Acta Astronautica 94 (2014) 577–583

Contents lists available at ScienceDirect

Acta Astronautica

journal homepage: www.elsevier.com/locate/actaastro

Toward a new cosmic consciousness: Psychoeducational aspects of contact with extraterrestrial civilizations ☆

Gabriel G. De la Torre *

Department of Psychology, University of Cádiz, Campus Río San Pedro, Puerto Real, Cádiz CP 11510, Spain

ARTICLE INFO

Article history:
Received 24 August 2013
Accepted 31 August 2013
Available online 7 September 2013

Keywords:
Consciousness
Neuroscience
Extraterrestrial
Psychology
Education

ABSTRACT

This study presents a new approach to the concept of cosmic consciousness integrated in current neuroscience knowledge and discusses implications for the search for extraterrestrial intelligence. It also examines different aspects related to consciousness and how it may play a key role in the understanding of the search for extraterrestrial intelligence and life in the Universe and its implications. Subjects ($n=116$) were college students from Spain, the United States, and Italy. Subjects responded to a questionnaire comprising five different sections: (A) religious beliefs, (B) environment and general opinion, (C) astronomy, (D) contact, and (E) attention and perception. The results showed the importance of several modular aspects that affect Space awareness in humans. Preliminary results are discussed with regard to current neuroscience, factor analysis, and possible implications for the understanding of contact with extraterrestrial intelligence. The roles of education, new search strategies, and possible contact scenarios are also discussed.

1. Introduction

On March 2nd, 1972, NASA launched Pioneer X. At the behest of Carl Sagan, Pioneer X carries a gold anodized aluminum plaque intended to provide communication in the event that the spacecraft is ever found by an intelligent extraterrestrial civilization from another planetary system. The plaque depicts the nude figures of a human male and female, along with schemes that are designed to provide information about the origin of the spacecraft and about our nature. In 1984, Jill Tarter and Thomas Pierson founded the SETI Institute, which fundamentally searches for intelligent extraterrestrial radio signals in Space. These are examples of our search efforts for other intelligent beings out there in the vast cosmos. The scientific community now accepts to some degree that this contact may occur in the next 50–100 years; consequently, we are becoming more concerned about this possibility and its aftermath. Some prominent scientists have expressed concerns about the possible negative effects of this event for the human race [1]. Certainly the topic of contact with extraterrestrial civilizations raises a number of questions that are not easy to answer. The psychological aspects of contact represent an important issue that should be addressed in advance. Neuropsychology, neuroscience, and consciousness theory may have a key role in this endeavor, which we explain in the following pages.

1.1. Neuroscience and cosmic consciousness

William James proposed that "taking a purely naturalistic view of the matter, it seems reasonable to suppose that, unless consciousness served some useful purpose, it would not have been superadded to life" [2]. More recently, Popper and Eccles argued that the mind, including consciousness, should be considered to be analogous to a bodily organ and that it is "the product of evolution by natural selection" [3]. In biology, nothing makes sense except in the light of evolution; therefore, in common with

☆ This paper was presented during the 63rd IAC in Naples.

* Tel.: +34 646287398; fax: +34 956016419.
E-mail address: gabriel.delatorre@uca.es

0094-5765/$ - see front matter © 2013 IAA. Published by Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.actaastro.2013.08.021

other biological structures, consciousness exists today because it provided some advantage to our ancestors that was harnessed by natural selection [4]. Humans depend on their own perception and consciousness to interpret and interact with the environment. This subjective scope of reality creates an anthropomorphic view of our world and may lead to errors of perception and consciousness. Over many years, different methods of communication were developed for deaf children so they could learn to communicate with "listeners." The initial problem was that we developed systems based on the listener perspective, and thus had very little success because the larger picture was dismissed, which was communication itself. This is a very typical error we make owing to our nature and biology. Neuroscientists, and especially neuropsychologists, know this phenomenon very well. The Stroop effect is a demonstration of the reaction time on a task. When the name of a color (e.g., "blue," "green," or "red") is printed in a color not denoted by the name (e.g., the word "red" is printed in blue ink instead of red ink), naming the color of the word takes longer, and it is more prone to errors than when the color of the ink matches the name of the color. The effect is named after John Ridley Stroop, who first published the effect in English [5]. The original paper has been one of the most cited papers in the history of experimental psychology. A common explanation for the Stroop effect is that observers have automatized the process of reading. Thus, the color names of the words are always processed very quickly, regardless of the color of the ink. Our brains and minds are prone to process in automatized ways in many circumstances, and much of this happens unconsciously. We have a natural tendency to apply our rules or previous knowledge and derived expectations to our actions and thoughts, and this is the result of natural adaptation and evolution. We continuously look around, searching and seeking of the realms of the unknown, interpreting the surroundings and finding explanations to natural phenomena. All of this information is apprehended by our consciousness in the end. Sometimes, when we do not have a valid explanation for our observations, we decide it could be God's matter, as most religions on earth seem to say, promoting this way to a state of higher consciousness or religious consciousness. This can be considered as an evolutionary step in the development of the human brain. We now know of the importance of the inferior parietal lobe in the creation of consciousness of objects in the external world or held in the imagination. Evidence from neglect (a form of visual agnosia) studies and brain imaging on healthy subjects has implicated the inferior parietal lobe as playing an important role in controlling attention and awareness. The frontal lobes and some subcortical structures such as the amygdala and visual cortex are also implicated in consciousness, but the parietal lobes seem to play the key part in human consciousness [6]. The emotions related to these subcortical structures are described as promoting fast decisions in a brain with slow neural circuitry [7]. The frontal lobes are responsible for executive functions and decision-making, but they are also very important in attention and actions. Although studies do report pop-out effects, that is, gist processing and natural object detection occurring in the absence of attention, further research has shown that attentional resources are required in each case in order to enable a conscious report of the target stimuli [8]. Indeed, the fact that attention is required for pop-out effects of very simple visual stimuli, such as a colored element or an oriented Gabor patch [9,10], implies that for all conscious events, even those involving very primitive elements, at least some attentional resources are necessary. In addition, a small number of studies have presented provisional evidence that neural dissociations can be found between attention and consciousness [11]. Recent findings in psychology and brain imaging have increasingly suggested that it is better to view attention not as a unitary faculty of the mind but as a complex organ system subserved by multiple interacting neuronal networks in the brain [12]. At least three such attentional networks, for alerting (achieving and maintaining an alert state in preparation for coming stimuli), orienting (selectively focusing on one or a few items out of many candidate ones), and executive control (monitoring and resolving conflicts in planning, decision-making, error detection, and overcoming habitual actions), have been identified. Considerable functional neuroimaging evidence has shown that activities of these networks highly correlate with the essential functions of attention [13,11].

Discovery of extraterrestrial intelligence could have an impact on society and individuals in historically unprecedented ways. Some authors have proposed that colonization examples of the Spanish and British empires offer a good source of information on what happens when two asymmetric cultures meet [14]. We cannot exactly predict what the effects would be if this asymmetry were broader than hundreds, thousands, or hundreds of thousands of years. It has also been previously stated that contact with an extraterrestrial civilization (EC) will not produce any chaos or damage despite the initial impact on society [15]. We estimate that this type of event will have not only a social effect but also on both consciousness and biology as well. Some authors [16] believe that an anthropocentric vision can influence the benevolent or malevolent perception of a possible EC. The variables that produce these misperceptions or interpretation biases with regard to this type of event are related to what we called modular aspects of cosmic consciousness.

More than one hundred years ago, Bucke went further and described a new concept of cosmic consciousness as a new evolution step beyond self-consciousness. According to Bucke, by virtue of self-consciousness, man is not only conscious of trees, rocks, bodies of water, and his own limbs and body, but he also becomes conscious of himself as a distinct entity apart from all the rest of the universe. Further, by means of self-consciousness, man becomes capable of treating his own mental states as objects of consciousness. The prime characteristic of cosmic consciousness is, as its name implies, a consciousness of the cosmos, that is, of the life and order of the universe [17]. Fig. 1 shows a proposed integration model of cosmic consciousness and awareness with current neuroscience.

Recently, quantitative similarities and calculated solutions for the intensities of magnetic fields associated with cerebral function and those that exist within intragalactic and extragalactic Space suggest that the energetic conditions associated