

The Conception of Matter among the Indigenous Talensi People of Ghana

Thomas N. Tindan¹ James Azure Awuni².

1. C. K. Tedam University of Technology and Applied Sciences, P.O. Box 24, Navrongo. Ghana

2. Department of Biology Education, University of Education, Winneba. Ghana

* E-mail of corresponding author: ttindan@cktutas.edu.gh

Abstract

The way indigenous people conceive the physical world and the way they relate with it can provide insight into their conceptions of nature of matter. This study sought to provide insight into the conceptions of the nature matter among indigenous Talensis of northern Ghana. A survey was conducted using an interview schedule on 51 indigenous adults selected across Taleng-teng (the land of the Talensi) in the Upper East Region of northern Ghana. The common believes they hold about matter were identified and recorded. The analysis showed that indigenous Talensis refer to matter as 'bom'. They believe 'bom' has mass, volume, weight, and sentience or consciousness. What they refer to as 'bom-biil' (seed of 'bom') is synonymous to the molecule, while they view 'duomiri' as the basic constituent of 'bom'. Indigenous Talensis view 'duomiri' as not visible. They have no concept equivalent to the atom. They believe that matter could exist tangibly (like stone) or intangibly like energy. The indigenous Talensis believe that energy is another state of matter. Multicultural education could be promoted if similar studies in other indigenous are conducted and the findings preserved. Pupils from indigenous communities are likely to be bringing into the science classroom preconceived indigenous scientific believes. If science teachers in such indigenous communities are aware of some of these believes, they would employ the appropriate pedagogy to help them unlearn any preconceived 'misconceptions', and to learn the true concepts.

Keywords: conception, matter, indigenous, substance, knowledge, ethnographic.

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1.0 Introduction

Despite the mind-boggling efforts by scientists to define matter, there still is still a lot of work going to provide a more suited answer to the ancient question: What is matter? It must be admitted that the scientific conception of material today is more wavering and uncertain than it had been for a long time. A great many new interesting details are discovered every now and then. But to construct a clear, and easily comprehensible picture on which all scientists would agree is still very far away. This critical state in the scientific revolution, might explain why (Michie 2001) maintains that no objective picture of reality is possible.

1.1 Statement of the problem

Materials are the things that humankind uses to make articles of necessity, utility, and artistic beauty. Materials are made of matter, which simply is anything that has volume and mass. The fundamental task of science is to provide a better and more acceptable description of matter. Any serious model of matter must give a detailed answer to the question: 'What is matter from this specific model point of view?' Otherwise, even the best model would be no more than science fiction.

The problem that led to this study is in two-fold:

- i. Knowledge of a society's world-view of matter will help in understanding the way that society behaves, the way they relate with people of other cultures, the way they relate with the physical and 'spiritual' world and the way they do things generally. This therefore calls for research work into the nature of the conceptions of matter of individual communities.
- ii. Even though research on matter is very numerous in contemporary times very few of them are into the arena of indigenous knowledge. In fact, it is extremely difficult to obtain literature on indigenous conception of matter, especially in any indigenous community in northern Ghana. There is dearth of recorded information on indigenous knowledge of matter.
The people who have the indigenous ideas and whose lives are being controlled by such beliefs and ideas are phasing out due to *aging* and *civilisation*. When they are phased out, all the indigenous ideas and practices that they have will disappear with them.

These are the issues that are of concern in this study under the topic 'the conception of matter of the indigenous Talensi people of northern Ghana'. There has been no recorded information regarding the indigenous Talensi people's conception of matter.

1.2 The objective of the study

The Talensis have a longstanding history with unique culture and well-developed language. They are among the very few communities whose indigenous practices and traditions are not much ‘corrupted’ by civilization. The indigenous Talensi people have their own science. They have a lot of ideas and practices which they apply to effectively handle their daily problems. For instance, it is a common knowledge within the Talensi community that indigenous Talensis are able to ‘call’ rain, and to cause lightning to strike an offender. They are able to send signals (in the form of sound, light or tangible objects) between two distant locations at speeds equivalent to the speed of light. Most of these ideas and practices to which contemporary science has not found explanations to are not documented even though by these they live their normal lives.

It is therefore prudent that an analysis and presentation of the indigenous ideas about the nature matter be made, to initiate further research. Hence, the objective of this study was to gather and strain the indigenous Talensi people’s conception of the nature of matter.

1.3 Research Question

The research question that was addressed by the study is: ‘What is the conception of matter of the indigenous Talensi people?’

2.0 Literature review

2.1 Indigenous conceptions of matter

Records about the conceptions of the nature of matter of indigenous communities are very rare to come by, even though any society that has a cultural identity, and for that matter a ‘material culture’- the artefacts of the community, such as its pottery, its vehicles, its buildings or its clothing, must have some knowledge about what material (matter) is, in order to put them into appropriate use. If they do not even have a word or term to represent the concept, they have conceptions of the properties of ‘matter’ which makes them believe that different materials could be put to similar or different uses.

Within many indigenous cultures, the natural world is considered alive and associated with what could perhaps be called energies, powers, or spirits (Peat 1994). Traditions suggest that, through a system of mutual obligations, the society can enter into relationships with these spirits, energies, or keepers of the animals (Peat 1994).

Even though there is not found recorded information on the conceptions of the nature of matter of many indigenous traditions, some sense, however, was made from some Ghanaian proverbs and poems that were collated by some educated Africans. Rogers (1999) recorded the following Ghanaian proverb: ‘I felt the universe with my fingers; and it was compounded of bone and sinew’. This suggests that the Ghanaian who propounded this proverb views the universe or nature having strength, vigour, muscularity, brawn, power and stamina. It has a tangible nature. Awoonor (1971) also recorded the following proverb: ‘For he who sings of the sun sings of life here in the land of death’. This tradition has ascribed life to the sun; and has ascribed death the earth due to the evils and sufferings experienced in it. This discloses how the physical, the social and the spiritual are all integrated in the conceptions of the indigenous people.

Thus, the indigenous people conceive matter not in terms of its building blocks, but rather views matter in terms of its uses and perception by the senses. A lot about the conceptions of the nature of matter of the indigenous people can be obtained by observing their conversation and daily activities. Among the Talensis there are stories about people eating stones and feeling normal after that exercise. There is a story about the leader of a group of undertakers who made them bury him with a corpse that will not stay in the grave. When the undertakers got back, they found their leader resting under the shade and waiting for them to arrive.

It was also told of a hunter who threw up his bow and jumped and remained hanging on it in the sky to escape a buffalo that attempted to gore him. Again, a fetish priest in broad day light invited spirit beings to dine with him before his audience. They arrived announcing their arrival. They ate and drunk and entertained the audience with stories and jokes. The spirits mentioned the names of some individuals in the audience and told them specific details about how they conduct or misconduct themselves in some places. The audience heard the voices, saw the earthen vessels and calabashes passing from one place to another and their contents (food and wine) emptied but saw not the personalities.

From these stories it could be observed that there is a close interaction between the tangible and the intangible, the spiritual and the non-spiritual among the Talensis. Although some indigenous knowledge systems (IKS) can be found in sacred texts, the majority of it in Taleng-teng is oral-based; often revealed through stories and legends. This makes it difficult to transmit ideas and concepts to those who do not share the same language tradition and cultural experience. This was a major contributing factor in the selection of Talen-teng (the land of the Talensis) for the study.

World development records indicated that the regions in the northern part of Ghana were similar in certain characteristics like education, infrastructure, poverty level, medical facilities, environment, culture, traditions,

technology, belief systems and so forth ((UNDP, 2000). But differ greatly from the other regions in the southern part of the country, which have had a lot of influence of western education and modern science and technology. Such influences can affect one’s knowledge and conception of matter, which this study seeks to gather (Hewson & Hamlyn, 1984; Schultz & Lavenda, 2005).

2.2 Concept identification

On both personal and collective levels, human beings are active and creative participants in their own intellectual development. In the course of everyday lives, humans actively solve problems, make decisions, and give explanations to events in the world, and to their own roles in the events. Humans form opinions and look for solutions to problems they face. They create culture and civilisation and they participate in the collective problem solving needed to advance social progress in areas such as technology, medicine, education and civil rights.

Human intellectual development is unmistakably a process of creative self-determination. Intellectual skills and abilities are in one way or another, the product of self-governed activity in relation to the world (Lowe 2000)(Lowe 2000).

A number of procedures have been developed to study how people classify objects and events. One procedure which has been used extensively is the concept identification procedure (Alkholly et al. 2017). Ellis and Hunt (1993) stated two basic paradigms which have been used in concept identification. They are:

- i. reception paradigm, and
- ii. selection paradigm.

In the reception paradigm the stimuli are presented in some random or predetermined order before the subject. The subject classifies each stimulus as it is presented. Usually only one stimulus is presented at a time; and the subjects are required to depend on their memory of the events over a series of trials.

In the selection paradigm, subjects select the stimuli, one at a time, from a set of stimuli placed before them. The subject is presented the entire set of stimuli at the onset and they select each stimulus trial after trial on which feedback is desired. An obvious advantage of the selection paradigm is that one can observe how the respondent goes about solving the problem.

In this study the selection paradigm was adopted using the prototypes or exemplars of the concepts to be identified. First the items (stimuli) are presented to the subject to identify by naming them one after the other. The respondents are then stimulated to put together the exemplars of the concept, by identifying the common attributes or features of the concept that the exemplars possess. By questioning they are encouraged to identify describe the common attributes or characteristics of the exemplars that they have employed to classify them as belonging to the same concept. These attributes or properties will then be gathered to form their conception of the concept (matter) and its properties.

2.3 Hierarchy of concepts

Concepts are in levels or hierarchies of three (Figure 1). Rosch (1988) identified them as:

- i. Superordinate level,
- ii. Basic or ordinate level and
- iii. Subordinate level

The super ordinate level is the highest or most general level. In this study ‘matter’ is a superordinate level concept. Basic level concepts are moderately specific. ‘Solid’, ‘liquid’, ‘gas’ and so forth are examples of basic concepts. Finally, subordinate level concepts are lowest level or most specific concepts. Examples are ‘stone’, ‘water’, ‘kerosene’ and ‘smoke’, and so forth.

The conception of matter of the subjects was studied as they were asked to classify the lower-level concepts according to any identifiable common attributes or defining attributes. The attributes they gave for classifying them into ‘solid’, ‘liquid’ or ‘gas’, or into ‘matter’ (Figure 2.1) or ‘non-matter’ (Figure 2.2) or otherwise, were collated, scrutinized and synthesised to form their conception of matter.

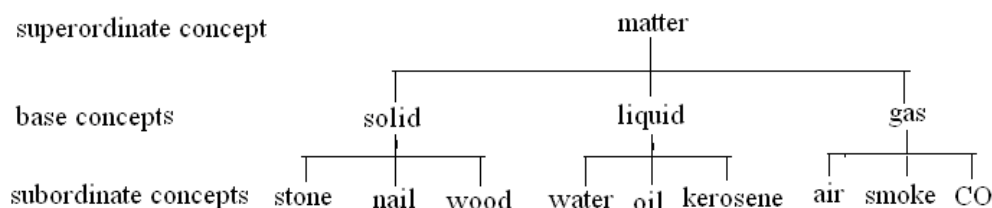


Figure 2.1: Hierarchy of Concepts

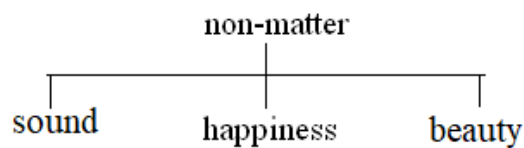


Figure 2.2: Non-Matter.

In recent years, a number of researchers have worked to develop methods of identifying people's conceptions that are not bonded to the traditional psychological testing laboratory or to the classroom. Some researchers have found that many non-western peoples are not used to thinking about things without relating them to some kind of context (Schultz and Lavenda 2005). These ideas were kept in mind in the design of the instrument.

3.0 Methodology

3.1 Research design

The study naturally falls under the category of a basic indigenous science research. The main focus of the study is to advance knowledge in the field of indigenous science. The indigenous ideas (or indigenous scientific knowledge) that the Talensi people have about matter was explored. It is also an ethnographic case study that used qualitative approach in the collection of data. As an exploratory study, it addresses the 'what' question. For instance, 'what is matter?', 'what conception does the indigenous Talensi people have about matter?', 'what is a stone?', and so on. Survey techniques were employed in collecting data. This is because survey research tends to be more open to using a range of evidence and discovering new issues (Simpson 1999). It is also less wedded to a specific theory or research question. A survey is often employed when a picture or information of what a large group of people in a community think, know, belief or feel about something or are doing is required (Neuman, 2003).

3.2 Population

The Talensi people occupy the Talensi district of the Upper East Region of Ghana. A typical section of Talen-teng includes the Tongo hills, the vicinity of which harbours the densest and oldest settlements of the district (Fortes 1967). There are over 130 towns, villages and settlements in Talen-teng. Its total population is 87,021 (GSS 2021). Nearly a third of it is concentrated within a radius of about six kilometres of the hills.

The target population for this study was the indigenous Talensi people of about 5,808 living in Talen-teng. These people were not schooled and had not travelled beyond the northern part of Ghana.

3.3 Sample

By systematic sampling 51 indigenous Talensi men and women (32 male and 19 female) living within the Talensi district of Ghana were chosen. They were all above 18 years in age. In addition, a sample of six educated Talensi adults (three male teachers, and three Senior High School (SHS) Form three students (two male and one female)) were purposively selected for the study. The six people were involved in a focus group discussion (FGD) to make clear some terminologies, ideas and believes that were expressed by the indigenous people during the interview.

Experience shows that for a quantitative study, a larger sample size will give a better estimate of population parameters than a smaller one. But in a qualitative study, sample's accuracy is more important than its size. A properly drawn sample of 57 adults can give a more reliable estimate on a population of 5,808, than a huge sample of the population which is poorly drawn. According to (Oppenheim 2000), where there are not many sub-groups to compare with each other, and where the population is relatively uniform in characteristics (which could be said about Talen-teng) (a homogenous population), the effect of the sample size on the results is no longer significant.

3.4 Instruments

Two instruments have been used in this study. They were semi-structured individual interview schedule, and a focus group discussion guide. In developing these instruments, the key issues that were to be investigated were identified. They include the following:

- i. whether the subjects have any awareness of the material world,
- ii. whether matter is real or imaginary to them,
- iii. whether they believe matter has sentience or not,
- iv. what they think is the basic composition of matter, and
- v. whether they think matter has any value to them.

The first instrument was used to interview the 51 indigenous Talensi adults. The second instrument was used at a focus group discussion (FGD) with six educated Talensi adults living in Talen-teng. The number of

items in the semi-structured interview schedule was 15 after reviewing and refining. The instrument for the focus group discussion was developed after the main interview was conducted. This was when it was realised that certain key findings that were encountered during the interviews needed elucidation.

3.5 Validity and reliability of the research instruments

In order to validate the findings of this study, it was appropriate that the population (accessible) consisted of people who were as minimum as possible influenced by western science and technology. Items of the interview and focus group discussion were reviewed by people of Tenlensi descent who understood and spoke Talin (the native language spoken by the Talensi people) fluently. Indigenous people from Talen-teng who have received some form of western schooling in their life and those who have travelled outside the northern part of Ghana could have had some cross-cultural influence (Aikenhead 2008). That is why they were excluded from the population. These attempts were made to increase the reliability of the findings and also to increase validity as much as possible.

In order to limit extraneous factors that could influence the indigenous ideas of the Talensi people, illiterate Talensi people who have travelled outside the northernmost regions (Upper East Region, Upper West Region, Savanna Region, North East Region and Northern Region) to the southern part of the country - where the impact of western technology is greater, were excluded.

3.6 Data collection procedure

The main approach to data collection for this study was by face-face individual in-depth interviewing, observation and focus group discussion. The respondents were given the freedom to express their responses in the way they wished, and as best as they could. Based on their responses, follow up questions were asked to help elucidate the responses. It was conducted in Talin language without an interpreter.

The first visit, after selection of the subjects, was for introduction and familiarisation. The subjects were briefed of what the activity was about. Negotiations were made for suitable dates and times for the interviews. The manner in which the interviews were to be conducted was made known to them individually. The actual interviewing took place on the second visit. It took roughly eleven weeks to complete data collection.

Different kinds of familiar material including stone, wood, nail, water, oil, air and smoke and so on were collected and presented to the respondents. The respondents were then required to group them into two or three or more according to certain common attributes they identify in them. Then they were to tell the criterion they used to group them the way they did. Wherever necessary, they were to regroup the objects again and again until the respondent found no other.

Interview with an individual participant lasted approximately 25 to 30 minutes. Notes were also taken. They were also recorded electronically. They were then cleaned and stored on the computer after the interview session for each day. Unfamiliar responds and confused responds were noted for clarification.

A focus group discussion was held after the individual interviews to foster understanding and to help clarify the unclear responses and to resolve unexpected issues that surfaced in the course of the study. It was also meant to ascertain the true meaning of some terms that were encountered during the interviews.

4.0 Data processing and analysis

4.1 Data processing

The responses of each subject were recorded both electronically and in text in detail. These responses were then coded into categories. They were then analysed to provide descriptions of their ideas in answer to the research question – their conception on the nature of matter.

In answer to the question: ‘What conception do the indigenous Talensi people of northern Ghana have about matter?’, the main ideas collected from the respondents were compared, and common ideas written. The commonalities were indicated clearly. They were then discussed at a focus group discussion, and what was agreed upon were written down.

4.2 Results and analysis of results

The results of the individual interviews and focus group discussion are presented below. The discussion involves the explanation of the findings of the interviews, particularly key concepts and terminologies that were obtained and recorded during interviews with the indigenous people.

1. ‘Bom’: ‘Bom’ literally means ‘a material thing’ or ‘a physical thing’. It refers to something non-human. That is, something without a spiritual or moral value. It means something that worth far less than a human being. The indigenous Talensi value the human soul more than any material thing including other animals. It is vulgar to the indigenous Talensi to refer to a human being as ‘bom’. ‘Bom’ could be living or non-living; tangible or non-tangible. A tangible living thing is ‘bom-vori’ (meaning ‘bom’ with life); whilst a non-living thing is ‘bom-kpiirung’ (meaning ‘bom’ with death). But ‘bom’ actually

- refers to the material part of anything. ‘Bom’ is so general that in the context of this study it is a super-ordinate concept. It is the word with a meaning closest to matter. The plural of ‘bom’ is ‘bom-nam’, meaning material things.
2. ‘Siel’: A living thing; or something with a soul and/or spirit. Both soul and ghost (or spirit) are referred to as ‘sii’. The distinction is only gotten from the context of the sentence. ‘Siel’ connotes some living element that has an evil potential; or it has the potential to generate fear in people. The true nature or shape of ‘siel’ is unknown. In fact, the word ‘siel’ is used when the identity of the thing meant in the conversation is unknown. A physical object is termed as ‘siel’ when it has a strange, unusual and non-definable nature; or defies human domination. It is common among the indigenous Talensis to experience certain diseases whereby a strange ball-like object moves in their bodies. Such unknown and unseen objects causing pain in the body is often referred to by them as ‘seil’; meaning ‘a strange thing’.
 3. ‘Bom-siel’: ‘Bom-siel’ means a tangible or non-tangible thing that has life, or, sentience. It includes both spiritual and non-spiritual things. Among the indigenous Talensi people, things that exist but whose identities are not known are considered as living, evil and hiding their identity. It is referred to as ‘bom-siel’. If something that is physical and tangible has an evil potential, the indigenous Talensi people prefer to call it ‘bom-siel’, meaning a ‘diabolical thing’, than call its actual name. They believe that the evil thing will hear when its actual name is being mentioned and come around to cause harm. Snake, scorpion, a witch and a wizard and all who practice and use evil spiritual powers on others are referred to as ‘bom-siel’ (‘bom-siel-nam’ or ‘bomsi-eh’ for plural).
 4. ‘Bom-biil’: ‘Bom-biil’ means the seed of any physical thing. It connotes particle or particulate. It means the basic unit of any tangible substance. It has all the properties of the substance of which it is. The ‘bombiil’ of one substance is different from the ‘bombiil’ of another substance. And so, there is ‘ko-biil’, a unit of water; ‘kug-biil’, a unit of stone; ‘kuru-biil’, a unit of iron; and so on. ‘Bom-biil’ is equivalent to a molecule of a substance. ‘Bombiila’ is the plural of ‘bombiil’.
 5. ‘Duomiri’: When ‘bombiil’ is broken further you obtain a ‘duomiri’. ‘Duomiri’ means a ‘dot’ or a ‘shadow’ or a ‘representation’ of the substance or matter in general. ‘Duomiri’ has a permanent characteristic. The ‘duomiri’ from water is the same as the ‘duomiri’ from stone iron or from any other substance. They have common features and properties. ‘Duomiri’ connotes something fundamental and basic to all matter. ‘Duomiri’ has no distinctions. The indigenous Talensi does not know how ‘duomiri’ is arranged and combined to determine what type of ‘bombiil’ they will form.
 6. ‘Naang’: ‘Naang’ denotes nature, character, feature and form. ‘La naang’ means ‘its nature’; and ‘u naang’ means ‘his nature’ or ‘her nature’. ‘Naang naang’ means ‘permanent nature’.
 7. ‘Kpiemire’: ‘Kpiemire’ or ‘Kpieung’ means ‘hard’. ‘Kpiemire’ is the Talensi term with meaning nearest to the word ‘solid’. ‘Kpiemire’ denotes tangible, incompressible and compact. ‘Kang-kan’ is another word similar to ‘kpiemire’. It means firmly bonded; and difficult to untie or break. It also means ‘hard’. It also connotes ‘lack of understanding’, ‘unyielding’; and of ‘a strange or difficult character’. ‘Kang-kan’ and ‘king-kin’, which have the same meaning, are gotten from the sound produced when a metallic object is hit with a hard solid object. It actually means hard or difficult. It is also common to hear others use the word ‘ku-u-gre’ in place of ‘kpiemire’. However, ‘ku-u-gre’ literally means ‘dry’. This should not be mistaken with ‘kugre’ which means ‘stone’.
 8. ‘Kun-kuog’: ‘Kun-kuog’ means liquid. It is obtained from the word ‘kuom’. ‘Kuom’ is ‘water’. Literally, ‘kun-kuog’ means ‘taken after water’, ‘watery’ or ‘water like’. In conversation one may simply say ‘kuog’, meaning ‘liquid’, instead of ‘kun-kuog’.
 9. ‘Yal-yal’: Air and gases in general are said to be ‘yal-yal’. ‘Yal-yal’ has the connotation that the items or particles of the bulk are very spacious. When seeds are sown on a land in a way that the spacing between seeds is very wide, they are said to be sown ‘yal-yal’. When there are very few items in ones room such that they are arranged with a lot of space between them, the room is said to be ‘yal-yal’. ‘Yal’ means ‘gap’. Therefore ‘yal-yal’ literally means ‘gap gap’. Gas is thus viewed by indigenous Talensi people to be composed of particles (though not visible to the naked eye) with large gaps between them. ‘Yal-yal’ also means ‘loose’; not tightly bonded or compacted. Sometimes transparent things are said to be ‘yal-yal’ intending to mean that there are not many objects in it to obstruct vision or viewing through it.

4.3 Summary of findings

1. Indigenous Talensis view matter as ‘bom’. ‘Bom’ literally means ‘a material or physical thing’. Sometimes it also refers to a non-human, or something far less in value or worth than that of a human being.
2. To the indigenous Talensi, matter has sentience. As was observed in the responses, 91.80% respondents

attributed life to one or more of the items they were asked to classify into living and non-living. Whilst 20.40% respondents put all the materials under living things (even though they were all non-living things). Only 8.20% grouped all under non-living things. They indicated generally that the materials could feel pains, talk, feed, move and reproduce. They believe matter can cause things to happen; it has the capacity to do work. And they believe these activities sometimes, are covert. ‘Bom’ (matter) has ‘buulum’ (mass), ‘karigir’ (volume), ‘tebihig’ (weight) and ‘vom’ (sentience or consciousness).

Talensis hardly differentiate between matter and energy. To the indigenous Talensi matter can change to energy and back to matter at any time and at any place under certain conditions. ‘Bom’ could be tangible like stone and water or non-tangible like sound and heat. Thus ‘bom’ can be matter or energy. Actually, the indigenous Talensis believe that any ‘bom’ can appear as matter or energy interchangeably. They have no separate terms for ‘matter’ and ‘energy’. The term closest in meaning to energy is ‘ya-alim’. This means ‘ability’. Strictly, it is the ability of man. But sound (voot), light (niihim), heat (tuulum) and any other kind of energy beside human ability (yaa-lim) are all variants of ‘bom’.

When there is a loud sound, one may ask: ‘lan bom ena?’ Meaning, ‘what matter (thing) is that?’ When there is a bright flash of light or an intense heat detected anywhere, the same question could be asked, ‘lan bom ena?’ The ‘bom’ refers to the sound, the flash of light or the heat. These are all energy. Thus, a stone, water, wood, sound, light, heat, are all ‘bom-nam’. The indigenous Talensi believes that the tangible elements including the human body can suddenly transform into sensible or non-sensible energy and can reappear into its original form or not, depending on the prevailing circumstances. In fact, energy is viewed as another state in which matter can exist. Thus, matter can exist in four states: ‘kpiemire’ (solid), ‘kunkuog’ (liquid), ‘yal-yal’ (gas) and ‘ya-alim’ (energy). Figure 4.1 shows the states of matter as conceived by indigenous Talensis.

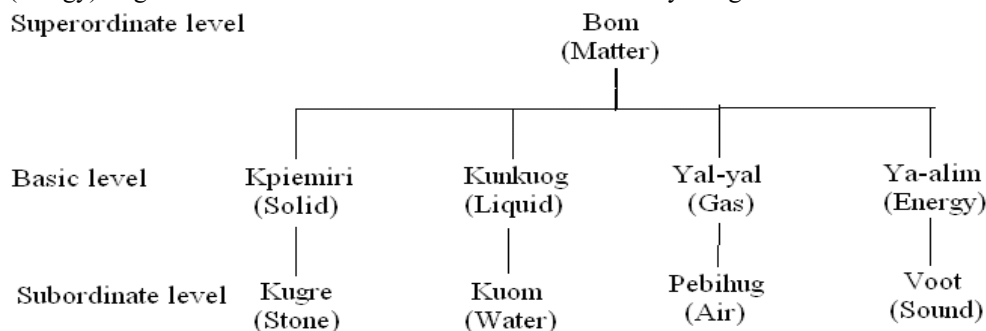


Figure 4.1: Hierarchy of concepts of indigenous Talensis conception of matter

Every matter is made of single units called ‘bom-biil’. Any further attempt to reduce ‘bom-biil’ will yield a ‘duomiri’, meaning ‘a dot of matter’, ‘a representation of matter’ or ‘a shadow of matter’. According to the indigenous Talensi, ‘duomiri’ can only be conceived, but cannot be attained by any physical means they know of. Nothing else can be done to ‘duomiri’. Further efforts will make it to disappear or go out of control. ‘Bombiil’ is not exactly the ‘atomos’ of Democritus; neither is ‘duomiri’ exactly the ‘hyle’ of Plato.

Every type of matter has its own ‘bom-biil’. For example, ‘ko-biil’ (seed of water), ‘kug-biil’ (seed of stone), ‘nyor-biil’ (seed of smoke). ‘Bom-biil’ could therefore be viewed as a molecule by those who have studied western science. ‘Duomiri’ represents a fundamental unit of matter. ‘Duoma’ (plural for ‘duomiri’) are indistinguishable. ‘Duomiri’ has a permanent characteristic. The ‘duomiri’ from water is not distinguishable from the ‘duomiri’ from stone; and can also not be distinguished from the ‘duomiri’ from any other substance. It has common features and properties. It will therefore be incorrect to say that ‘duomiri’ of indigenous Talensis is exactly the same as the atom. Atoms of different elements are distinguishable. The atom of carbon is different from the atom of silicon; and is different from the atom of hydrogen. But ‘duomiri’ has no distinctions. Indigenous Talensis can say nothing about the way ‘duoma’ constitute themselves to form a particular type of ‘bombiil’. The number of ‘duoma’ that pack together to form a particular ‘bombiil’ is not known

5.0 Conclusion and Recommendations

Even though the respondents were enthusiastic they were not self-assuming in their responses. Only one man brought ‘keberi’ (a traditional implement for producing fire) to demonstrate how it was used together with cotton and soot to produce fire. From the findings and analysis of the data gathered the following deductions have been made.

Indigenous Talensis have their own conception about matter. They call matter ‘bom’. They believe that matter has sentience or consciousness. They believe that matter can exist both as physical and spiritual. They believe that matter can be inhabited by a spirit. The properties of ‘bom’ (matter) are: ‘buulum’ (mass), ‘karigiri’ (volume), ‘tebihig’ (weight) and ‘vom’ (sentience or consciousness).

In the view of the indigenous Talensis, the basic unit of all matter is ‘duomiri’. It is the only fundamental

matter known among indigenous Talensis. It has no sub-particles; but energy.

Letting students know that they have their own indigenous conceptions of matter helps them to acknowledge that the concept is not foreign but relevant to them. It gives them the motivation to learn what other cultures conceive about the same issue.

We recommend that similar studies be conducted on Talensi's ideas or perceptions of science and technology, and the causes of diseases and drought. It is also paramount that the Education Service enforces the integration of indigenous knowledge for the teaching and learning of basic mathematics, the sciences and other related subjects. The Education Service can collaborate with local Non-Governmental Organisations (NGOs) in these areas.

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