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DAFTAR ISI

THE IMPORTANCE OF COMMUNICATION IN THE HUMAN BRAIN AND THE PRACTICE OF THE LIFEWORLD IN MULTICULTURAL SOCIETY

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ABSTRAK

Tulisan ini merupakan upaya dialog keilmuan antara *neuroscience* dan *filsafat*. Menurut *neuroscience* seluruh alam pikiran manusia ditentukan oleh mekanisme internal otak. Tesis ini menantang pemikiran filsafat khususnya tentang masalah determinisme dan kebebebasan: apabila seluruh pemikiran ditentukan oleh mekanisme internal otak maka sebenarnya manusia tidak bebas dalam mengekplorasi alam pikirannya karena sejak awal telah ditentukan oleh proses mekanik internal tersebut. Menghadapi dilema tersebut, tulisan ini menawarkan komunikasi sebagai "prinsip ultim" bagi otak, pikiran dan praksis hidup manusia. Komunikasi bukan saja merupakan bagian sentral dari otak, melainkan juga merupakan "momentum pembebasan" bagi para filsuf dalam mengusahakan sebuah *neurophilosophy* yang berkualitas dan "momentum pencerahan" bagi masyarakat multikultural.

KEY WORDS:

Communication, Human Brain, Lifeworld, Multicultural Society

Introduction

The last two decades have seen a rapid research within and related to neuroscience. This research brings about some important questions regarding the capacity of the human brain such as information, communication, and representation inside the brain. In this paper I will

explore communication in the human brain. According to neuroscience, the mind is what the brain does, and the brain is a causal machine. Consequently deliberations, beliefs, decisions, and ensuing behavior are the outcome of causal processes. If it is so, "How can we emancipate ourselves from the mechanism of brain?" I will answer this question based on Habermas' theory of communicative action. My purpose is to show that communication is important for human beings both in the brain and in the practice of the lifeworld. In this sense, communication through deliberation and discourse is a possibility in which a person can make a decision out of the mechanism of brain.

This paper is divided into three parts. First, communication in the human brain. In this part I explore structures and functions of the human brain, especially communication among neurons. I argue that what makes us the human being is nothing but communication among neurons in the human brain spread by neurotransmitter across the synaptic cleft and attach them, or *bind* them, to a receptor on the postsynaptic neuron. Secondly, the practice of communication in the lifeworld (*Lebenswelt*). In this part I argue that communicative action becomes a *medium* which mediates between participants of a dialogue in order to reach mutual understanding. Such action requires freedom, equality, rational discourse, and the inclusion of the other to accept and to renew his knowledge. Third, communication, neurophilosophy, and multicultural society. In this part I apply the paradigm of communicative action for interdisciplinary dialogue between neuroscience and philosophy. I believe through such dialogue scientific achievements can be gained for the goodness of the people. I then step further to discuss paradigm of communicative action in multicultural society.

1. Communication in the Human Brain

The appearance of the human brain is far from impressive. According to John P.J. Pinel, the human brain is a squishy, wrinkled, walnut-shaped hunk of tissue weighing about 1.3 kilograms. Despite of its external appearance, the human brain is an amazingly intricate network of neurons (cells that receive and transmit electrochemical signals). It considers the 100 billion neurons in complex array, the estimated 100 trillion connections among them, and the almost infinite number of paths that neural signals can follow through this morass.[1] The brain thus can be viewed as a collection of interacting neuronal circuits that have accumulated and developed throughout human evolution.[2]

It is generally known that the basic structure of the human brain consists of three main parts, namely: the forebrain, midbrain, and hindbrain. The hindbrain consists of the *myelencephalon* and the *metencephalon*. The myelencephalon or medulla is the most posterior division of the brain. It is composed largely of tracks carrying signals between the rest of the brain and the body. An important part of the myelencephalon is the *reticular formation*. It is described as "a complex network of about 100 tiny nuclei that occupies the central of the brain stem from the posterior to the posteriori boundary of the mind-brain."[3]

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[1]John P.J. Pinel, *Biopsychology*, sixth edition (Boston: Pearson Education Publishing, 2006), 2.

[2]Michael S. Gazzaniga and Todd F. Heatherton, *Psychological Science. Mind, Brain, and Behavior* (New York: W.W. Norton & Company Inc., 2003), 104.

[3]John P.J. Pinel, Ibid., 65.

The various nuclei of the reticular formation are involved in various functions including sleep, attention, movement, the maintenance of muscle tone and various cardiac, circulatory, and respiratory reflexes. These functions operate in the metencephalon which creates a bulge, called the *pons*, on the brain stem's vital surface. Another major division of the metencephalon is the *cerebellum* ("little brain"). It is the large and convoluted structure on the brain stem's dorsal structure and plays an important role for motor learning. Moreover, "it seems to be 'trained' by the rest of the nervous system and operates independently and unconsciously... Functioning imaging, however, indicates a broader role for the cerebellum, suggesting that it may be involved in 'automatic' psychological activity."[4]

The second part of the human brain is the midbrain. It consists of *mesencephalon* and has two divisions namely the *tectum and the tegmentum*. The *tectum* (roof) is the dorsal surface of the midbrain, while the *tegmentum* is the mesencephalon ventral to the tectum. The mesencephalon consist of three colorful structures, which are the periaqueductal gray, the substantia nigra, and the red nucleus. "The periaqueductal gray is the matter situated around the cerebral aqueduct which mediates the analgesic (pain-reducing) effects of opiate drugs. The substantia nigra (black substance) and the red nucleus are both the important parts of the sensory motor system."[5]

Forebrain is the third part of the human brain which is composed of two symmetric cerebral hemispheres. This is the important part of the

[4]Michael S. Gazzaniga and Todd F. Heatherton, Ibid., 107.

[5]John P.J. Pinel, Ibid., 66.

human brain for it is the site of all thought, detailed perception, and consciousness; in short, everything that makes us human. "All animals also have a forebrain, but in humans it has evolved into a relatively enormous structure that enables our complex culture and communication".[6] Every hemisphere consists of *diencephalon* and *telencephalon*. Diencephalon is composed of two structures: the thalamus and the hypothalamus. The thalamus is the large, two-lobed structure that constitutes the top of the brain stem. It also comprises many different pairs of nuclei, most of which project to the cortex. Some of them are *sensory relay nuclei*, nuclei that receive signals from sensory receptors, process them, and then transmit them to the appropriate areas of sensory cortex.

The hypothalamus, which is located just below the anterior thalamus, is important in the regulation of several behaviors. As one of the most vital regions of the human brain, "the hypothalamus receives input from almost everywhere and projects its influence, directly or indirectly, to almost everywhere. Through its projections to the rest of the brain, the hypothalamus induces motivational drives and the behaviors to satisfy them. Through its projection to the spinal cord, it governs much of the function of the internal organs... It controls the *pituitary gland*, the 'master gland' of the body, which by leasing hormones into the bloodstream controls all other glands and governs such major processes as development, ovulation and lactation."[7] Another important role of the hypothalamus is that it governs sexual and reproductive development and behavior.

[6]Michael S. Gazzaniga and Todd F. Heatherton, Ibid., 108.

[7]Michael S. Gazzaniga and Todd F. Heatherton, Ibid., 108.

However, the largest division of the human brain is the telencephaton. It mediates the brain's most complex functions: "It initiates voluntary movement, interprets sensory input, and mediates complex cognitive processes such as learning, speaking and problem solving."[8] The most important part of telencephaton is the *cerebral cortex*. The Cerebral cortex is the out-layer of brain tissue that forms the convoluted surface of the brain. The main role of the cerebral cortex is that it "supplements many functions of the brain stem, allowing us to learn fine distinctions and intricate combinations of attributes of the outside world, as well as enabling complex behaviors and conferring the ability to *think* before we act."[9]

The cerebral cortex is divided into four sections, called "lobes," they are: the frontal lobe, parietal lobe, occipital lobe, and temporal lobe. One can ask: "What do each of these lobes do?" First, the *frontal lobe* is the region of the cerebral cortex associated with reasoning, planning, parts of speech, movement, emotions, and problem solving. This lobe can be divided into two regions namely: primary motor cortex and prefrontal cortex. On the one hand, the main task of the primary motor cortex is that it responds to sensations which come to the body. The prefrontal cortex, on the other hand, is responsible for directing and maintaining attention, keeping ideas in mind while distractions bombard us from the outside world, and developing plans and acting on them. It is also critical for interpreting social causes and behaving in a socially appropriate manner. Second, the *parietal lobe* is associated with the sense of touch: it contains

[8]John P.J. Pinel, Ibid., 67.

[9] Michael S. Gazzaniga and Todd F. Heatherton, Ibid., 110.

the *primary somatosensory cortex* (bodily sense), a strip running from the top of the brain down the side. The parietal lobe is also important for perceiving the spatial layout of the environment and for effectively moving through it. Third, the *occipital lobe* is most associated with visual processing. Michael S. Gazzaniga and Todd F. Heatherton describe it as follows:

> Typically for the cerebral cortex, the information is *topographically mapped*, or represented in a way that preserves the spatial relationship: that is, the visual image, relayed from eye through the thalamus, is "projected" more or less faithfully onto the primary visual cortex. Two objects near to each other in a visual image then will activate populations of neurons that are near to each other in the primary visual cortex.[10]

And fourth, the *temporal lobe* is associated with perception and recognition of auditory stimuli, memory, and speech. It contain the primary auditory cortex, an area for hearing analogous to the primary visual and somatosensory cortices, as well as secondary auditory areas that further process what we hear, including the decoding of words and sentences. It also contains more specialized visual areas for recognizing detail objects such as faces; it is also critical for memory.[11] "How do we know the function of the brain effects thoughts and knowledge, emotion and behavior? As we know the human brain is one of the divisions of central nervous system (CNS) which is located within the skull and pines and functions as a communication network that serves as the foundation for all psychological activity".[12] The basic unit of the CNS is *neurons*.

[10]Ibid.

[11]Ibid.

[12]Ibid.

Being different from other cells, neurons operate through electrical impulses which communicate with other neurons through chemical signals in order to receive, to integrate and to transmit information in the CNS. Thus,

> Neuron communication depends on the ability of the neuron to response to incoming stimulation by becoming electrically excited and subsequently passing along signals to other neurons. An action potential, also called *neuronal firing*, is the electrical signal that passes along the axon and causes release of chemicals from the terminal buttons. These chemicals then transmit signals to other neurons.[13]

How do these chemicals work? Inside the terminal buttons are small packages, or *vesicle*, that contain chemical substances known as "neurotransmitters" that carry signals across the synaptic cleft. "After an action potential travels to the terminal button, it causes the vesicles to split their neurotransmitters into the synaptic cleft. These neurotransmitters then spread across the synaptic cleft and attach themselves, or *bind*, to the receptor on the postsynaptic neuron."[14]

The neuroscientist researchers believe that there are more than 60 chemicals transmitting information in the human brain, and that the different transmitters are responsible for influencing emotion, thought and behavior. According to John Pearson and Michael Platt, the power of the brain, the key to its flexibility and coordination, lies not just in the capacities of these dedicated processing centers, but also in the connections among them. It lies not just in the brain's

[13]Ibid., 71.

[14]Ibid., 77.

compartmentalization, but in its *communication*. The modern neuroscience techniques, then, often focus on localization at the expense of communication.[15] The reason is that communicative functions exist at many other levels of organization of the nervous system such as at the cellular system, the intersystem, the behavioral, and psychological levels.[16] Through chemicals that transmit information in the human brain, "neurotransmitters" are responsible for influencing emotion, thought and behavior.

2. Practice of Communication in the Lifeworld

I have shown in the previous section that we think and act in the realm of the brain's mechanism, especially the forebrain. This part of the human brain is the site of all thought, detailed perception, and consciousness. In short, what makes us human depends on the communication among neurons in our brain, spread by "neurotransmitters" across the synaptic cleft. If so, then our communication in the lifeworld is also governed by our brain. "How can we understand the practice of communication in the lifeworld?"

It was Jürgen Habermas who proposed the notion of the lifeworld in his theory of communicative action. In his opinion, the theory of communicative action justifies the term or condition on the basis of a free reasoning among participants. In other words, communicative action is

[15]John Pearson and Michael Platt, "Decision Making in the Brain: Eavesdropping on Neurons," available from http://www.scientificamerican.com/article.cfm?id=decision-making-in-brain;Internet, accesed 29/9/2009.

[16]Ira B. Black, *Information in the Brain: A Molecular Perspective* (Massachusetts: The MIT Press, 1994), xiii.

rooted in the intuition in which the justification of terms and conditions of associations proceeds through rational argumentation or discourse among the participants. They are coordinated not through egocentric calculations of success but through acts of reaching understanding. He explains this notion by saying:

> In communicative action participants are not primarily oriented to their own individual success; they pursue their individual goals under the condition that they can harmonize their plans of action on the basis of communication situation definitions. In this respect the negotiation of definition of situation is an essential element of the interpretative accomplishments required for communication action.[17]

Since communicative action puts negotiation of the definition of a situation at the centre of justification, it also becomes an ideal procedure of any communicative action. In such procedure participants or actors regard one another as equal whose aim is to defend and criticize conditions and terms that others have reason to accept, cooperating with the results of discussion, or treating those results as authoritarian. Habermas says that communicative action requires a rational basis for agreement. It cannot be imposed by or brought about by external power, and by manipulating one's partner in interaction, but depends on rationally motivated approval of the substance of an utterance. An agreement, as the goal of effort to reach understanding, thus, can only be reached if one's

[17]Jürgen Habermas, *The Theory of Communicative Action. Vol. 1. Reason and the Rationalization of Society*, translated by Thomas McCarthy (Boston: Beacon Press, 1984), 286.

speech is accepted by taking an affirmative position on a claim to validity that is in the principle of criticizable.[18]

When agreement is reached, a participant can make three different claims to validity. The first is claims to truth. These claims point to whether the speaker refers to something in the objective world (as the totality of existing states of affairs). The socond is claims to rightness. They are claims that point to something in the shared world (as the totality of the legitimately regulated interpersonal relationship of a social totality of experiences of a social group). The third is claims to truthfulness. These claims suggest something in the speaker's own subjective world (as the totality of experiences to which one has privileged access).[19] These claims can be gained through inter-subjective recognition by explicit linguistic processes.

Habermas argues that the hermeneutic model of understanding can help different participants to bridge differences between them in order to reach mutual understanding. "Interpretation must in each case bridge the gap between the hermeneutic preunderstanding of both sides – whether the culture and spatiotemporal distances are shorter or longer, or the semantic differences smaller or longer. All interpretations are translation *in cune*."[20] In the situation in which participants of a dialogue are struggling with the difficulties to understand each other, they must be able to understand what

[18]Jürgen Habermas, *Moral Consciousness and Communicative Action*, translated by Christian Lenhardt and Shierry Weber Nicholsen, introduction by Thomas McCharty, (Massachusetts: The MIT Press, 1990), 58.

[19]Ibid.

[20]Jürgen Habermas, "Fundamentalism and Terror," in *Philosophy in a Time of Terror. Dialogues with Jürgen Habermas and Jacques Derrida*, edited by Giovanna Borradori, (Chicago: The University of Chicago Press, 2003), 37.

falls under the dictates of a world-disclosing language. Hermeneutic effort enables participants of dialogue to become painfully aware of the one-sided nature and limitations of their initial conjectures, step by step widening their original perspectives and ultimately bringing them together. They can gain a 'fusion of horizon' only when they take up the roles of 'speaker' and 'hearer' in which they engage a fundamental symmetry required by all speech situations. Such an understanding can be gained only under symmetrical conditions of *mutual* perspective-taking. In this sense Habermas says: "The speech act of one person succeeds only if the other accepts the offer contained in it by taking (however implicitly) a 'yes' or 'no' position on a validity claim which his utterance, and alter, who recognizes or rejects it, base their decisions on potential grounds or reason".[21]

However, Habermas reminds that communicative action also corresponds to the lifeworld. Habermas' notion of the lifeworld, which is taken from Alfred Schutz, refers to the intersubjective realm of people's everyday life. It consists of all the taken-for-granted knowledge that we create and share, such as language or values; of the actions we plan and carry out; and of the justifications for those acts. Habermas in fact links the term life world with Durkheim's "conscience collective," since without it communication, interaction, and social life would be impossible. The life world exists in the "private" and "micro" spheres of lived

[21]Jürgen Habermas, *The Theory of Communicative Action, vol. 1*.... Ibid., 287.

experience and is contrasted with "system," public sphere institutions. The family has become the most important site in the life world.[22]

In Habermas' opinion, from the speakers perspective, action situation and speech situation always intertwines with a system of the lifeworld. It becomes background of communicative action in which the participant can be an "initiator" who masters action situation and speech situation, and at the same time can be a "product" of traditions around him. In this sense, participants cannot escape but are always moving *within* the horizon of the life world since it not only forms the "context" for the process of reaching understanding but also furnishes "resources" for it. The shared lifeworld offers a storehouse of unquestioned cultural pattens from which those participating in communication draw agreed-upon patterns of interpretation for use in their interpretative efforts.[23] Thus, says Habermas, "the lifeworld is, so to speak, the transcendental site where speaker and hearer meet, where they can reciprocally raise claims that their disagreement can criticize and confirm those validity claims, settle their disagreements, and arrive at agreements".[24]

In coming to an understanding with one another about their situation, argues Habermas, participants in interaction stand in a cultural

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[22]Echo E. Fields, "Understanding Activist Fundamentalism: Capitalist Crisis and the 'Colonization of the Lifeworld,' in *Sociological Analysis*, Vol. 52, No. 2, Religion in the United States (Summer, 1991), pp. 175-190,avalable from http://www.jstor.org/stable/3710962; [Journal on-line]; Internet; accessed 27/11/2008.

[23]Jürgen Habermas, *Moral Consciousness and Communicative Action, vol 1*... Ibid., 135.

[24]Jürgen Habermas, *The Theory of Communicative Action, vol. 2, Lifeworld and System: A Critique of Functionalist Reason*, translated by Thomas McCarthy, (Boston: Beacon Press, 1987), 126.

tradition which can use and renew their cultural knowledge, and in coordinating their action by way of intersubjectively recognizing criticizable validity claims, they are not at once relying on membership in social groups and strengthening the integration of those same groups but they internalize the value orientations of his social group and acquire generalized capacities for action. Thus, under the functional aspect of *mutual understanding*, communicative action serves to transmit and renew cultural knowledge; under the aspect of *coordinating action*, it serves social integration and establishment of solidarity and, finally, under the aspect of *socialization* communication action serves the formation of personal identity.[25]

Habermas says that communicative action in the lifeworld can be effected by the "purposive-rational action." Under this action, participants are primarily oriented to attaining an end. They select means that seem to them appropriate in the given situation, and calculate consequences of this action as a secondary condition of success. Such action can become *instrumental* and *strategic*. It becomes instrumental if the participants just follow the technical rules of action and asses the efficiency of an intervention into a complex of circumstances and events. It becomes strategic if participants follow the rule of rational choice with an aim to influence rational decision of opponents.[26] In the modern world, such action goes through two systemic mechanisms namely: money and

[25]Ibid., 137.

[26]Jürgen Habermas, *The Theory of Communicative Action, vol. 1,.... Ibid.,* 285.

power.[27] Money and power colonize the lifeworld both in the private life-forms and the public spheres.[28] Habermas explains how the two sub systems colonize the lifeworld by saying:

> The colonization of the lifeworld can come about, when traditional forms of life are so far dismantled that the structural components of the life world (cultural, society, and personality) have been differentiated to a great extent; when exchange relations between the subsystems and the lifeworld are regulated through differentiated roles (for employment at organized work places, for the consumer demand of private households, for the relation of clients to government bureaucracies, and for formal participation in the legitimation process); where the real abstractions that make available the labor power of the employed and make possible the mobilization of the vote of the electorate are tolerated by those affected as a trade-off against social rewards (in terms of time and money); where these compensations are financed according to the welfare-state pattern from the gain of

[27]According to Habermas: "Money has structure-forming effects only when it becomes an intersystemic medium of interchange. The economy can be constituted as a monetarily steered subsystem only to the degree that it regulates its interchanges with its social environments via the medium of money. Complementary environments take shape as the production process in converted over wage labor and the state apparatus is connected up with production via the yield from taxes on those employed. The state apparatus becomes dependent upon the media-steered subsystem of the economy; this forces it to reorganize and leads, among other things, to an assimilation of power to the structure of a steering medium: power becomes assimilated to money." Jürgen Habermas, *The Theory of Communicative Action, vol. 2,...* Ibid., 171.

[28]Habermas explains this by saying: "To the degree that the economic system subjects the life-forms of private households and the life conduct of consumers and employees to its imperatives, consumerism and possessive individualism, motives of performance and competition gain the force to shape behavior. The communicative practice of everyday life is one-sidely rationalized into a utilitarian life-style; this media induced shift to purposive-rational action orientations calls forth the reaction of hedonism freed from the pressures of rationality. As the private sphere is undermined and eroded by the economic system, so too is the public share by the administrative system." Ibid., 325.

> capitalist growth and are canalized into those roles in which, withdrawn from the world of work and the public sphere, privatized hopes for self-actualization and self-determination are primarily located, namely, in the roles of consumer and client.[29]

To liberate ourselves and the lifeworld from such mechanisms we should do nothing but take "deliberative" action. In Habermas' view, deliberation "refers to a certain attitude toward social cooperation, namely, that of openness to persuasion by reason referring to the claims of others as well as one's own. The deliberative medium is a good faith exchange of view - including participants' reports of their own understanding of their respective vital interests."[30] In the process of communication, deliberative action supports the supremacy of rational dialogue and takes other persons into account as equal because they provide alternative possibility for our consideration. However, deliberatively rational communications depend on free and open cultural knowledge, and on the initiative of opinion-shaping association.[31] In short, deliberative action basically depends on "the inclusion of the other".

3. Communication, Neurophilosophy and Multicultural Society

We have seen through the two sections above that communication is an important aspect both in the human brain and in the practice of the lifeworld. In this section I move further to apply the paradigm of

[29]Ibid., 356.

[30]Jürgen Habermas, *The Inclusion of the Other. Studies in Political Theory*, edited by Ciaran Cronin and Pablo De Greiff, (Cambridge: MIT Press, 1999), 244.

[31]Ibid., 252.

communicative action in disciplinary dialogue between neuroscience and philosophy, and also in multicultural society as we experience now.

The interdisciplinary dialogue between neuroscience and philosophy or what is called "neuroscience" was practiced at the turn of last century such as by W. Wundt, and Barbara Von Eckardt-Klein who did take note of some available neuroscientific detail. The term neuroscience itself is often used either implicitly or explicitly for the characterization of an investigation of philosophical theories in relation to neuroscientific hypothesis.[32] Barbara Von Eckardt-Klein in 1975 discussed the identity theory with respect to sensations of touch and pressure, and incorporated then-current hypotheses about neural coding of sensation modality, intensity, duration, and location as theorized by Mountcastle, Libet, and Jasper. Yet, she was a glaring exception. By and large, available neuroscience at the time was ignored by both philosophical friends and foes of early identity theories.[33] The major turning point in philosophers' interest in neuroscience came to the public arena along with the publication of a book titled: *Neurophilosophy. Toward A Unified Science of the Mind (1986)* by Patricia Smith Churchland. In her book, as George Northoff notes, Churchland distilled eliminativist arguments of the past decade, unified the pieces of the

[32]George Northoff, "What is Neurophilosophy," in *Journal for General Philosohy of Science 35: 91-127*, (Netherlands: Kluwer Academic Publisher), 92.

[33]John Bickle notes that there are three major philosophical themes in Churcland's book : developing an alternative to the logical empiricist theory of intertheoretic reduction; responding to property-dualistic arguments based on subjectivity and sensory qualia; and responding to anti-reductionist multiple realizability arguments. These projects have remained central to neurophilosophy over the past decade. *See* John Bickle, "The Philosophy of Neuroscience," available from http://www.scribd.com/doc/13066843/Bickle-Philosophy-Neuroscience; Internet, accessed 10/1/2009.

philosophy of science underlying them, and sandwiched the philosophy between a five-chapter introduction and a 70-page chapter on three then-current theories of brain function.[34]

According to Churchland neuroscience can provide an important contribution to philosophy. She believes that by what she calls "interanimation" or interdisciplinary dialogue neuroscience and philosophy can exchange ideas, even correct and inspire each other, to gain fruitfully theories, models, and methods. Thus, says Churchland: "What is envisaged is a rich interanimation between the two, which can be expected to provoke a fruitful co-evolution of theories, models, and methods, where each informs, correct, and inspires the other."[35] Churchland's idea of *interanimation* is parallel to Habermas's theory of *communicative action*: both of them support open, free and rational discourse to gain mutual understanding and consensus about some old-age problems as mentioned earlier. Without such interanimation, Churchland argues, neuroscientists, on the one hand, will lose themselves and their experiment down to a dead-end warrant. On the other hand, the philosopher will "remain boxed within the narrow canyons of the commonsense conception of the world or to content himself with historically plumping up the pillow of descript dogmas".[36] On the contrary, the advantage of interanimation, Churchland confesses, enables her to understand not only the brain-behavior but also reoriented her philosophical interest. She explains this by saying:

[34]Ibid.

[35]Patricia Smith Churchland, *Neurophilosophy. Toward A Unified Science of the Mind*, (Massachusetts: The MIT Press Paperback Edition, 1989), 2.

[36]Ibid., 3.

> My early conviction was simple: that neuroscience must contribute essentially to the theoretical enterprise because we cannot expect to understand the brain-behavior relationship unless we understand what neurons do and how they are interconnected. Studying the neuroscience has deepened that conviction and has resulted as well in a reorientation of my philosophical pursuits.[37]

Another example of interanimation is designed by M.R. Bernett and P.M.S. Hacker in their book entitled: *Philosophical Foundation of Neuroscience,* published by Blackwell in 2003. This book can be seen as the fruit of a cooperative project between a neuroscientist and a philosopher. As a fruit of a cooperative project, this book attracted attention straightaway because it was the first systematic evaluation of the conceptual foundations of neuroscience, as these foundations had been laid by scientists and philosophers. The authors argue that neuroscientist and philosopher cannot stand by on their own position to judge each other since they are in different positions. Philosophy, on the one hand, can contribute to conceptual clarification of the neuroscientist's research but not to empirical investigation of the human brain. They explain this by saying:

> What philosophy can contribute to neuroscience is conceptual clarification. Philosophy can point out when the bounds of sense are transgressed... It can make clear when the conceptual framework which informs a neuroscientist's research has been twistted or distorted... Far from being irrelevant to the goal of neuroscience, the conceptual clarifications of philosophy analysis are indispensible for their achievement.[38]

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[37]Ibid., 6.

[38]M.R. Bennett and P.M.S. Hacker, *Phiolosophical Foundation of Neuroscience*, (Australia: Blackwell Publishing, 2003), 405.

Neuroscience, on the other hand, can investigate brain and its empirical mechanism but not conceptual framework which contribute to the solution of philosophical problems. They argue this by saying:

> Neuroscience cannot contribute to the solution of philosophical problems. It can investigate empirical brain but not conceptual ones. Neuroscience aims to achieve an understanding of the natural conditions that endow us with the distinctive human capacities we posses... Achievement in cognitive neuroscience is gradually enlarging our understanding of why we are as we are, why we possess the power we posses, what determines their empirical limitations, and what goes on in our brain when we exercise them.[39]

In other words, it is hopeless to try to solve conceptual problems concerning the nature of the human brain by empirical methods. In contrast, it is hopeless to try to solve empirical problems concerning the nature of the human brain by general philosophical arguments. In this sense, philosophy and empirical science, such as neuroscience, are not in opposition. Rather they are dealing with different questions. Yet, since a conceptual scheme is necessary to any fruitful experiment we cannot avoid asking both sides. What philosopher and neuroscientist can do is nothing but, as Denis Nobel says in his *Forward* for his book, "cooperative project" between them to analyze in depth from outside. That a neuroscientist and a philosopher should combine to do so, argues Nobel, is a sign of our time.[40]

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[39]Ibid., 408.

[40]Denis Nobel, "Forward," in *Philosophical Foundation of Neuroscience*, by M.R. Bennett and P.M.S. Hacker, (Australia: Blackwell Publishing, 2003), Ibid.,1

Thus, communication (Habermas) or interanimation (Churchland) or cooperative (Nobel) becomes *medium* which bridge the gap between philosopher and neuroscientist in order to gain mutual understanding of the human brain. Moreover, it becomes an "enlightenment moment," or what Dr. Rainier Ibana calls a *moment of freedom*,[41] to expand and to extend each horizon of thinking regarding some old-age problems, especially the brain-mind relationship, and to bear for more fruitfully scientific achievements.

The notion of communication as the enlightenment moment or moment of freedom, then, can be applied to the human relationship in the way of a "multicultural society." This term, in my opinion, refers to a philosophy that recognizes ethnic diversity within a society and that encourages others to be enlightened by worthwhile contributions to society by those of diverse ethnic backgrounds. According to Karl-Otto Apel, this philosophical notion recognizes a person "not as a matter of respecting the *universalized other* as such rather than a matter of recognizing the *concrete other* in one of his or her particular but not accidental properties. Nevertheless, talking about someone's *'right* to his own culture' points to the fact that what is at stake here is not only a matter of respecting the *pluralism* of particular cultural traditions but also – at the same time – respecting a *right* that benefits *all* human person as such."[42]

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[41]*See* Rainier Ibana, "Freedom and the Human Brain," Summer Lecture, (Manila: Ateneo de Manila University, 2009).

[42]Karl-Otto Apel, "The Problem of Justice in a Multicultural Society. A Response of Discourse Ethics," in *Questioning Ethics. Contemporary Debates in Philosophy*, edited by Richard Kearney and Mark Dooley, (London: Routledge, 1999), 146.

In the multicultural society we can simply acknowledge some groups in our society such as indigenous peoples, national minorities, ethno-cultural nations, old and new immigrants, feminists, gays and lesbians. Each of the groups communicate and represent not only different processes, life styles, views and ways of life, but also demand legitimation, respect and public affirmation to their existence. The problem is: "How can we acknowledge them as equal as well as other citizens in our society?" Here, the problem lies not in the fact of plurality itself but "primarily in different assessments and evaluations of the human status and hence the right to life."[43] In this context, the paradigm of communicative action can be a basis to solve such problems in the multicultural society.

According to Habermas, the process of actualizing rights is indeed embedded in contexts that require such discourses as an important component of politics – discussions about shared conception of the good and a desire for life that is acknowledged to be authentic. In such discussion the participants clarify the way they want to understand themselves as citizens of a specific republic, as inhabitants of a specific region, as heirs to a specific culture, which traditions they want to perpetuate and which they want to discontinue, how they want to deal with their history, with one another, with nature and so on.[44] Personal identity thus has an irreducible intersubjective basis because the acquisition and maintenance of a sense of self depends upon the structures of reciprocity

[43]Ibid., 160.

[44]Jürgen Habermas, *The Inclusion of the Other. Studies in Political Theory*, edited by Ciaran Cronin and Pablo De Greiff, (Cambridge: MIT Press, 1999), 218.

and recognition that are built into the presupposition of communication action.[45]

In a multicultural society the process of actualizing equal individual rights can also extend to guarantees different other groups and their culture forms of life equal rights to coexistence. The coexistence of forms of life with equal rights means ensuring every citizen the opportunity to grow up within the world with a cultural heritage without suffering discrimination. This requires mutual recognition of different cultural membership. It means that all persons must also be recognized as members of ethical communities integrated around different conceptions of the good.[46] A fair consensus of the conception of the good can be gained insofar all members in the society keep aside one's own particular interest and exchange their ideas through discourse, and gain what is considered to be the common good for all the people.

4. Conclusion

The last two decades research within and related to neuroscience have grown rapidly. This research brings about some important questions for philosophy concerning function of the human brain. One importantthing among others is that if the brain governs our thoughts, acts, and behaviors, then how can we emancipate ourselves from its mechanism? We have seen throughout this paper that communication is the basis for both human brain and human relationship in the lifeworld. In the human brain, communicative functions exist at many other levels of

[45]Ciaran Cronin and Pablo De Greiff, "Editors' Introduction," in *The Inclusion of the Other. Studies in Political Theory*, by Jurgen Habermas, edited by Ciaran Cronin and Pablo De Greiff. (Cambridge: MIT Press, 1999), xxix.

[46]Jürgen Habermas, *The Inclusion of the Other*.... Ibid., 224-225.

organization of the nervous systems. Communication among neurons depend on the ability of the neuron to response to incoming stimulation by becoming electrically excited and subsequently passing along signals to other neurons. An action potential, also called *neuronal firing*, is the electrical signal that passes along the axon and causes release of a chemical from the terminal buttons. These chemicals then transmit signals to other neurons.

In the practice of communication in the lifeworld, communicative action becomes *medium* which mediates participants of dialogue in order to reach mutual understanding and to gain agreement. Such communicative action requires freedom, equality, rational discourse, and above of all, inclusiveness of others to accept and to renew their conditions, terms or knowledge. This notion has encouraged both neuroscientist and philosopher to work together in order to gain a new scientific achievement such as neurophilosophy. Such understanding should been applied to communication in multicultural society. In this society communication requires to treat groups, ethics, genus, etc., as equal as well as different and not to discourage them; that they are similar and different at the same time. Their similarities and differences do not passively coexistence but interpenetrate.

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