COGNITIVE SEMANTICS OF CLIMATE CHANGE TERMS IN SELECTED NIGERIAN INDIGENOUS LANGUAGES

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Abstract

The paper examines the cognitive semantics of lexical units in the Tiv and Igbo languages using survey design.. The findings show that indigenous languages lack adequate terms for abstracts and highly scientific related scenes or objects unlike the source language. The Igbo uses more of descriptive forms in representing lexical units unlike Tiv. However, the Tiv lexicon has an optional parameter in the formation of lexical units for most technical scenes. Finding also shows that both languages share some level of similarities in morphosemantic and cognitive arguments on related scenarios. The Schematic analysis shows that to understand the semantics of climate change in indigenous languages; one requires further investigation into the cognitive nature of the climate science and frames to be able to integrate meaning in indigenous languages. The paper recommends for further researches in other indigenous languages so that they can play invaluable roles in climate change discourse.

Keywords: Semantics, Frames, Cognition, Climate change, indigenous language

1. Introduction

Climate change is one of the most pressing issues facing humanity today. Climate change is now a linguistics matter. Language is a strategic tool used by climate scientists, policy makers and communicators used in tackling or preventing climate change. It is equally believed that the meanings people ascribe to climate change are closely related to how the phenomenon is portrayed. The public's understanding of climate, climaterelated concepts and climate risk have shown that even when scientists define complex concepts, often related to extreme climate events and

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explain implications, the public interprets them from their general knowledge of the language and the world (Leiserowitz 2007). The situation where the public interprets climate change information from general knowledge may create misinterpretations in terms of meaning. The climate debate becomes particularly complex and multifaceted, causing a sociolinguistic problem based on semantics.

In most cases, the vast majority of indigenous people find it difficult to express climate change issues or create awareness on climate change risks due to inadequate vocabularies in their local languages. A competent native speaker of any language should be able to express things around in his or her mother tongue. However, it is always difficult to account for all scenes around in indigenous languages especially issues of science. Climate change is a science and most of the climate issues are captured in scientific forms. This situation often creates semantic issues to language users, especially in the selection of appropriate words or concepts to express them. In understanding the semantic structure of climate change concepts, one is required to look at the cognitive dimension to such climatic events. It is obvious that lack of rudimentary knowledge of some scientific happenings may bring about the inadequate vocabularies and appropriate semantics to understand climatic issues. The underlying motivations and concepts of the language users are reflected in their choice of language. According to Schoenfeld, Meier and Griffin (1979), the mass media are key actors in the identification and interpretation of environmental issues. That is, the media function as interpreters, intermediaries or messengers between scientific claims and the public. According to studies like Boykoff and Boykof (2007) & Ukonu (2012), the public, including policy actors, learns about science principally through the mass media. However, the media lacks the semantic knowledge of climate change vocabularies in indigenous languages. In addition, most of the climate change concepts are framed by climate scientists or policy makers for specific purposes; therefore, in an attempt to look at their semantic structures in the local languages, one is also expected to understand the linguistic science of the concepts to be able to appreciate their complex formations.

It is, indeed, a challenge for communicators getting the message of climate change to rural dwellers given to the complex nature of the concepts and lack of linguistic studies in this direction. No wonder, Makwanya (2013) observed that the language used to communicate information on climate change is not inclusive of the majority of the people of the Sub Saharan region. This is due to the technical and the ambiguous nature of the terminologies. Meanwhile, Dhewa (2007; 11) notes that indigenous African knowledge has much to offer science, but only if science can be translated into local languages. This explains a similar stand with Mbah and Ayegba (2013), who affirmed that lack of proper awareness to local language speakers on climate change brings about possible implications and management lapses.

Badly framed concepts will lead to inaccurate and sometimes misleading information. It is in a bid to avoid the gap and appreciate the role local languages can play in climate change that the researcher thought it necessary to embark on this research. The research is therefore aimed at analysing the semantics of the climate change concepts and also providing native speakers of the selected Nigerian languages with the needed terminologies for some aspects of climate change to help them contribute their quota in improving their environments.

Tiv language is spoken in the Middle Belt Nigeria and Igbo in the South Eastern Nigeria as can be seen on the map below:



2. Literature Review

Insights into how climate change concepts are framed in various contexts are essential for the study of how climate change is perceived and responded to.

This is an idea progressively employed in environmental communication generally (Hansen and Doyle, 2011), and in studies of the communicative aspects of global climate change specifically. The framing literature suggests that, to form a sense of the globe, individuals suppose in terms of unconscious structures referred to as frames (Goffman, 1974).

Lakoff (2010) argues that every one of our information makes use of frames, which each word is outlined through the frame or frames it activates; consequently, all thinking and talking involves "framing". Thus, after we discuss global climate change, we tend to continuously frame it in how, whether or not or not we tend to be alert to it. Framing will therefore be seen as a method during which the substance of the frame is consistently negotiated between varied frame articulators or claim manufacturers. For instance, if global climate change is framed as an associate environmental drawback, instead of as a problem of development or economic science, this means that we'll discuss, compare, and perceived global climate change in regard to how we tend to understand alternative environmental problems. As global climate change is inevitable-framed in a method or another, framing analysis is crucial in furthering our understanding of however global climate change created sense of and saw. Though wide used, the thought of framing has been criticized for its theoretical and method impreciseness (see, e.g., Entman, 1993, 2007; Scheufele, 1999; Scheufele and Tewksbury, 2007; Weaver, 2007). There is clearly no universal definition of the concept of framing, which is used in different ways in different traditions.

3. Semantic Interpretation Of Concepts In Igbo and TIV

The Igbo and Tiv conceptualize weather scenes in a related form, but with some peculiarities in morphological and semantic interpretations. In situations where there is an increase and decrease in weather condition in relation to specific environments, the lexical structure and semantic argument changes in order to describe such changes. The technical weather concepts are more of scenes (object and events) that cannot easily be identified and described with indigenous people's knowledge. Some of the concepts are translated into the Igbo and Tiv and concepts that described weather situations in the selected domains are not found in the same way with weather situations in western societies or vice versa. The variations in weather situations in a particular environment prescribe the pattern of lexical formation and semantic realisation. The Igbo and Tiv as shown below



The illustrations indicate that Igbo uses more of a descriptive form of representation of a single lexical unit unlike Tiv. However, the Tiv word structure has an optional pattern in the formation of most technical scenes, especially for climate and climate change scenarios. It is semantically accurate to describe 'rainfall' as 'wura^{rain} noon^{fall}, in a discursive context.

The idea that one cannot understand the meaning of a single word without access to all the essential knowledge that relates to that word was applied in the semantic interpretation of base concepts. Frame in this context refers to any concept that can only be understood if a larger system of concepts is also understood. This suggests that frames play important roles in connecting climatic experiences in one's mind and interpreting the semantic structure of such concepts based on background knowledge of the native speakers of the languages. In a general sense, cognitive frames are usually expressed as slot-filler representations which show structures of interconnected roles together with constraints on the possible or likely fillers of those slots. The frames are seen in this context as partially ordered sets of climatic events and objects, as well as the concepts used to describe such climatic scenes and how these concepts are related to each other. The understanding of a climatic concept is by virtue of a speakers' exposure or knowledge of a particular situation or environment.

3.2 Semantic Frames And Frame Elements

Frames as cognitive structures and associated elements are explained in line with the frame semantic theory. The semantic prominence and symbiotic relationships that exist between a concept and other concepts is demonstrated in Igbo and Tiv languages.

(2). Frame: oge ^{time/period} /shi	e ^{time/period} / season (we	ather concepts)
IGBO	TIV	GLOSS
a. ự́bọ̀cḣ̀ị́ị́n]	yángé _{,n}	day
b. <i>ízù</i> .n	láádi, _n	week
c. ọ́nwá _{.n}	wér _{,n}	month
d áfọ̀ _{.n}	nyòm _{.n}	year events
e ókóchì _{.n}	nyóm _{,n}	dry season
f ùdú _{adj.} -mmīrī ^{water} .n	fám, _n	rainy season
g ýgỳrỳ _{.n}	hír, _n	harmattan
h óyī _{.adj.}	ńdòhól _{.n} /wúhé, _{adj}	cold
i òsúsó n	ìúsá n	sweat events
j èkpòmókų́ "	mtséé. _{.n} /íchíén ^{heat} y	ólù ^{body} heat/heat time
j èkpòmóký _{.n} k ányánwụ _{.n}	mtséé. _{.n} /íchíén ^{heat} y yángé. _{,n}	ólù ^{body} heat/heat time
j èkpòmóký _{.n} k ányánwū _{.n} l kpákpāndò _{.n}	mtséé. _{.n} /íchíén ^{heat} y yángé. _{,n} shán _{.n}	ólù ^{body} heat/heat time sun star object
j èkpòmóký _{.n} k ányánwū _{.n} l kpákpāndò _{.n} m ýbọchì	mtséé. _{.n} /íchíén ^{heat} y yángé. _{,n} shán _{.n} sév _{adj}	ólù ^{body} heat/heat time sun star object day time
j èkpòmóký _{.n} k ányánwụ _{.n} l kpákpāndò _{.n} m ýbòchì n ỳtýtỳ _{.n}	mtséé. _{.n} /íchíén ^{heat} y yángé. _{,n} shán _{.n} sév _{adj} pépé _{.adj}	ólù ^{body} heat/heat time sun star object day time morning
j èkpòmóký _{.n} k ányánwụ _{.n} l kpákpāndò _{.n} m ýbòchì n ỳtýtỳ _{.n} o. éhìhìè _{.adj}	mtséé. _{.n} /íchíén ^{heat} y yángé. _{,n} shán _{.n} sév _{adj} pépé _{.adj} átétán ^{adj} /nóm _{adj.} y	ólù ^{body} heat/heat time sun star object day time morning ángé ^{sun} .n afternoon
j èkpòmóký _{.n} k ányánwų _{.n} l kpákpāndò _{.n} m ýbọ̀chì n ỳtýtỳ _{.n} o. éhìhìè _{.adj} p ḿgbèdè _{.adj}	mtséé. _{.n} /íchíén ^{heat} y yángé. _{,n} shán _{.n} sév _{adj} pépé _{.adj} átétán ^{adj} /nóm _{adj.} y àìkíér _{.adj}	ólù ^{body} heat/heat time sun star object day time morning ángé ^{sun} .n afternoon evening events
j èkpòmóký _{.n} k ányánwụ _{.n} l kpákpāndò _{.n} m ýbọ̀chì n ỳtýtỳ. _n o. éhìhìè _{.adj} p ḿgbèdè _{.adj} q ábàlì _{.adj}	mtséé. _{.n} /íchíén ^{heat} y yángé. _{,n} shán _{.n} sév _{adj} pépé _{.adj} átétán ^{adj} /nóm _{adj.} y àìkíér _{.adj}	ólù ^{body} heat/heat time sun star object day time morning ángé ^{sun} .n afternoon evening events night

The semantic structures in the example (2) are sub-classified under [a-d], [e-f], [g-h], [i-j],[k-m],[n-q] and [r-s]. The categorizations of semantic frames in the selected languages are based on relationships that exist between weather/climatic scenes and the conceptual plot. In each frame element under sub categorization, there are other elements that are considered as immediate pairs while others cannot be slot in as fillers. For instance, the cognitive frame of [àfợ/nyòm/year] evoke the FEs;

ýbọ̀cḣ̀i̇́ _n	yángé _{,n}	day/
ízù _{.n}	láádi, _{n/} àdùà	week
ónwá _{.n}	wér, _n	month/

The FEs that describes *àfó/nyòm* falls within the argument of cycle schema which is an image schema that involves the repetitious nature of events (second, minute, hour, day, week and month) that have starting point with progression and a return to the initial state.

In Igbo and Tiv, concepts like *ónwá /'wér'* have the same lexical structures with different but related semantic representations. Both languages used the same form in describing 'month' and 'moon'. The source domain has separate terms for each of these weather scenes. The linguistic sciences of the concepts show that Igbo and Tiv exhibit a symbiotic relationship in representing some weather/climatic scenes. In a similar vein, to understand the concept '*yángé'* as an object requires a sense-relation on the role performs or ascribes to it. Indeed, '*yángé'* as 'sun' relates to the '*yángé'* as 'day' in the sense that, when we understand 'day time', we must recognize it through brightness offers by 'sun'. The cognitive argument is that, if there is no sunlight, there no day time and vice versa. The semantic structures of these concepts further proved that indigenous languages exhibit common parameter in identifying related objects and events. These scenarios further explain the dynamic nature of human language and the uniqueness of some indigenous languages in environmental discourse.

Based on the postulation of frame semantic theory, understanding the semantic frame requires understanding of other related concepts as displayed in 2, a-r respectively.

(२)	Frame:	<i>mmír</i> ī	òzùzò/wùrá/	rain	(weather &	climate	change)
`_'			0-0-0,0.		(e

IGBO	TIV GL	oss
a. mmírī	m̀ngérèm ⁿ	water 🥆
b. ìfúfé/úfèrè/úhèrè _{./n}	àbévé ⁿ /ahùmbé _{.n}	breeze/air \
c. èbìlì _{.n} ḿmírī ^{water}	bó. _{adj} àhùmbè _{.n}	storms
d Ìfùfè/ikuku	ìjévé àhúmbé	wind
e. égbè élúígwē	ìdyùrán ⁿ	thunder / W
f àmỳmà ⁿ	ìnyíá, _n ,	lightening
g. égwùrùgwù	ìkùmè _n	rainbow /
h úrùkpùrù	àbéén. _{.n}	clouds \prec
i mbuzé n	ìkyúàn, _n	erosion CC
j ídè <i>ṁmírī</i>	ávéngé,,n	floods 7
k. ndi na-ezo mmiri	-	rain- ma 🕅

The cognitive and semantic contents of the base concept [$\acute{m}m\acute{rr}$ $\acute{o}z\acute{u}z\acute{o}$ / $w\acute{u}r\acute{a}$ /rain] connects to scenarios that are associated with it. The process and effects of 'rain' as shown in (3) can be understood in relation to associated FEs. In contrast to the Tiv mental pattern for describing rain, the FE (ndi na-ezo mmiri) in Igbo presents force dynamics called

compulsion schema as counter force that brings about rainfall within a particular place and time. The forces of rain-makers in Igbo suppressed nature in order to change weather condition. The balance between the forces results from their interactions in which the rain makers exerted control over the weather outlook at a particular place. This shows that basic feature of a force-dynamic expression of precipitation in this context is the presence of two force-exerting on elements. According to Talmy (1981), natural rainfall situations can be seen as *agonistic entity*, meanwhile the counter force entity (rain-makers) that opposes the natural forces can be seen as an *antagonistic entity*. However, the counteracting forces that result in such abnormal rainfall is not obtainable in the Tiv epistemology.

(4) Frame : kábòn	/ Carbon (Climate Change)	
Igbo	Tiv	Gloss
(a) ndị nzo kábòn	mbaashórobó mba kábòn	carbon sinners
(b) ngàrùbè kábòn	àhwár ù <i>kábòn</i>	carbon cycle
(c) ỳtý kabon	kpándé kù kábòn	carbon tax
(d) kabon sínkì	<i>kábòn</i> siniki	carbon sink

In (4a), the single base supports the number of profiles which means that, each concept as demonstrated in (4a-d) uses the concept of 'kabon' as a base or root. The concepts '*ndi nzo* /mbashórobó/sinners are used metaphorically to connect the idea of religion to climate change policy. In the real sense 'carbon sinners' depict countries that violate the Kyoto Protocol agreement on environmental sustainability. The way in which climate change scientists used concepts to describe climatic scenes often appear to be a deliberate way of relating information through specific domains. This means that Igbo and Tiv speakers can only understand the cognitive structure of the source language before the semantic argument in their languages hence the scenes are scripted in a figurative way. Each base concept has its profile or frame element as posited in semantic frame theory. From socio-semantic perspective, to understand the semantics of climate change as expressed in indigenous languages, one requires further investigation into the culture and cognitive nature of each language to be able to interpret meaning.

4. Findings And Conclusion

The paper observed that climate change discourse is almost nonexistent to the vast majority of the speakers of indigenous languages giving to its scientific nature. The analysis suggests that indigenous people lack rudimentary knowledge of climate science; thereby lacks appropriate conceptual slots in representing some climate science around in indigenous languages. Evidently, most of the technical LUs that describe the event and the object have no appropriate lexical equivalence in either Tiv or Igbo languages.

Finding also showed that most of the concepts describing scenes or events in the selected indigenous languages displayed a level of similarities in morpho-semantic descriptions. In other words, they shared lexical semantic structures with related scenarios. The Schematic analysis showed that to understand the semantics of climate change in indigenous languages; one requires further investigation into the cognitive nature of the climate science and frames to be able to integrate meaning in indigenous languages.

The paper has shown that one can only understand the cognitive structures of the concepts in the source language before its semantic arguments in indigenous languages hence some of the scenes are scripted metaphorically. The paper recommends for further researches in other indigenous languages so that they can play invaluable roles in climate change discourse.

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