerge in the field. In the 1990s, the term quantum anthropology (Pownell, 1996) or quantum ethnography (Vann, 1995) were coined, but no clear delineation of this field has yet occurred. But, after the turn of the century, the discipline of quantum anthropology arose. From this time on, we can recently distinguish several works that may be considered to be quantum anthropological (Barad, 2007; Bergallo, 2002; Kirby, 2011; Russell, 2013; Trnka, 2015a; Wendt, 2006, 2015). Although these works originated from different subfields and were focused on various issues, they had one thing in common: All of these works integrated quantum principles into various interpretations of man and humanity. To be more specific, all of them used the probabilistic logic of quantum theory, and all of them also worked with the distinction between the realm of potentiality and actuality. Also, the observer effect was incorporated in most of these works, especially with a focus on agency, or, better said, on the interconnection between agency and the observer effect. Most of