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THE INTER-PERSONALIST IDEOLOGY OF *IGWEBUIKE* AND THE WORKINGS OF NEURONS: AN INTERPERSONALITIC-NEUROSCIENTIFIC INQUIRY

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Abstract

The human brain research has always been an interesting field of study,understanding how it coordinates itself, receiving and giving out information, encoding, decoding and even encrypting signs. It is a delicate organ in the human body, whose work is so important that if compromised, the human person will be considered as lacking in that quality that makes him human, namely his rational consciousness. In contemporary times, brain research and study has been termed as neuroscience (having many subfields under it, namely, neurophilosophy, molecular neuroscience, cognitive, behavioral, computational neuroscience, etc. Neuroscience studies the nervous system, combining fields, such a physiology, anatomy, molecular biology, developmental biology, cytology, mathematical modeling, computer science, genetics, medicine, philosophy and psychology, to give credence to its study of neurons and the neural circuits). The importance of the human brain stems from the reality of what specifically defines the human, namely, his rationality. I had earlier termed this as a rational consciousness. This is because the human being is rational and is conscious of the fact that he is rational. More to this, he is conscious and is conscious of the fact that he is conscious. This is principally what separates us from the genus of the animal. There is a certain kind of consciousness that resides in brutes, and indeed every living creature, that is non-animal like. For instance, some plants, like the Humulus Lupulus, have a tendency to move when touched, a phenomena that is known as thigmotropism. Other plants, like the Venus Flytrap, are conscious whenever an insect wanders into their wide open jaws. They thus close up and ingest the insect. Such instances we may term as a response to stimulus, anchored by Mother Nature, but such response is yet reminiscent of a sort of consciousness. In all that has been said, the human consciousness is by far the most intriguing. What makes this so? A study into the brain and how consciousness arises from the working of the brain has revealed that there are small molecular cells at work in the brain, known as neurons. It is being speculated (this implies that it has not been holistically accepted in the entirety) in some neuroscientific quarters that it is these

neurons that are the chief source of the consciousness in man. That is to say that these cells are the ones behind man's conscious awareness. Since the dawn of the discovery of the neurons in the late 1800s, the investigation into the brain has skyrocketed and more insights into the workings and modalities of operation of the brain have been unveiled. The workings of neurons have proven to be insightful and broken grounds in the medical/scientific/philosophical field. Nonetheless, what lesson can be garnered by the workings of the neurons in the light of the interpersonalism that is the heart of the Igwebuike philosophy? The Igwebuike philosophy portrays the sense of an interpersonalistic rapport between individuals. Having its root in the Igbo culture of south-eastern Nigeria, this ideology carries with it two vital principles, namely: solidarity and complementarity. Yet, can this ideology be understood further by looking at how the neurons in the brain work, complementing each other? Can the solidarity of the neurons and its network, leading to a well orchestrated brain operation and indeed a very well organized human functioning, be used to throw some light on how this solidarity, as espoused by Igwebuike, can lead to better interpersonal affinity and empathy, thus resulting in a better understanding of one another? We do not seek to consider a certain neuroscientific field; we aim at showing how effective Igwebuike is, not only to the Igbo society, but to the world at large, via looking at the workings of the neurons of the brain.

Keywords: Neurons, Neuroscience, Solidarity, Complementarity, Igwebuike, Brain, Interpersonalism.

Neurons and their Functioning

This is a late nineteenth century Greek term which refers to highly specialized "nerve cells". A neuron exhibits a highly complex repertoire of specialized membranous structures, embedded ion channels, second messengers, genetic and epigenetic elements and unique complements of various proteins such as the receptors. Neurons are excitable cells (i.e., able to conduct electrical impulses of action potentials), which form elaborate networks through axons and dendrites. This ensemble is responsible for integrating, processing and transmitting information, and forms the basis for e.g., coordinated muscle movements and brain functions, including learning and memory formation.[1] Neurons have four morphologically defined regions: the cell body, dendrites, axon, and presynaptic terminals. A bipolar *neuron* receives signals from the dendritic system; these signals are integrated at a specific location in the cell body and then sent out by

[1] **M. D. Binder, N. Hirokawa, U. Windhorst (Eds.),** ***Encyclopedia of Neuroscience*****, Springer-Verlag GmbH, Berlin Heidelberg, Germany, 2009, 2751.**

means of the axon to the presynaptic terminals. There are neurons which have more than one set of dendritic systems, or more than one axon, thus enabling them to perform simultaneously multiple tasks; they are called *multipolar neurons*.[2] A neuron is an electrically excitable cell that processes and transmits information by electro-chemical signalling. Unlike other cells, neurons never divide, nor do they die off to be replaced by new ones. By the same token, they usually cannot be replaced after being lost, although there are a few exceptions. The average human brain has about 100 billion neurons (or nerve cells) and many more neuroglia which serve to support and protect the neurons.[3] Each neuron may be connected to up to 10,000 other neurons, passing signals to one another via as many as 1,000 trillion synaptic connections, equivalent by some estimates to a computer with a 1 trillion bit per second processor. Estimates of the human brain's memory capacity vary wildly from 1 to 1,000 terabytes.

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[2] A. Borisyuk et al, eds., *Tutorials in Mathematical Biosciences I. Mathematical Neuroscience*, Springer-Verlag Berlin Heidelberg, Germany 2005, 1. Neurons may be classified into

- **Bipolar: similar to retinal cells, two processes extend from the body of bipolar neurons.**
- **Unipolar: there are two dorsal root ganglion axons for each unipolar cell. One axon stretches out in the direction of the spinal cord and the other in the direction of the skin or muscles.**
- **Multipolar: these neurons contain many processes that branch out from the cell body. However, here the neurons each only have one axon (e.g. spinal motor neurons).**
- **Pseudo-unipolar neurons, a variant of bipolar neurons that sense pressure, touch and pain, have no true dendrites. Instead, a single axon emerges from the cell body and heads in two opposite directions, one end heading for the skin, joints and muscle and the other end traveling to the spinal cord.**
- **Anaxonic: An anaxonic neuron is a neuron where the axon cannot be differentiated from the dendrites. Some sources mention that such neurons have no axons and only dendrites. They are found in the brain and retina, which act as non-spiking interneurons.**
- **Pseudounipolar: A pseudounipolar neuron is a kind of sensory neuron in the peripheral nervous system. This neuron contains an axon that has split into two branches. These neurons have sensory receptors on skin, joints, muscles, and other parts of the body. The area of the axon that is closest to the receptor is the trigger zone for the neuron. The signal is conducted through the axon to the dorsal root ganglion's cell body, then through the axon and ending at the sensory nuclei in the dorsal column-medial lemniscus pathway of the spinal cord.**

Another very basic method for the classification of neurons is by identifying which way they transmit information:

- **Efferent neurons (motor neurons): these direct information away from the brain towards muscles and glands.**
- **Afferent neurons (sensory neurons): these transmit information to the central nervous system from sensory receptors.**
- **Interneurons: found in the central nervous system, these pass information between motor neurons and sensory neurons.**

[3] 90% of the brain cells are glial cells, which primarily protect brain by absorbing possible chemicals which might endanger the body's operations. These specified cells are a key component of the nervous system as they represent the vehicles that carry the messages from one part of the body to the other.

Information transmission within the brain, such as takes place during the processes of memory encoding and retrieval, is achieved using a combination of chemicals and electricity.[4] The neuron, as seen in Fig 1.1, is made up of a cell body called the soma, branched projections called dendrites and an axon, which is the long, slim nerve fibre that transmits information to muscles, glands and other neurons. Signals are received at the dendrite, processed in the nucleus of the soma and transmitted away from the soma along the axon.

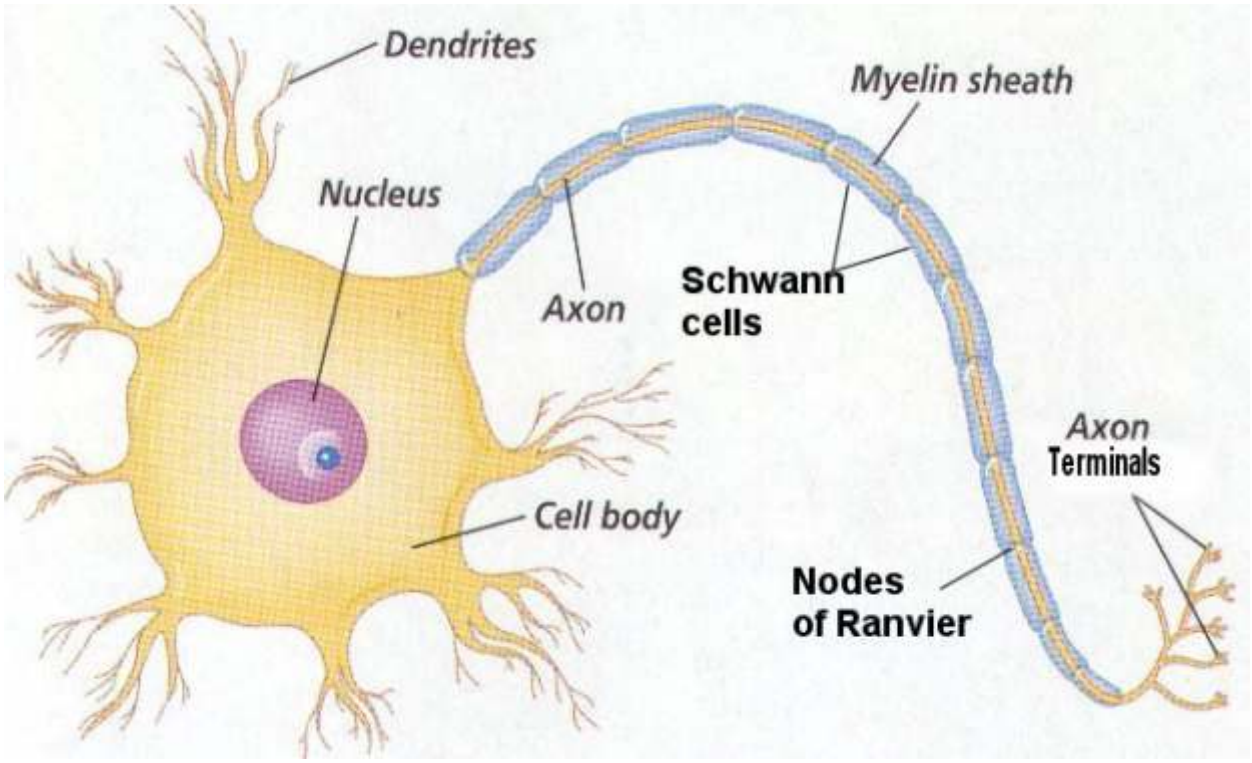

Fig 1.1

Parts of a Neuron include:

1. Soma: The soma is the body of the neuron. As it contains the nucleus, most protein synthesis occurs here. The nucleus can range from 3 to 18 micrometers in diameter.

[4] **J. Zhang, *Basic Neural Units of the Brain: Neurons, Synapses and Action Potential*, in IFM LAB TUTORIAL SERIES No. 5, 2019, https://arxiv.org/pdf/1906.01703.pdf, 1-38.**

2. Dendrites: The dendrites of a neuron are cellular extensions with many branches. This overall shape and structure is referred to metaphorically as a dendritic tree. This is where the majority of input to the neuron occurs via the dendritic spine.
3. Axon: The axon is a finer, cable-like projection that can extend tens, hundreds, or even tens of thousands of times the diameter of the soma in length. The axon primarily carries nerve signals away from the soma, and carries some types of information back to it. Many neurons have only one axon, but this axon may - and usually will -undergo extensive branching, enabling communication with many target cells.
4. Axon Hillock: The part of the axon where it emerges from the soma is called the axon hillock. Besides being an anatomical structure, the axon hillock also has the greatest density of voltage-dependent sodium channels. This makes it the most easily excited part of the neuron and the spike initiation zone for the axon. In electrophysiological terms, it has the most negative threshold potential. While the axon and axon hillock are generally involved in information outow, this region can also receive input from other neurons.
5. Myelin: Myelin is a lipid-rich substance formed in the central nervous system by neuroglia called oligodendrocytes, and in the peripheral nervous system by Schwann cells. Myelin insulates nerve cell axons to increase the speed at which information travels from one nerve cell body to another or, for example, from a nerve cell body to a muscle. The myelinated axon can be likened to an electrical wire with insulating material (myelin) around it.
6. Node of Ranvier: Unlike the plastic covering on an electrical wire, myelin does not form a single long sheath over the entire length of the axon. Rather, each myelin sheath insulates the axon over a single section and, in general, each axon comprises multiple long myelinated sections separated from each other by short gaps called Nodes of Ranvier.
7. Axon Terminal: The axon terminal is found at the end of the axon farthest from the soma and contains synapses. Synaptic boutons are specialized structures where neurotransmitter chemicals are released to communicate with target neurons.[5]

[5] **Ibid**

Every neuron maintains a voltage gradient across its membrane, due to metabolicallydriven differences in ions of sodium, potassium, chloride and calcium within the cell, each of which has a different charge. If the voltage changes significantly, an electrochemical pulse called an action potential (or nerve impulse) is generated. This electrical activity can be measured and displayed as a wave form called brain wave or brain rhythm. This pulse travels rapidly along the cell's axon, and is transferred across a specialized connection known as a synapse to a neighboring neuron, which receives it through its feathery dendrites. A synapse is a complex membrane junction or gap (the actual gap, also known as the synaptic cleft, is of the order of 20 nanometres, or 20 millionths of a millimetre) used to transmit signals between cells, and this transfer is, therefore, known as a synaptic connection. Although axon-dendrite synaptic connections are the norm, other variations (e.g. dendrite-dendrite, axon-axon, dendrite-axon) are also possible. A typical neuron fires 5 - 50 times every second.[6] Each individual neuron can form thousands of links with other neurons in this way, giving a typical brain well over 100 trillion synapses (up to 1,000 trillion, by some estimates). Functionally related neurons connect to each other to form neural networks (also known as neural nets or assemblies). The connections between neurons are not static, though, they change over time. The more signals sent between two neurons, the stronger the connection grows (technically, the amplitude of the post-synaptic neuron's response increases), and so, with each new experience and each remembered event or fact, the brain slightly re-wires its physical structure.[7]

How Neurons Communicate with One Another

From the foregoing, we have learnt that neurons are connected to one another through synapses, and these are sites where signals (electric) are transmitted in the form of chemical messengers. Each neuron in the body is ***interlinked*** to another and is capable of carrying varied complex computations. According to R. Jahn, "each neuron has an antenna zone comprising the cell body and its extensions (dendrites). It is here that it receives signals from other neurons".[8] This is the place that communication occurs. The signals are then computed and forwarded by a cable, "the axon, in the form of electrical impulses. In the emitter region, the axon branches to form contact sites known as synapses, where the

[6] **Ibid**
[7] **Ibid**
[8] **R. Jahn,** ***How Neurons Talk to Each Other*****, in Neuroscience News, 24th September, 2016, https://neurosciencenews.com/neurons-synapses-neuroscience-5119/ Retrieved 7th May, 2020.**

signals are transmitted to other neurons. At the synapse, electrical impulses arriving from the axon are converted into chemical signals. The information then flows in one direction,[9] that is to say that one cell (neuron) talks, and another listens. In the communication of neurons, the dendrites of the first neuron receive information from, for instance, a sensory receptor on the finger detecting pain from a hot object. The message, in the electrochemical form, is transmitted up to the brain by a chain of neurons to be assessed by the many neurons in the brain. Then this information is carried to the dendrites of the first neuron, then to its body and nucleus where the information is interpreted. Next, the message is passed on by charges in the neuron onto the axon which is at *resting potential,*[10] but soon its charge is altered by positive and negative ions to bring it to an *action potential* state.[11] When this electrical signal reaches the end of the axon, a neurotransmitter[12] is deployed, and this restarts the process (this communication by neurons is one way and this transfer of messages can be visualized by Fig 1.2).[13] What is being said here is that neurons communicate to one another, by making use of special chemical, known as neurotransmitters. Neurotransmitters are the one that send messages from one neuron to another.[14] Each

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[9] Ibid.

[10] Resting potential is the membrane potential (electric charge) in a neuron that is not currently transmitting a signal.

[11] Action Potential is a brief depolarization (reduction in the magnitude of the charge) along the neuron's axon: action potentials are all-or-nothing (they do not have degrees of magnitude). The starting state is called resting potential which is when the cell is negatively charged inside and positively charged outside. This balance is altered by elements that move through the membrane such as: Sodium (NA^+), Potassium (K^+), Calcium (Ca^{2+}) and Chlorine ($C1^-$).When the chemical distribution is changed, such as when Sodium moves into the axon as NA^+ channels open - making it positively charged inside the axon - it is called the action potential. When this occurs, the neurotransmitter is released. During this whole process the electrochemical signals are transmitted between neurons via junctions called synapses and these are located and the end of the axon terminal and before the dendrites of the subsequent neuron. However, once a neuron has fired the impulse to the next neuron, it cannot fire again for a 1000th of a second - this is called the absolute refractory period. However, if a neuron obtains a stimulus much stronger than its usual threshold then it can fire again and this is referred to as the relative refractory period. (V. Whiteley, *Describe the structure of the nervous system. How do neurons communicate*)

[12] These are chemical messengers that communicate between adjacent neurons; release of neurotransmitters from one neuron will either help depolarize ir hyperpolarize (increase the magnitude of the charge) the adjacent neuron, making an action potential either more or less likely to occur in the next neuron.

[13] V. Whiteley, *Describe the structure of the nervous system. How do neurons communicate*, in the Research Gate Online Journal, https://www.researchgate.net/publication/301888628, Retrieved 7th May, 2020.

[14] M. Ludwig, *How Your Brain Cells Talk to Each Other* in Frontiers for Young Minds, 5:39, 26th July, 2017, https://kids.frontiersin.org/article/10.3389/frym.2017.00039, Retrieved 7th May, 2020.

neurotransmitter binds only to its specific receptor, just as a key fits only a particular lock (fig 1.3).[15] Depending on the neurotransmitter, it either excites the other neuron or inhibits (that is to say that neurotransmitters are either excitatory or inhibitory), making it either more likely or less likely to fire an action potential of its own.[16] It should be noted that all these happen with very high precision and are repeated again and again, at very fast speed, going up to 100m/s. This kind of communication between neurons is called wired communication.[17]

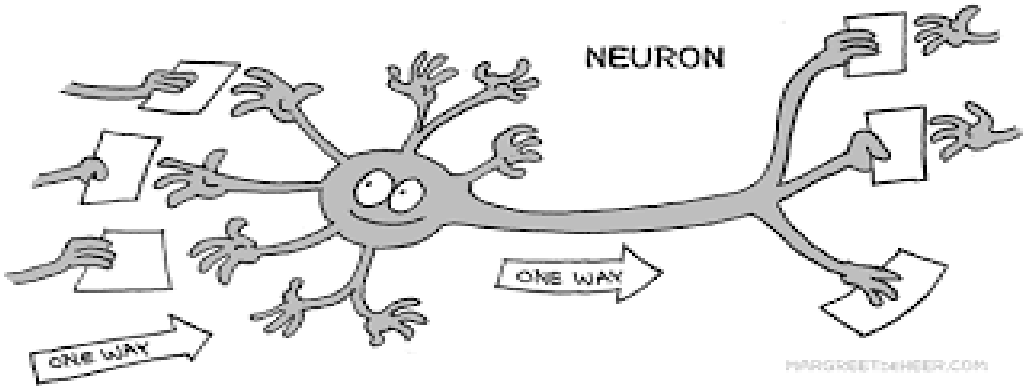

Fig 1.2

According to Gazzaniga et al

> Neurons receive, evaluate, and transmit information. These processes are referred to as *neuronal signaling*. Information that is received by the neuron at its input synapses passes through the cell body and then, via the axon, to

[15] A neurotransmitter is *a chemical that relays signals across the synapses between neurons*. Neurotransmitters travel across the synaptic space between the terminal button of one neuron and the dendrites of other neurons, where they bind to the dendrites in the neighbouring neurons. Furthermore, different terminal buttons release different neurotransmitters, and different dendrites are particularly sensitive to different neurotransmitters. The dendrites will admit the neurotransmitters only if they are the right shape to fit in the receptor sites on the receiving neuron. (J. Walinga-C. Stangor, Introduction to Psychology 1st Canadian Edition, BCCampus Vicotria B.C., Canada, 2014, 129-131, Retrieved from https://opentextbc.ca/introductiontopsychology/)

[16] Talking about neurotransmitters, they appear in two main forms: excitatory or inhibitory. An example of an excitatory neurotransmitter is Nitric Oxide, which induces the excitatory postsynaptic potential which makes the impulse continue to be transmitted along the neurons. An inhibitory neurotransmitter could be serotonin and this works in the reverse way to induce an inhibitory postsynaptic potential which will stop the transmission of the impulse and hence end the communication between neurons. (V. Whiteley, *Describe the structure of the nervous system. How do neurons communicate*). An excitatory transmitter promotes the generation of an electrical signal called an action potential in the receiving neuron, while an inhibitory transmitter prevents it. Whether a neurotransmitter is excitatory or inhibitory depends on the receptor it binds to.

[17] Ibid.

output synapses on the axon terminals. At these output synapses, information is transferred across synapses from one neuron to the next neuron; or to non-neuronal cells such as those in muscles or glands; or to other targets, such as blood vessels. Within a neuron, information moves from input synapses to output synapses through changes in the electrical state of the neuron caused by the flow of electrical currents within the neuron and across its neuronal membrane. Between neurons, information transfer across synapses is typically mediated chemically by neurotransmitters (signaling molecules); these synapses are called chemical synapses. At electrical synapses, however, signals between neurons travel via transsynaptic electrical currents. Regarding information flow, neurons are referred to as either presynaptic or postsynaptic in relation to any particular synapse. *Most neurons are both presynaptic and postsynaptic:* They are presynaptic when their axon's output synapses make connections onto other neurons or targets, and they are postsynaptic when other neurons make a connection at input synapses onto their dendrites or elsewhere on the receiving neuron.[18]

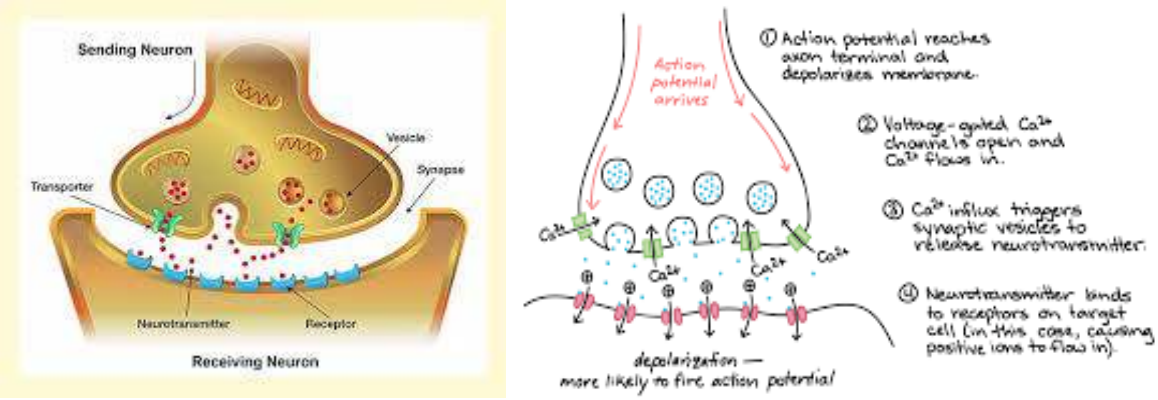

Fig 1.3

In Sum:

What should be noted here is that the nervous system works using an electrochemical process: which is that the electrical charge moves through the neuron, and it is the chemicals that are employed to transmit the information between the neurons. It is by means of the chemicals that these electric current is transmitted from one neuron to another, however, within the neuron, it is the electric current that moves. This implies that the electric current is the message

[18] **M.S. Gazzaniga, R.B. Ivry, G.R. Mangun,** ***Cognitive Neuroscience. The Biology of the Mind,*** **W. W. Norton & Company, New York, 2019, 28.**

that is being communicated, but the chemicals are there to ensure that such message is transmitted from one neuron to another. These chemicals are aroused when the electric signals reach the terminal buttons. These chemicals are referred to as neurotransmitters which occasion a communication of these electric current between neurons spaced out by synapses. The electric current moving through the neuron is due to changes in the electrical charge of the axon. The axon would normally remain in its resting potential (where the interior of the neuron contains a greater number of negative charged ions than its exterior. This further means that at its ground state, the neuron is negatively charged. It only becomes positively charged, when there is a message being transmitted through it). When the segment of the axon that is closest to the cell body is stimulated by the electrical signals from the dendrites and if this electric signal is strong enough that it passes a certain level or threshold, the cell membrane in this first segment opens its gates, allowing positively charged sodium ions (Na^+) that resided in the outside to flow inside. This change that occurs in the neuron when a nerve impulse (a message) is transmitted is known as the Action Potential (once this action potential occurs, the internals of the neuron becomes more positively charged than the exteriors, because the number of positively charged ions exceeds that of the negative ions. As the message passes one section of the axon, the positive charge drops, and that segment of the axon returns back to its high number of negative charged ions, also known as the resting potential. It should be noted that this message that is transmitted in each segment of the axon moves in a set of small jumps.[19] The movement of this message is done in an all or nothing manner, that is to say that either the neuron fires completely or it does not fire at all. For the neuron to fire completely, it has to move fast, very fast. The speed of the message is what prioritizes the message and not its strength. As the message passes from one neuron to another repeatedly, the mode of communication between the two is strengthened, such that if a message is relayed again, the synaptic gap separating the two neurons becomes more acquainted with one another, that the message is easily passed on from the two "friendly" neurons (this is the means by which people form habits or become addicts). That is to say that communication becomes more fluid and less hectic between the acquainted neurons.

Igwebuike as an Interpersonalistic Philosophy

[19] J. Walinga-C. Stangor, Introduction to Psychology 1st Canadian Edition, BCCampus Vicotria B.C., Canada, 2014, 129-131, Retrieved from https://opentextbc.ca/introductiontopsychology/

Before we venture into the interpersonalistic philosophy of *Igwebuike*[20], we better separate the two words, inter- and personalism. Let us start off with the latter, personalism. It derives from the Latin word, 'Persona', which means person or personality. It is a trend in philosophy which acknowledges the person as the prime creative reality, having the highest spiritual value. It views the world as a manifestation of the supreme person. It differentiates between the concepts of the "individual" and the "person"**. A** human being is an individual as a member of society, as a part defined in correlation with the whole. As a person, one can affirm oneself in freewill and in an eternal source-God. The decision of a person presupposes an intention, a choice, a moral evaluation and an affirmation of personal freedom.[21]

Personalism would consider the persona as an individual being which is realized through conscious ownership and independent disposal of an own self. The concept of person, which was unknown to the Greek philosophy, developed under the influence of Jewish-Christian thinking as late as in the patristic era and then it gradually found its place in philosophy.[22] According to E. Mounier, personalism is a philosophy; it is not merely an attitude. It is a philosophy but not a system.[23] The personalistic philosophy pays tribute to the person as the center of all that concerns reality. Arising from the term "person", it maintains that a person is one who is consciously aware of his acts, doing it in an awareness that arises from his free will. Personalists consider personhood as the fundamental notion, one which gives meaning to all of reality and constitutes its supreme value. Personhood carries with it an inviolable dignity that merits unconditional respect.

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[20] Kanu, I. A. (2019). *Igwebuikeconomics*: The Igbo apprenticeship for wealth creation. *IGWEBUIKE: An African Journal of Arts and Humanities* (IAAJAH). *5. 4.* pp. *56-70*. Kanu, I. A. (2019). *Igwebuikecracy*: The Igbo-African participatory cocio-political system of governance. *TOLLE LEGE: An Augustinian Journal of the Philosophy and Theology. 1. 1.* pp. 34-45. Kanu, I. A. (2019). On the origin and principles of *Igwebuike* philosophy. *International Journal of Religion and Human Relations*. Vol. 11. No. 1. pp. 159-176. Kanu, I. A. (2019b). An *Igwebuike* approach to the study of African traditional naming ceremony and baptism. *International Journal of Religion and Human Relations*. Vol. 11. No. 1. pp. 25-50. Kanu, I. A. (2017). *Igwebuike* as an Igbo-African philosophy for Christian-Muslim relations in Northern Nigeria. In Mahmoud Misaeli (Ed.). *Spirituality and Global Ethics* (pp. 300-310). United Kingdom: Cambridge Scholars.

[21] T. Zaverzhenets, *The Personalism of Emmanuel Mounier*, in Mozaik 1, 2003, 20.

[22] P. Dancak, Personalism. The philosophical Movement for Human Development in Advances in Social Science, Education, Social Sciences And Humanities Research, Vol.124, 2017, 51-55.

[23] E. Mounier, Personalism, Routledge & Kegan Paul Ltd, London, 1950, Vii.

The term, 'Inter-,' as a prefix is used to form words from the outside, in contrast to the prefix, 'Intra-'. Interpersonalism translates to a person-to-person conscious interaction, one that is willfully mediated and orchestrated for the sake of the other person. It is a philosophy that embraces and brings under its wings the existential, ontological reality of the person, while not handling lightly the individuality of the person, but giving it more credence. The interpersonalistic nature of the *Igwebuike* is mirrored by the Zulu proverb: *Umuntu Ngumuntu Ngabantu* (I am because you are; you are because we are). In Africa, we say that a person is a person because of other people. Our conception of being is held in common. We agree with our ancestors in believing that our humanness is not an individual quality but something that is of necessity shared.[24] According to R.J. Khoza,

In metaphysical terms, Ubuntu is first and foremost a statement of being- the "I am" in all of us. It declares that each of us, in our separate lives, draws existence from the collective and we are only persons through other persons. This is a meta-statement because it makes a fundamental assertion about the nature of our existence which is not reducible to anything else. I am because others are. The reach of this statement is enormous. Its repercussions flow through all subsequent statements about who and what we are; ontologically how should we see the world; epistemologically what our knowledge amounts to; logically what is reasonable; ethically how we should act for the good of all; politically how decisions should be made; aesthetically how beauty can be collectively perceived.[25]

The *Igwebuike* interpersonalistic ideology holds on to two basic tenets of solidarity and complementarity[26]. *Igwebuike* is very much like the Ubuntu

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[24] Dr R.J. Khoza, *The Ubuntu Philosophy as a Conceptual Framework for Interpersonal Relationships and Leadership*, An address given to Nedbank Group Technology Leaders on the 15th of September 2012,

[25] Ibid.

[26] Kanu, I. A. (2018). *Igwebuike* as an African integrative and progressive anthropology. *NAJOP: Nasara Journal of Philosophy.* Vol. 2. No. 1. pp. 151-161. Kanu, I. A. (2018). New Africanism: *Igwebuike* as a philosophical Attribute of Africa in portraying the Image of Life. In Mahmoud Misaeli, Sanni Yaya and Rico Sneller (Eds.). *African Perspectives on Global on Global Development* (pp. 92-103). United Kingdom: Cambridge Scholars Publishing. Kanu, I. A. (2019). Collaboration within the ecology of mission: An African cultural perspective. *The Catholic Voyage: African Journal of Consecrated Life.* Vol. 15. pp. 125-149. Kanu, I. A. (2019). *Igwebuike* research methodology: A new trend for scientific and wholistic investigation. *IGWEBUIKE: An African Journal of Arts and Humanities* (IAAJAH). *5. 4.* pp. *95-105.*

philosophy in this regard.[27] It argues that 'to be' is to live in solidarity and complementarity, and to live outside the parameters of solidarity and complementarity is to suffer alienation. 'To be' is 'to be with the other', in a community of beings. This is based on the African philosophy of community, which is the underlying principle and unity of African Traditional Religious and philosophical experience.[28] B.I. Ekwulu emphasizes this concept of complementarity as he notes:

If the other is my part or a piece of me, it means that I need him for me to be complete, for me to be what I really am. The other completes rather than diminishes me. His language and culture make my own stand out and at the same time, they enrich and complement my own. In the presence of his language and culture, the riches and poverty of my language and culture become clear and I see that his own and my own when put together form a richer whole when compared to any of them in isolation.[29]

What B.I. Ekwulu notes is the crux of that which pertains to the *Igwebuike* ideology, namely that: I am personally linked to the other person, who is also personally linked to me. This interpersonal linkage does not in any way reduce or tamper with the reality of the person's individuality. It rather emphasizes it. A.I Kanu buttresses this point:

> The principle of identity is the first principle of Igwebuike philosophy. It states that every being is determined in itself, is one with itself and is consistent in itself. Thus, every being is one with itself and divided from others. The qualities of matter, referred to in traditional metaphysics as accidents, such as size, colour, shape, etc., distinguish one being from the other. If reality does not have an identity, then everything would be everything, giving birth to one thing since nothing can be differentiated from the other. In this case, there would be no subject and object relationship.[30]

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[27] D. Iwuh OSA, *Action Understanding Is Not Entirely Neutral It Is Existential, It Is Igwebuike* in Igwebuike: An African Journal of Arts and Humanities Vol. 5 No 6, September 2019, 51-70.
[28] A. I. Kanu, *Igwebuike As A Trend In African Philosophy*, in Igwebuike An African Journal of Arts and Humanities Vol. 2 No 1, March 2016, 108-113.
[29] B.I. Ekwulu, Igbo concept of Ibe (the other) as a philosophical solution to the ethnic conflicts in African countries in B. I. Ekwulu (Ed.), philosophical reflections on African issues, Enugu Publications, Delta, 2010, 183-192.
[30] A.I. Kanu, *On The Origins and Principles of Igwebuike Philosophy*, Journal of Religion and Human Relations, Volume 11 No. 1, 2019, 159-176.

The interpersonalism of *Igwebuike* is inherent in its principles of solidarity and complementarity, but is seen further in the underlining principle of "sharedness". A.I. Kanu notes:

> The Igbo would… refer to the 'other person' as *ibe m* which means 'my piece' or *mmadu ibe m* (my fellow human being). This is the concept also employed in reference to relationships and reciprocity: love one another (*hunu ibe unu n'anya*), help one another (*nyere nu ibe unu aka*), respect one another (*sopuru nu ibe unu*), etc. Since the 'other' refers to my own piece, it would, therefore, mean that to love the other is to love oneself, to help the other is to help oneself and to respect the other is to respect oneself.[31]

According to this philosophy, each person may have his own individual paths to thread, it yet does not negate the fact that we all share in one supreme desire, which is *wellbeing*. This *wellbeing* that is sought after by all and sundry can only be attained by banding together to working for this common desire. It demands from persons commitment, alignment and, above all, communication. The interpersonalism that *Igwebuike* breeds is one that situates the human person as the center of all that happens in the world. This is because it is the human person that makes sense of what is happening around him, based on the conscious awareness that he has. Interpersonalism says that the human person is not a solitary being, he is not solipsistic, he is interrelational, he is part of a bigger family of persons, who complement one another. The interpersonalism of *Igwebuike* bespeaks of the human person who is characterized by a common origin, common world-view, common language, shared culture, shared race, colour and habits, common historical experience and a common destiny.[32]

Synthesis between the Interpersonalistic *Igwebuike* and Neuron Communication

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[31] A.I. Kanu, Igwebuike As An Igbo-African Ethic Of Reciprocity, in Igwebuike. An African Journal of Arts and Humanities Vol. 3 No 2, March 2017, 153-160.

[32] Kanu, I. A. (2017b). *Igwebuike* as a wholistic response to the problem of evil and human suffering. *Igwebuike: An African Journal of Arts and Humanities*. Vol. 3 No 2, March. Kanu, I. A. (2017e). *Igwebuike* as an Igbo-African modality of peace and conflict resolution. *Journal of African Traditional Religion and Philosophy Scholars. Vol. 1. No. 1. pp. 31-40*. Kanu, I. A. (2017g). *Igwebuike* and the logic (Nka) of African philosophy. *Igwebuike: An African Journal of Arts and Humanities.* 3. 1. pp. 1-13. Kanu, I. A. (2017h). *Igwebuike* philosophy and human rights violation in Africa. *IGWEBUIKE: An African Journal of Arts and Humanities.* Vol. 3. No. 7. pp. 117-136. Kanu, I. A. (2017i). *Igwebuike* as a hermeneutic of personal autonomy in African ontology. *Journal of African Traditional Religion and Philosophy Scholars. Vol. 2. No. 1. pp. 14-22.*

Let us think of the brain as a forest of dense proportions, one in which different kinds of trees grow near, around and on top of one another, their branches and roots intertwining. Indeed, as all trees share one basic structure, that is roots, trunk, branches, etc., but do not look exactly alike, all neurons in the brain are variations on a common structural basis. That is to say that even if the neurons have one and the same structure, they are not alike (although scientific research is still ongoing as to this aspect). Irrespective of the fact that neurons are not all alike, yet this does not hinder communication; that is to say that they still transmit electrochemical messages with one another. Each neuron is linked to the other, not standing on its own, and does not operate on its own. It rather operates in tandem with other neurons to produce optimal result.

As it is witnessed, there are times when there is break in communication amongst neurons, for instance, a stroke is just one example of a condition when communication between nerve cells breaks down. Micro-failures in brain functioning also occur in conditions such as depression and dementia. In most cases, the lost capacity will return after a while. However, consequential damage will often remain so that the functional capability can only be restored through lengthy treatment. This treatment will involve relearning all that one has previously learnt, for instance, motor activities, as in the case of a patient with a stroke. This is because significant alterations occur in neural cells while the communication pathways are blocked.

Neuron networks reconnect during such periods of inactivity and become hypersensitive. If we imagine that normal communication pathways are motorways, when they are blocked, a form of traffic chaos occurs in the brain, whereby information is re-routed in a disorganized form along what can be called side streets and minor routes. Additional synapses are generated everywhere and begin operating. When the signal is reinstated, the previously coordinated information routes no longer exist and, as in the case of a child, the appropriate functions need to be learned from scratch. Since they are receiving no normal signals during the phase of brain malfunction, the nerve cells also become more sensitive in an attempt to find the missing input. Once the signals return, this means they may overreact.[33] This implies that the basic functioning route that the neuron takes in its communication pathway ought not to be

[33] **University of Erlangen-Nuremberg, *What happens when nerve cells stop working? Total breakdown in the brain*, in Science Daily, 27 September 2017, <www.sciencedaily.com/releases/2017/09/170927093300.htm>.**

hindered, lest the human person risks losing one of the vital functions that pertain to his being. For this communication pathway to be fostered continually, there is the need of a link that connects the two neurons. This link is known as neurotransmitters, as already noted. Without the neurotransmitters, the possibility of connecting one neuron to another would be impossible. There is, in essence, an *interneuronal* relationship that exists in the brain amongst neurons.

Much like the neurons in the brain, the human being is entirely the same, structure wise, but no two persons are the same. Our individuality is contained in the fact of our being persons. "Individual," as an English word, is derived from two Latin words, namely, *in-* and *–dividus,* which translates literally to "not divisible". In the light of the non-divisibility of the person, Boethius defines the person as *naturae rationalis individualis substantia.*[34] According to Norris Clark, commenting on the thought of St Thomas Aquinas:

> …to be a person it is not enough merely to possess a complete individual intellectual nature which all admitted was an essential requisite, according to the classical definition of Boethius: a person is "an individual substance of a rational nature." To be a person in its own right such a nature would have to possess or "own" its own act of existence (*esse*). Thus the human nature of Christ, though a complete human *nature*, just like ours, was not a human *person*, because it was owned by a Divine Person (the Son or Word of God), in what is technically called the Hypostatic (i.e., personal) Union of God and man. Hence, it is the nature's own proportionate act of existence, actualizing it as an existent, which formally constitutes that nature a person. The person is the concrete whole resulting from this union, expressed by the term "I." Ordinary language indicates quite clearly the distinction by two distinct questions: "*who* am I?" (person) and "*what* am I?" (nature). Thus for St. Thomas the person could be defined as "an intellectual nature possessing its own act of existence, so that it can be the self-conscious, responsible source of its own actions." In a word, in perhaps the briefest and still one of the best descriptions of person ever given, a person is a being that is *dominus sui*, that is, master of itself, or *self-possessing* (in the order of

[34] *Substantia* (substance) is used to exclude accidents; *Individua*, that is *individum in se*, Boethius considers it synonymous to singularies (singular); *Rationalis naturae*, meaning that the person is predicated only of intellectual being. L. Geddes, Person, in the Catholic Encyclopedia, Robert Appleton Company, New York, 1911, http://www.newadvent.org/cathen/11726a.htm, retrieved 10th May, 2020.

> knowledge by self-consciousness; in the order of will and action by self-determination or freewill).[35]

Communication between human persons has to be willfully orchestrated; this actually implies that without the full participation of the will, then, interpersonal relationship would not be possible. We should think of the human will as the neurotransmitters that enable communication between the neurons; the will, thus, is what enables one person to engage in an interrelational rapport with the other person. Each single neuron serves a primary purpose in the grand scale of all that refers to coordination and functioning; this is what makes important the interneuronal relationship that is seen in the human brain. Each human person also serves a primary purpose in the grand scheme of all that is (reality). Thus, an interpersonal rapport is central to the human person. *Igwebuike* ideology, which stands in support of this interpersonal affinity amongst persons, gives the latter more credence in noting that there is also the ethic of reciprocity inherent in this ideology. According to A.I. Kanu,

> The philosophy of Igwebuike is not just a philosophical foundation for the ethic of reciprocity, but it is the ethic of reciprocity. It presents the ethic of reciprocity not just as a moral principle, but as a duty that one owns to himself or herself- everyone owns himself or herself of treating the other in a way that one would like to be treated. This is because Igwebuike sees a very strong relationship between every reality- an intricate web. To treat the other- that which is different from the self in a way that accords with honour is to treat oneself in a way that is honourable. However, to treat the other in a way that is dishonourable to dishonor oneself, because everything we do to the other has a way of getting back at us. Thus, in Igwebuike, the ethic of reciprocity is not just a moral principle, but a moral obligation one must have towards the other. In fact, from the above understanding, it is not just a moral obligation one owns the other, but an obligation to oneself.[36]

An interpersonal bond amongst persons, in the light of *Igwebuike*, should arise willfully, based on an understanding that every individual is a part of a grand scheme, greater than his/her selfish inclinations or trends. Such a bond is strengthened by continued interrelational acts, aimed at the

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[35] **N. Clark, *Person and Being. Aquinas Lectures*, Marquette University Press, Milwaukee, 1993, 26-28.**
[36] **A.I. Kanu, *Igwebuike As An Igbo-African Ethic Of Reciprocity*, in Igwebuike: An African Journal of Arts and Humanities Vol. 3 No 2, March 2017, 153-160.**

"sharing of the" good (*Igwebuike* bespeaks of sharing). It is acknowledged that there can be no strengthening of bond, if there is no bond to start with. As such, a willfully initiated relation, based on an understanding of the position of the human person in the greater scale of humanity, is key in the fostering this bond. This is the philosophy of *Igwebuike*[37].

Conclusion

It is impossible to situate the relationship of the human person on the determined relationship of neurons in the brain; true. But this is where the will of the human person comes in. As much as the neurotransmitters enable relations between neurons amidst the synaptic gap that is present between them, the will enables such relations between human persons. Yet, the will should be motivated by one truth, being that: life is a shared reality, one that presupposes a tailormade-cloth, measured, cut and sewn to fit into the curves, contours, shape and size, peculiarities and particularities of a being. Thus, every being has a missing part and is, at the same time, a missing part.

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[37] **Kanu, I. A. (2017). *Igwebuike* as an Igbo-African philosophy for the protection of the environment. *Nightingale International Journal of Humanities and Social Sciences.* Vol. 3. No. 4. pp. 28-38. Kanu, I. A. (2017). *Igwebuike* as the hermeneutic of individuality and communality in African ontology. *NAJOP: Nasara Journal of Philosophy.* Vol. 2. No. 1. pp. 162-179. Kanu, I. A. (2017a). *Igwebuike* and question of superiority in the scientific community of knowledge. *Igwebuike: An African Journal of Arts and Humanities*.Vol.3 No1. pp. 131-138. Kanu, I. A. (2017a). *Igwebuike as a philosophical attribute of Africa in portraying the image of life*. A paper presented at the 2017 Oracle of Wisdom International Conference by the Department of Philosophy, Tansian University, Umunya, Anambra State, 27-29 April. Kanu, I. A. (2017b). *Igwebuike* as a complementary approach to the issue of girl-child education. *Nightingale International Journal of Contemporary Education and Research*. Vol. 3. No. 6. pp. 11-17.**

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