International Journal of Development and Sustainability
ISSN: 2186-8662 – www.isdsnet.com/ijds
Volume 13 Number 10 (2024): Pages 864-881
ISDS Article ID: IJDS24043001

The role of indigenous cultural practices in mitigating human wildlife conflicts for sustainable development

Muzwa Mukwambo [1*], Kenneth Nzwala [2], A.M. Musiba [1]

[1] *University of Namibia (Katima Mulilo Campus) Department of Applied Social Science*
[2] *University of Namibia (Katima Mulilo Campus) Department of Early Child Development*

Abstract

Lessening human-wildlife conflicts through use of cultural practices spurs sustainable development. However, the avoidance of cultural practices which were in place historically and the unbalanced increase in the components of the environment have helped compromise the relationship between humans and wildlife. To mitigate this with the aim to revert to normalcy, this qualitative study used observations, interviews and audio-visual techniques to understand how cultural practices indigenous communities engage can be used to allow communities under investigation lessen human-wildlife conflicts and thus bringing sustainable development. Contradictions which emerge when systems are allowed to degenerate to that level have helped us see that the theory which can be used to understand the phenomenon of human-world life conflict is the Cultural Historical Activity Theory (CHAT). Also, to support the observed phenomenon, socio-cultural and social realism were found fit for this purpose. Using these frameworks, revelations are making cultural practices extant and can help lessen human-wildlife conflicts in communities where they are being manifested. We also worked on sample, sampling techniques, and how data were analyzed.

Keywords: Conflicts; Cultural Practices; Sustainable Development; Human-wildlife

Published by ISDS LLC, Japan | Copyright © 2024 by the Author(s) | This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Cite this article as: Mukwambo, M., Nzwala, K. and Musiba, A.M. (2024), "The role of indigenous cultural practices in mitigating human wildlife conflicts for sustainable development", *International Journal of Development and Sustainability*, Vol. 13 No. 10, pp. 864-881.

[*] Corresponding author. *E-mail address:* mmukwambo@unam.na

1. Introduction

Maintaining harmony between humans and wildlife is a principal goal any community wishes for and societies that have existed before us have managed to achieve this (Rodina, 2021). Under such circumstances, coexistence of fauna and flora could be attributed to the use of sustainable ways of harvesting products from the environment. Also, this was attributed to the fact that the human population had not yet rose up to where it is now and adherence to cultural practices which are viewed as activity systems which were in place by then helped to prevent human-wildlife conflicts, thus degenerating competition for natural resources between human and wildlife.

In contrast, today the population has increased and there is competition between wildlife and human beings (Fynn and Bonyongo, 2010). Also, the non-valuing of cultural practices as it was dusted out from the community made communities change the way they interact with the environment as they changed their culture as it is dynamic (Odora-Hoppers, 2010). Spencer-Oatey (2008) also acknowledges the idea that culture is dynamic. Culture where cultural practices used to mitigate human-wildlife conflict is "that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society" (Tyler, 2012. p. 1).

Abandoning cultural practices has created clashes which we see today as human-wildlife conflicts. It is then the focus of this study to bring some mitigating measures on human wild-life conflicts by understanding how other communities who kept some of their cultural practices extant have managed to create conducive human-wildlife conflict free environments and how they can bring sustainable development, ensuring that present generation meets its needs without compromising the ability of future generations to meet their own needs (Brooks, 1990). This will be achieved through looking into theoretical frameworks, the socio-cultural and social realism that are the footing used to construct knowledge (Grant and Osanloo, 2014). The CHAT was used as a tool since there are concepts and constructs in it that helped to explain the phenomenon. Cultural practices done in communities as well as the methodology used are explained. Finally, data from three regions in Namibia which manifest that some communities still observe their practices is given and then supported by concepts and constructs from the theoretical frameworks and literature.

2. Theoretical frameworks

The theoretical framework as the footing reveals the application of a theory, in this case, how the cultural practices which certain indigenous communities still use in regions of Namibia spur conducive human-wildlife conflict free environments. This, when practiced promotes sustainable development, that is the economic value of the current generation which would also be used by future generations. Imenda (2014) supports the idea of frameworks applied to understand social phenomena. The theoretical frameworks used in this study are the Socio-Cultural Theory, Social Realism and Cultural Historical Activity Theory (CHAT) and are discussed in the sections below:

2.1. Socio-cultural theory

Socio-cultural theory is based on the premise that cultural practices are embedded with knowledge and are products of social interactions, involving adults, peers and teachers in a community (Vygotsky, 1978). These

cultural practices are learned on two planes or levels, namely, interpsychological and intrapsychological planes respectively. The medium used to learn and understand these cultural practices is a language and in our case all the regions studied use different languages. Language as an element of culture as Tyler (2012) suggests forms a cultural system when it interacts with other elements of culture such as cultural practices, norms and beliefs conveyed through language in any given community (Vygotsky, 1978). It is the language in each community that is used to culturally mold specific activities to develop a community member's thinking, and this differs between cultures because different cultures stress different values (Blunden, 2010). Faitar (2009) views this as he suggests that different cultures are bound to do things differently depending on their traditions and history. The historical linkage makes it relevant to have the CHAT used as a tool in this study and this explains why we included it in the section which comes immediately hereafter. However, if a particular cultural activity emerged under the same condition, it will make different indigenous communities to have congruent practices.

For instance, in the Zambezi and Kavango Regions of Namibia, communities separated hundreds of kilometers away are found either bathing, doing laundry work or swimming at certain parts of the rivers which are infested with crocodiles. The Okavango River with a length of 1 600 kilometers has its source in the highlands in Angola and passes through Namibia and it is here where the Okavango people can be found either bathing, doing laundry work or swimming at certain parts because their cultural practices guarantee them that such points are inaccessible by crocodiles. Similarly, habitants staying closer to the Zambezi River, the 2,574-kilometre-long river with source in Democratic Republic of Congo and other tributaries supplying it starting from Angola and Zambia are also found either bathing, doing laundry work or swimming at certain parts of the river for the same purpose as pointed out above.

These two studied communities know that they are safe by bathing at these two different rocky points since this practice comes with knowledge that a crocodile will not access a rocky place in the river. This is because its belly is too soft in such a way that once it does, it will be scratched. As a result, parts of its body come out and instead of it feeding on other animals it is itself which incurs the challenges. Other aquatic animals will start feeding on it and it dies. So, through using such practices, those who do not know these ethnic groups might label them as using mysterious power. This is not so as it is the power of their indigenous knowledge which they use to stay in harmony with nature and the environment.

Through this knowledge, they are able to repel conflicts with crocodiles which infest these two rivers. By restricting themselves to these rocky areas of the rivers when they want to bath, doing laundry work or swimming, they are not preyed on by crocodiles and this reduces human-wildlife conflict. Furthermore, it is because if a member of the community is preyed on they start searching for the crocodile and kill it and this does not spur sustainable development that serves both current and future generations' needs.

All this emerges due to us embracing the socio-cultural theory which as we see considers the acquisition and use of cultural practices as cultural, social and dynamic. The dynamic nature of the same cultural practices has made some other communities abandon theirs or make amendments but with some challenges emerging. To embrace this socio-cultural theory in full we found it necessary to link it with social realism and this also shows the teacher that there is a need to do cultural translation, a hybrid curriculum as Bhabha (1994) suggests

2.2. Social realism

Social realism has some principal concepts and constructs that backup that indigenous communities' practices reflect reality (Elder-Vass, 2008). To cognize this, we define social realism and some of its tenets. Schwandt (1997) views social realism as theories that refer to reality of features of the world. 'Reality here refers to whatever it is in the universe (i.e., forces, structures, and so on) that causes the phenomena we perceive with our senses" (Schwandt, 1997, p. 133). In relation to this study, the structures in place are the cultural practices that are activity systems indigenous communities use to help lessen human-wildlife conflict to sustain the environment.

Socio-cultural theory looks into social systems and cultural systems as components; however, on the other hand, social realism theory deals more with social systems. Social realism is premised on the understanding that real social structures and systems exist, and they are stratified, and these layers are the real, the actual and the empirical (Bhaskar, 1978). The same social structures and systems are emergent entities which operate independently of human ideas (Archer, 1995; Willmott, 1997; Phillips, 1987). Social structures, customs, traditions, norms, cultural activities and rituals Mbiti (1991) view as important in indigenous communities are real. If they were not real, the chances of existing in space and time would not be there. These have existed before and after the knower and they have a causative influence on social events (Archer, 1995).

The territory of the real is where the mechanisms of the structures are, in this case, the explanations the indigenous communities have about the cultural practices the community members engage to achieve sustainable development in their surroundings and human-wildlife free environments. These contribute to engendering the actual occurrence. For instance, a cultural practice where a domesticated animal is smeared with human urine or traditional perfume to repel predators such as jackals, lions, leopards and others is practiced. The mechanism is that urine in the Herero communities (in Namibia) is a valuable tool used to prevent human-wildlife conflicts as this practice keeps predator wildlife away from domesticated animals. This helps reduce human-wildlife conflict as the scent the predators smell is that of a human being and are forced to run away. The real stratum forms a portion of the unobservable which must be understood in order to explain that which is observed. Furthermore, the territory of the real contains events which have been prompted by the mechanisms in the real layer. In the case of the practice of smearing human urine or dusting a domesticated animal with traditional perfume, the knowledge used is the domesticated animal loses its natural smell and this makes the predators not scent them. Predators are not prophets who prophesy the position where domestic animals are grazing or are enclosed at night. However, they are scent sniffers which enable them to locate their prey. Alternatively, the presence of human urine or traditional perfume makes them feel threatened that humans are nearby. The actual layer manifests an event that is the occurrence of the activities of treating these animals for them not to be preyed on. Finally, the empirical includes the observable experiences. That is domesticated animals return home unharmed if they are fumigated with human urine or dusted with traditional perfume. Elder-Vass (2008) proposes that actual events and entities are inherently multileveled and downwardly inclusive.

Bhaskar (1993) views empirical reality as that which can be observed whereas actual reality is the second layer of reality camouflaged by the empirical layer. The actual layer is manifested when events are activated. Alternatively, the actual layer can be described as that which occurs. Sustaining the environment requires that community members understand the components of the real layer which emerges in the other layers.

The real layer is whatever occurs because it exists, whether people are knowledgeable of it or not, and it can be social or natural. It is linked to causal influences which are not separated from the nature of the entity. For example, according to Archer (1995), the property of an object causes it to behave in the way it manifests itself and will always have an effect on other systems connected to it. As stated earlier, a change in the scent around domesticated animals is a property which cannot allow a predator to smell its prey. In the area of world views, the hegemonic nature of other views which Breidlid (2013) suggests makes other indigenous communities who have allowed their cultural practices that are activity systems to be extinct to embrace only one world view. These do not establish friendly human-wildlife environments and as a result do not spur sustainable development as it brings contradictions explained in the CHAT.

Elder-Vass (2008) suggests that the three domains of reality discussed above have a certain ontological depth. Combining the causal mechanisms from a number of different levels equips community members with experiences which are not only going to end as sense data (Elder-Vass, 2008). These experiences as part of reality are applied in the community to sustain the environment and the experiences are part of structural systems which can be employed in sustainable development projects.

2.3. Cultural historical activity theory

Unlike the other two frameworks discussed, socio-cultural and social realism discussed above do not bring concepts of history into consideration. Instead, the CHAT takes into account the social, cultural and historical aspects of indigenous communities. It is for this reason we bring it into this study.

The ontogenesis of CHAT is in the period of the Enlightenment and is not only the Marxist conceptions on which it is anchored on. Enlightenment generally emphasizes the power of reason and the use of logic and criticism to discover the natural laws governing human society and environment. This makes us see that the cultural practices as activity systems indigenous communities' use such as those that emerged in the Herero, Lozi and Okavango to mitigate human-wildlife conflict are a product of using logic and criticism. Kant (1788) defines enlightenment as the process of thinking for oneself, employing and relying on one's own intellectual capacities in order to determine what to believe, apply and how to act, which leads to spurring sustainable development that is devoiding other generations of resources which would have been exhausted in a community. Kant (1788) further understands how one constructs knowledge and other conceptions from materialist philosophers like Feuerbach to Marx and Plekhanov paved the way for CHAT. Later strands of constructivism, namely cognitive and social theories also played a role in CHAT, and this has then made us discuss socio-cultural and social realism as CHAT has its base in these theories.

CHAT, examines human activities such as cultural practices that are activity systems under consideration in this study and how we can understand to uncover tensions caused by systemic contradictions (Cole and Engeström, 1993; Engeström, 1987). In human activities, contradictions emerge. This happens when the conditions of an activity place the subject in contradictory positions that can impede achieving the object or the nature of the subject's participation in the activity while trying to achieve the object using tools. In relation to this study, these elements, the subject, object and tools can be represented as in Figure 1. These elements can be best seen as a community with rules, and with division of labour. This is all shown in the modified diagram of Engeström (1987) as adapted to suit our study.

These elements in the activity system which come as a result of the intention to emerge a human-wildlife conflict free environment to bring development which is sustainable are dialectically related. The dialectical

relationship makes us see that if there is violation within the components then conflicts emerge as witnessed in our study when predators prey on domesticated animals or destroy the community's infrastructure.

For instance, conflicts and contradictions emerging in the community are elephants destroying water tanks or even pipes when they do not find water to drink in open earth dams. Earth dams were in the communities before but due to population increase, water has been over- used. Also, sometimes water has been forced to evaporate excessively due to bathing or doing laundry work using soap in the pond in which case water evaporates faster. The soap which they use lowers the surface tension and makes water evaporate faster leaving nothing for elephants to quench their thirst. This is referred to as the Capillary Effect or Marangoni Effect mentioned by Mukwambo (2017) to show how soap affects the vapour pressure of water and represents a cultural practice indigenous communities engage to curb human-wildlife conflicts.

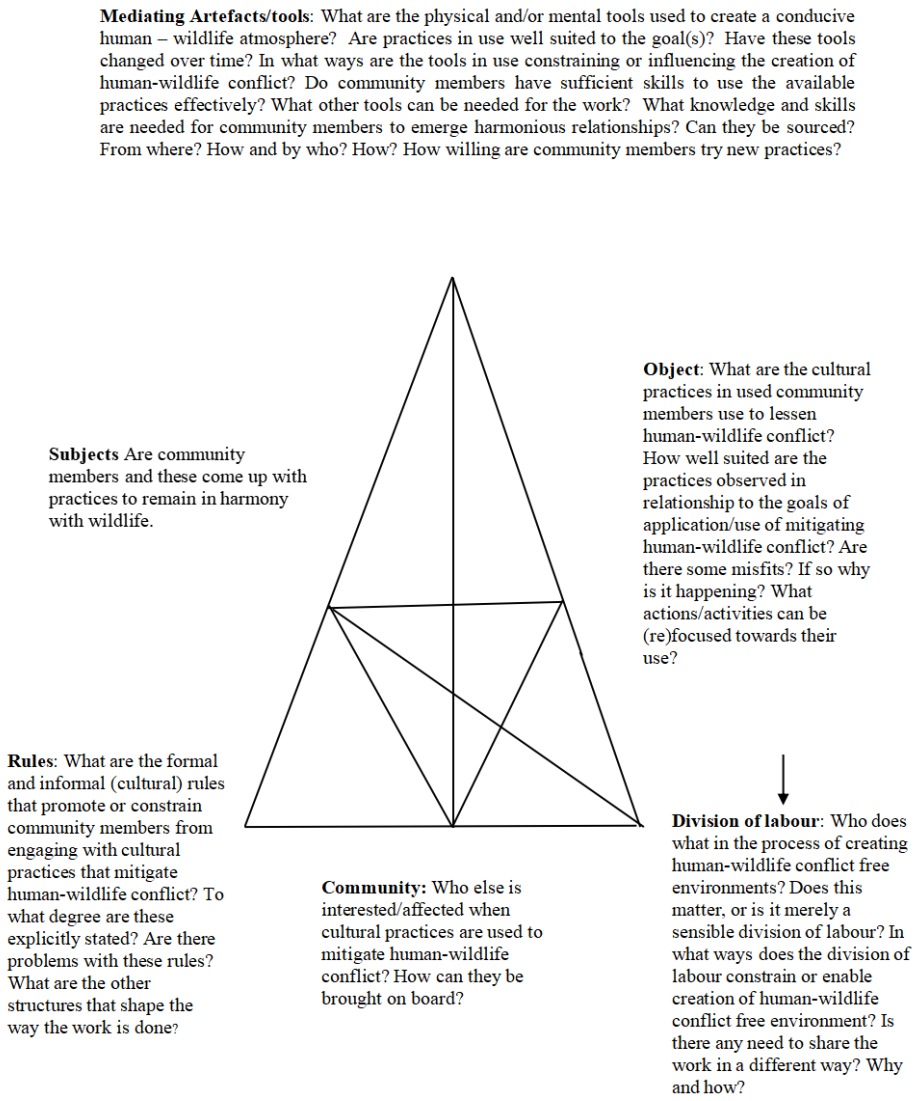

Figure 1. Activity system: Relationship within the elements. Adapted from Engeström (1987, p. 78)

Currently, to curb these conflicts emerged by failure to adhere to rules as seen in Figure 1, community members came up with a plan with the help of the Namibian Ministry of Environment. The Ministry of Environment warns communities of the presence of elephants in their vicinity. These communities then ensure that earth dams where their domesticated animals also drink from are filled with water. When elephants arrive, they have an alternative place to quench their thirst instead of destroying tanks of water or dig buried water pipes. It is also critical to mention that these cultural practices as activity systems they engage, are only done by a certain group in the community and this implies the division of labour as also illustrated in Figure 1. The components illustrated in this figure are dialectically related to one another even though we did not show arrows in the diagram. That is, there is synergy, cooperative interaction within these elements and the implication is that tensions arise if rules are not adhered to. As a consequence, that is why there is a need to strike a balance to prevent human-wildlife conflicts and indigenous communities are aware of this. For instance, they have rules converted into practices to prevent overharvesting or do selective harvesting of forest products since they are aware that this will result in wildlife invading their fields as they fail to get natural food products. This directs to answering the research question as explained below.

The questions paused in Figure 1 will help come up with responses to the research question of the study. That is (1) how do cultural practices indigenous communities engage in lessen human-wildlife conflicts? and (2) How can this bring sustainable development? Understanding of how those components are which is the *subject*, the *tools*, the *object, division of labour*, the *community* and the *rules* allowed us to structure the method of investigation as explained in the section below.

3. Methodology

The theoretical frameworks explained above allow us to come up with a qualitative study. In the study we aimed as stated before that the objective of this study is to emerge data which reveal how cultural practices can help mitigate human-wildlife conflict to enable sustainable development to occur. To achieve this population and sampling techniques are explained. This is followed by explaining the data generating instruments which were used and how the data was analysed to respond to the research questions. Finally, the ethical considerations are discussed.

The population from where the sample was selected was from three regions. Out of this population a sample was selected purposefully for the purpose of interacting with community members who encounter human-wildlife conflict. We explained the objective of the research to the selected members, and they were asked to sign consent forms. For learners who were minors, consent was sought from the principal, class teacher and some of the parents who came to participate. They voluntarily confirmed their willingness to participate in the research. Not all communities in Namibia where this study was carried out encounter human-wildlife conflict. As a result of this, the samples consisted of three schools in each region situated in communities where human-wildlife conflict is rampant. In each school, teachers and learners whose disciplines tackle environmental concepts and constructs were selected. Also, in the sample of people who participated in the study were the ageing members of those communities who were born and grew up in those areas since they were considered to know very well how human-wildlife conflict can be prevented. This means to stay in harmony with the fauna and flora as their *Ubuntu* philosophy which Mukwambo et al. (2018) view as *Unhu, Ujamaa* or *Harambee* emphasizing the need to stay in harmony.

The *Ubuntu* philosophy according to Mbeki (2006) involves sharing, sympathy, empathy, tolerance, caring, compassion, solidarity, sensitivity to the wants of others, warmth, consideration, and acts of kindness. Nussbaum (2003) adds to the above features of *Unhu* by suggesting that the sight of keeping one's surroundings in harmony also manifests the *Unhu* philosophy. This helps indigenous communities stay in harmony with fauna and flora and sustain them as they embrace that philosophy and, in most cases, it is through realizing that they must not overharvest forest products or any other wild life product to curb conflicts with wildlife.

So, the sample consisted of three sets of participants. Participants were selected on the basis of the following criteria: 1). their experience in human wildlife conflicts, and their status as 2) Indigenous community members. The same criteria were used for the other set of participants who were also purposefully selected, and these were some officials from the Namibian Ministry of Environment. However, on this set, the condition for selecting the members was they needed to be aware of cultural practices used in the area where they work to mitigate human-wildlife conflict. The three sets of participants were subjected to interviews, observation and audio-visual techniques were used to generate data. The officials from the Namibian Ministry of Environment were subjected to interviews only. All these participants generated data which was coded, classified and then themes they manifested were looked into in relation to the research questions and what the frameworks say.

To address ethical issues, consent forms were given to participants. The learners as minors were considered as receiving extra lessons in environmental science since the discussions with them were along those lines. Also, as part of research ethics, views we sought were not discussed with learners which helped us stick to the *Ubuntu* ideals and as a result researchers got respected. These helped us generate data which we present below.

4. Data presentation

The data presented in Table 1 below were obtained from the use of all the three instruments mentioned. The data generated from the instruments such as interviews, observation and audio-visual techniques were sorted and then classified. Data which were found to reveal the same theme were classified under the same heading as shown in Table 1 below which shows the themes which emerged.

Table 1. Themes emerging from the data

Scaring practices	**Rituals practices**	**Change of environment**	**Enclosures**	**Disguising**	**Rules**
Use of drums	Tying grass around	Make use of alcohol	Fence by using poles	Take off your clothes	Releasing of immature captured animals back into the system
Use of tins	Rubbing hands	Ensuring earth dams are filled with water when wild animals are nearby	use of thorns at water points	Put a piece of log or branch on your head	Time frame to harvest forest products

Table 1. *Cont.*

Scaring practices	**Rituals practices**	**Change of environment**	**Enclosures**	**Disguising**	**Rules**
Use of guard animals	River bank ceremony	Spraying domesticated animals with human urine	Building strong enclosure for livestock	Put a branch on your head	Selecting products to harvest from the forest
Burning fire	Herbs mixed with elephant dung	Smearing domesticated animals with traditional perfume		Scare crow	Avoid removing all products from where they are harvesting
Bright plastics and bright clothes	Use of holy fire	Oil from a certain plants			
Prevent dehorning		Bitter bulbs			

Each of the cultural practices revealed during interview, observed or captured was placed under a theme where it belongs. The guiding principle of categorizing them in those groups was due to them sharing similarities on how each cultural practice answered the research questions of (1) how do cultural practices indigenous communities engage lessen human-wildlife conflicts? and (2) how can this bring sustainable development? To arrive at responding to these questions, we discuss the data presented in Table 1 using those themes in the heading of the columns in the following section of data interpretation below.

5. Data interpretation

The data which was organized under the themes in Table 1 is discussed. First to discuss are the cultural practices which are used to scare would-be wildlife which comes as a result of failure to stick to practices which deter them as contradictions emerge in the activity system (Cole and Engeström, 1993; Engeström, 1987). The theme of *use of ritual practices* follows and the view of Mbiti (1991) about rituals is that they characterize African Religion and are essentially monotheistic as spirits have names in many languages and also presented in art and talked of in ceremonies. That particular language is associated with rituals and since language reflects knowledge as Tyler (2012) suggests, we also see that the rituals are done after gathering knowledge in the stratified layers Bhaskar (1989) mentions as *real, actual and empirical*. The theme of *change of environment* follows and the theme of *enclosures and disguising* are discussed. Finally, is the theme where *rules are used* to help lessen human-wildlife conflict.

5.1. Use of cultural practices that scare wildlife

Animals, both humans and wildlife, are not able to tolerate certain levels of sound or structures they are not used to. Sound is a social structure like language which Schwandt (1997), using social realism view, considers as referring to reality of features of the world. When the sound becomes too low or too high it signals danger or a situation not normal, and for them, this contradicts with what is expected as CHAT suggests. In the case of humans, buildings which are found to have a lot of reverberation are sound insulated. This is where sound engineers come in to fit the walls of the building with absorbents to prevent the reverberation of sound so that the occupants or users can tolerate sound levels. In support of this view, animals are only capable of tolerating certain levels of sound. According to Tyack and Janik (2013), animals can tolerate certain levels of frequency and when not normal, they bring about some behavioural changes in the animal, something contradicting what CHAT advocates. To have an environment which is in harmony with it, a wild animal gains knowledge to move away from an area with sound it cannot tolerate, and as such, a social structure from the point of view of social realism brings disturbance. From the sociocultural view of Vygotsky (1978), sound in wildlife is a language which they use to communicate and signal danger whenever the sound is not of permissible levels.

Similarly, animals can only tolerate certain levels of light as Schroer and Hölker (2017) suggest. This has made indigenous communities come up with cultural practices where they light a fire around their fields as they protect their crops from wild animals and even around their kraals at night. This is on account that they see that animals can only tolerate certain levels of the intensity of light. This is also why they make use of reflectors as wild animals cannot tolerate certain rays from certain materials. In response to reflection to scare wild animals, indigenous communities in areas investigated were found to have hanged some reflectors in their fields. This was more common with those who practice crop farming, in both areas where the research was generating data. On the other hand, those who do domestic animal farming hang it around their kraals. For instance, when a hippopotamus, a nocturnal animal sees fire or detects reflection which is not normal, it becomes uncomfortable. It moves in the direction where there is darkness, a social system as viewed from analysis of Bhaskar (1978). In bringing such a cultural practice, it deters such wild animals from grazing crops of communities. If they graze crops, as seen from CHAT, conflicts arise between humans and wildlife in the communities (Fynn and Bonyongo, 2010). The result is, if these structures are absent, humans follow the wild animals and destroy them, thus promoting human wildlife conflicts. We can thus say that performing these cultural practices can sustain the environment as seen in the example and supported by Cole and Engeström (1993) and Engeström (1987) who consider the cultural practices as activity systems.

Coupled with this understanding as communities in practice with division of labour as Engeström (1987) suggests, rules are enforced, indigenous communities whose cultural practices were studied were found to also understand that animals can be deterred from their vicinities through use of sound. To achieve this, they beat drums whenever they are alerted that some wild animals which might cause conflict are closer to them. The alert according to our interviews comes from the officials from the Ministry of Environment. Not only drums are used to create noise which wildlife cannot tolerate but they also hang empty tins on a long wire leading to the direction these wild animals normally visit and then force the system into vibration. As they do so, the tines hit against each other and in the process create noise which the wild animals cannot tolerate. This forces them to move away thus avoiding human-wildlife conflict and levelling the ground for contradictions not to emerge.

This resonates very well with what was observed in Figure 1 where Cole and Engeström (1993) and Engeström (1987) suggest that between the elements in the activity system where tension arises, there is no harmony but contradictions. So, contradiction come in the form of creating environments which wildlife cannot tolerate and then are forced to move away and create peace in another community. In doing so, such a cultural practice of beating drums or hanging tins on a wire and force the wire into vibration allows sustaining the environment as the end result is the wild animal moves away from the community and the community remains in peace instead of killing the animal which would have destroyed their social infrastructure as viewed from Archer (1995); Willmott (1997) and Phillips (1987).

Under the same theme of cultural practices that scare wildlife, indigenous communities refrain from dehorning domesticated animals and also use shepherd dogs as a practice to stay in harmony with wildlife. From the view of the indigenous community members a dehorned animal cannot defend itself when attacked by wild animals. So, they prefer to leave the animals with horns.

Historically, animals were not allowed to go in the forest for grazing unattended. However, this practice has been abandoned by many. Only a few still stick to this and this allows owners of domesticated animals to keep protecting their animals each and every time. This has been attributed to the fact that currently many lack human resources to send someone with their animals in the forest for grazing. Those who used to attend to the animals were youngsters but these days these youngsters are attending school. From Faitar's (2009) view, this activity is done differently in those communities where the research study was done. Like many communities, domesticated animals are grazed during the day. Unlike these other groups, some other communities keep their animals indoors during the day and only release them during dark hours for grazing.

To mitigate this situation, indigenous communities make use of shepherd dogs to guard their livestock to prevent contradictions CHAT suggests. The shepherd dogs move around with livestock and protect them against predators. However, according to some officials from the Ministry of Environment, currently predators befriend these shepherd dogs. While being entertained by one or two predators, the other predators attack the livestock which they will share with a shepherd dog. Due to this, they are no longer relying on shepherd dogs alone. To counteract this, they bring other practices such as the change of environment, which comes as a theme standing on its own.

5.2. Change of environment

Wild animals are not soothsayers, fortune-tellers, and neither are they able to prophesize that a flock of goats or a herd of cattle is at a particular location. However, they rely on smell to locate their prey. Therefore, farmers in some of the regions studied use traditional perfumes to ensure that the smell of their animal is not vividly detected by these predators. Women at home have also reported that they miss their best perfume since husbands stealthily use them to spray livestock going into the forest for grazing. Also oil from certain plants is sprayed at the kraal to prevent the predators from smelling where the animals are. Bulbs from certain plants are crushed into powder. The powder is then sprinkled around the kraal. The aim of this practice is still to prevent the predators from locating domesticated animals using their sense of smell, which is all aimed to avoid contradiction as viewed by CHAT. This idea of creating an environment which makes predator fail to locate its prey through preventing them from smelling is further supported by the cultural practices where some of these indigenous communities value their urine like the precious metal gold. Urine collected at night using urinary storage containers is not thrown into the toilet early in the morning. Instead, they either smear

it on scarecrow which they hang on the walls of their livestock's kraal or sprinkle it on animals. This still has the same effect of camouflaging the smell of the livestock and instead the smell of a person is felt. The result of this is wild animals move away and stop attacking domesticated animals and in doing so helps to sustain the environment and reduce competition for space as Fynn and Bonyongo (2010) assert this as the main cause of human-wildlife conflict.

The effect of camouflaging the smell of domesticated animals is also seen through the use of alcohol. Alcohol is left in the forest where they believe wild animals visit. When these wild animals smell alcohol, they move away from that area leaving domesticated animals not attacked. The implication is that such a cultural practice helps prevent conflict between humans and wildlife and in doing so emerge sustainable development.

Also, to change the environment where wild animals visit, community members use open water earth dams. When they are told that elephants are in the vicinity these earth dams are filled up with water. When an elephant arrives, instead of destroying water infrastructure in place, for instance, water tanks and buried water pipes, it helps itself from water in the earth dam and does not damage structures. This cultural practice helps reduce human-wildlife conflict. The use of traditional perfume, urine and filling earth dams with water when elephants are in the vicinity and other practices form part of the tools mentioned in Figure 1 under the section of tools. That is in particular, physical and/or mental tools used to create a conducive human – wildlife atmosphere (Engeström, 1987). Indigenous communities view an idea as a tool as it would have been observed in the three domains of reality (Elder-Vass, 2008).

Brown (2018) supports the idea of scaring wildlife with scent as scent is the one wildlife use to communicate and is thus language for wildlife. This is inline with Brown (2018) who claims that wild animals trust odor as it enables them to understand the environment around them. This supports our idea that animals are not soothsayers, but they rely on scent language to communicate. So, this knowledge comes as a result of the understanding that reality is stratified and in layers. Bhaskar (1989) contends that its use helps bring sustainable development in communities. To ensure that their livestock are safe, they do not only engage in changing environments or using cultural practices that scare wildlife, but they also engage in cultural practices which reflect their belief systems and/or their rituals, and these are discussed below:

5.3. Rituals

From the view of Mbiti (1991) mentioned previously, it is clear that indigenous communities adhere to religious beliefs. These beliefs are helpful in deterring human-wildlife conflicts. They practice them in each of those regions studied. In this study these beliefs ranged from the use of holy fire, tying grass to form a circular structure which they leave at a place where they intended to prevent wildlife from trespassing, rubbing and clapping hands while communicating with the creator, herbs mixed with elephant dung and performing of the river bank rituals.

The use of holy fire cultural practice was found among the *Ovaherero* ethnic groups. In some of the ethnics' groups found within the *Ovaherero*, holy fire is found at a place called *okuruo*. This is where they pray to their God referred to as *Ndjambi*. Division of labour CHAT brings reveal that one selected member of the indigenous community talks to him through their ancestors to guide them so that wildlife cannot attack their livestock and other things they wish for blessings. Their understanding is that *Ndjambi* is kind, and this has allowed them to practice the *Ubuntu* philosophy mentioned before which Mbeki (2006) reveals has to do with kindness. This

philosophy allows them to treat each fauna and flora as a creation of *Ndjambi* hence must not be destroyed but sustained. As a result, this makes the *Ovaherero* treat both living and non-living organisms with special care and in the process sustain them for future generations.

This philosophy of *Ubuntu* is also seen practiced by other ethnic groups in other areas where the research took place. However, the distinction is that they do not involve holy fire. The San people are an example who engage in rituals of tying grass to form a circular structure which they leave at a place where they intended to prevent wildlife from trespassing, rubbing and clapping hands while communicating with the creator. On the other hand, the *Lozi* also perform rituals as they aim to stay in harmony with wildlife. Elephant droppings are mixed with powdered chilly and burnt. In some instances, they also tell their ancestors that they must chase them to far away areas where they should graze, and they bring the construct of *Nyambe* whom they consider as the creator. In these ethnic groups where this research took place, they do not believe that *Ndjambi* or *Nyambe* can prevent wildlife from attacking their livestock without them taking measures to protect them. Instead, they have some mechanisms to protect them at night and we discuss these measures as a theme namely, use of enclosures. Using the CHAT lens, we view these rituals as tools.

5.4. Use of enclosures

In all the areas observed, it was found that livestock are kept in enclosures when they come home late in the evening. Even though the *Ovaherero* sends cows for grazing at night they still place them in enclosures during the time they are at home. However, the structures used to make the enclosures vary in each and every ethnic group. Thorny branches were found to be the most common material used mainly in the *Lozi* people's livestock enclosures. The San community, due to most of them not owning livestock, also uses thorny branches. However, most of the *Ovaherero* use fence and treated poles to erect a livestock enclosure.

The presence of a livestock enclosure in each and every community allows lessening human- wildlife conflict. As animals are placed in areas where they cannot be eaten by wildlife, this removes tension which arises when people take the law in their own hands and hunt the culprit animals and kill them. This ends up reducing wildlife and creates tension with the Ministry of Environment. So, the cultural practice of constructing enclosures for livestock lessens human-wildlife conflicts.

5.5. Disguising wildlife

The theme of disguising is based on the fact that wildlife is afraid of humans as Gross et al (2021) claim. Wildlife cannot stay where humans are. They only come when they find that their food resource is in areas where humans are staying. This has had some certain ethnic groups prevent overharvesting forest products. For instance, there are rules in each of those communities investigated that they must not overharvest forest products.

In recognition that humans can be naughty and overharvest, cultural practices in use to deter wildlife are the use of a scarecrow, placing a piece of log or branch on one's head and taking off one's clothes. These rules fit well with trying to create harmony between human and wildlife as wildlife is far more scared of human beings than some other hazard they face in nature, and wildlife have every reason to be. At occasions, humans have shown wildlife how deadly they are by killing them in their hundreds and thousands as a result of overpopulation as viewed from (Fynn and Bonyongo, 2010), invade their habitats and hunt them for meat,

sport and hide. Wildlife has been mistreated for many centuries and their suspicion of us has become deeply instilled in their instinct.

5.6. Rules in place

As the communities realize that forest products are to be shared with wildlife, they decide to put some rules, and from the view of CHAT, certain members of the community design them. These rules aim to ensure that food for wildlife is present in the forest. They have learnt that it must not be depleted. As a result, the structure in the Engeström (1987) activity system informs us there is a division of labour within the community. This division of labour allows some to draft rules to protect the environment by not overharvesting. Rules are put in place to ensure that the biomass pyramid, also known as the ecological pyramid is in equilibrium. The ecological pyramid shows energy flow between different levels. Communities understand the need not to disturb this equilibrium.

What they have in place to maintain the equilibrium is that they do not overharvest forest products. Also, they do selective harvesting to ensure that food for wildlife is left for them to prevent seeking or preying on their domesticated animals. For instance, when they are harvesting bird's berry fruits or others, community members are discouraged from removing all the fruits from the tree. Rules are enforced by other community members who are tasked to do so since there is division of labour. Any member found violating that rule is fined. Also, when they go hunting or fishing, animals which are found to be too small are not killed if captured alive but are returned into the ecosystem.

Selective harvesting is also done when they harvest firewood. Only dry trees are eliminated from the forest for firewood, and this was observed mostly among the Ovaherero ethnic group, and others also practice the same as they rely on dry wood for firewood. According to them, the reason is the dry trees act as habitats for predators where they hide to attack domesticated animals. As earlier stated, wildlife is afraid of humans, and thus cannot use a tree which has all its branches and leaves as it cannot see who might come and attack it. So, if these dry trees are removed from the forest they prevent predators from preying on domesticated animals. In the case of fishing, community members are not allowed to remove fish that is not fully grown. Once caught alive it must be returned into the river. They also have time for fishing and with the help of the Ministry of Environment that season is observed to allow the fish to breed and grow.

6. Responding to the research questions

In our view, the research questions of this study have been answered. The response to *'how do cultural practices indigenous communities engage lessen human-wildlife conflicts?'* is that these practices are embedded with knowledge which help scare wildlife away from products of human activity. This results in the lessening of contradictions as revealed in the CHAT, Figure 1. When objectives are achieved, the subjects, the community and those in different groups doing particular activities are found in friendly relationships through use of friendly tools, the cultural practices. On the other hand, to bring sustainable development, the cultural practices engaged allow both humans and wildlife to stay in harmony and in doing so equilibrium is attained. This also resonates with the social realist theory which suggests that in the cultural practices they have

emerged as a result of finding that they are part of reality and layered as real, actual and empirical (Bhaskar, 1978).

This brings sustainable development in that the cultural practices, artifacts and others as knowledge as viewed by sociocultural theory are mediated through a language. Language, including scent animals use and sound are elements of culture. Tyler (2012) further supports by claiming that they are not only used to transmit knowledge to each generation, but to transform homo sapiens to homo superior as they aim to sustain the environment around them. In doing so each generation becomes aware. As they become aware of them this helps to sustain them. When these are used the activities do not only spur development as fauna and flora is kept intact, not disturbed as there will be no conflict but also create condition for preventing conflict between human and wildlife.

7. Recommendation

Based on what we have observed that communities in areas studied relied on cultural practices to help lessen human-wildlife conflict, we recommend that these cultural practices be included in the curriculum to be used in schools so as to sensitize learners at an early stage. For instance, school curriculum has concepts of an ecological pyramid/biomass pyramid, but the teacher does not relate how the community brings this idea as it uses it to create harmony between human and wildlife. Instead, the ideas in the community which are about maintaining equilibrium among species must be brought into discussion. This can either be in the form of cultural case studies, cultural analogies, cultural simile, cultural metaphor. To achieve this the implementers, the teachers need to cultural translated ideas in curriculum using those cultural mediating tools mentioned (Bhabha, 1994). In doing so it does not only help the teacher and the learner to contextualize concepts taught, but also helps to show how knowledge in the curriculum is applied in the community. Not only that as it also demonstrates how curriculum and community knowledge complement each other in an effort to strengthen learning with understanding. The consequent is knowledge taught is prevented from being inert as the learner sees where it is applied. The learner also comes to understand that curriculum knowledge is not new knowledge, but basically old knowledge extracted from the communities. Finally, it also helps to prevent knowledge from the community used to lessen human-wildlife conflict from extinction.

To ensure that these cultural practices do not become extinct, policy makers who come up with official curriculum must clarify explicitly that an official curriculum is a guideline to what one need to teach. It is not embedded in concrete but one need to come up with a hybrid curriculum out of the official curriculum. Also, it must be mandatory that educators in all disciplines are encouraged that their students who will be teachers in future must be tasked to come up with plans to identify the cultural mediating tools mentioned previously that have context of their communities. Finally, the emphasis which curriculum policy makers should make is that all curriculum documents must place emphasis on is to use the current education system and harness it with an indigenous context which embraces cultural case studies, cultural analogies, cultural simile, cultural metaphor that reflect how indigenous communities sustain the environment.

Finally, on the issue of policies, governments must come up with policies to control overharvesting of forestry products. Policies to sustain the environment in most cases are to do with breeding. During certain seasons for example there are policies preventing harvesting of fish and in doing so encourages fish to breed. However, on the other hand there are no policies which are explicit to control overharvesting of forestry

products. These are only noticed at indigenous community level. So we recommend that such a policy must also be at the state level.

8. Conclusion

Even though humans are more powerful than wildlife, we must never overlook the fact that without weapons, we cannot defeat them. If we try to prove this, a death sentence emerges. However, the solution we find from this study is to engage in cultural practices which are friendly, and which sustain the environment. We might be the strong super hunters, but eventually we are not congruent to Mother Nature when she retaliates. So, when the communities in this study engage with these cultural practices, they are aware that wildlife fears humans but can attack if triggered into anger. So, to lessen human-wildlife conflict, cultural practices need to be observed and embraced and in doing so prevent them from undergoing extinction especially if we incorporate them in the curricula of disciplines in schools to awaken learners' consciousness.

References

Archer, M.S. (1995), *Realist social theory: The morphogenetic approach*, Cambridge University Press, Cambridge.

Bhabha, H.K. (1994), *The location of culture*, Routledge, London.

Bhaskar, R. (1978), *A realist theory of science*, Harvester Press, Sussex.

Bhaskar, R. (1989), *The possibility of naturalism: A philosophical critique of the contemporary human sciences (2nd Ed.),* Harvester Wheatsheaf, New York.

Bhaskar, R. (1993), *Dialectic: The pulse of freedom*, Verso, London

Blunden, A. (2010), *An interdisciplinary theory of activity*, Brill, Boston.

Breidlid, A. (2013), *Education, indigenous knowledge and development in the global south: Contesting knowledges for sustainable future*, Routledge, New York.

Brooks, D. (1990), "Beyond catch phrases: What does sustainable development really mean?", *IDRC Reports, October I990, Environmental Policy*, IRDC, Ottawa. Available at: https://idl-bnc-idrc.dspacedirect.org/server/api/core/bitstreams/79c6d259-f19a-4ab6-9b72-adf313f4d0fd/content (accessed 20 March 2024).

Brown, E.A. (2018), "How humans are hijacking scent, the universal animal language", available at: https://www.nationalgeographic.com/animals/article/tiger-obsession-cologne-smell-animal-behavior-news (accessed 16 March 2026).

Cole, M. and Engeström, Y. (1993), "A cultural-historical approach to distributed cognition", In: Salomon (Ed.), *Distributed cognitions, psychological and educational considerations*, pp. 1-46, Cambridge University Press, Cambridge.

Elder-Vass, D. (2008), "Searching for realism, structure and agency in actor network theory", *The British Journal of Sociology*, Vol. 59, pp. 455-473.

Engeström, Y. (1987), *Learning by expanding: An activity-theoretical approach to developmental research*, Orienta-Konsulti, Helsinki, Finland.

Faitar, G. (2009). "Unity in diversity: Is there a common denominator?", *International Journal of Educational Policies*, Vol. 3 No. 1, pp. 20-31.

Fynn, R.W.S. and Bonyongo, M.C. (2010), "Functional conservation areas and the future of Africa's wildlife", *African Journal of Ecology*, Vol. 49, pp. 175-188.

Grant, C. and Osanloo, A. (2014), "Understanding, selecting and integrating a theoretical framework in dissertation research: Creating the blueprint for your "house", *Administrative Issues Journal: Connecting Education, Practice and Research*, Vol. 4 No. 2, pp. 12-26.

Gross, E., Jayasinghe, N., Brooks, A., Polet, G., Wadhwa, R. and Hilderink-Koopmans, F. (2021), *A future for all: The need for human-wildlife coexistence*. WWF, Gland, Switzerland.

Imenda, S. (2014), "Is there a conceptual difference between theoretical and conceptual frameworks?", *Journal of Social Science*, Vol. 38 No. 2, pp. 185-195.

Kant, I. (1788), *Critique of practical reason: Translated by Mary Gregor*. Cambridge: Cambridge University Press.

Mbeki, T. (2006,), *Address of the President: Speech given to the National House of Traditional Leaders*, Tshwane, South Africa.

Mbiti, J.S. (1991), *Introduction to African Religion*, Heinemann Publishers, Johannesburg.

Mukwambo, M. (2017), Exploring and expanding situated cognition in teaching science concepts: The nexus of indigenous knowledge and Western modern science", Unpublished doctoral thesis, Rhodes University, Grahamstown.

Mukwambo, M., Ngcoza, K. and Chikunda C. (2018), "Unhu in indigenous knowledge: Implication for Science teaching and learning", In: L.M. Semali and A. Singa'mbi (Eds.), *African Association for the Study of Indigenous knowledge Systems (AASIKS), pp. 149-165. Conference Proceedings of the 4th International African Association for the study of Indigenous Knowledge Systems at Mwenge Catholic University Moshi, Kilimanjaro*, Tanzania. ISBN 1821-8369.

Odora-Hoppers, C.A. (2001), "Indigenous knowledge systems and academic institutions in South Africa", *Perspectives in Education*, Vol. 19 No. 1, pp. 73-83.

Phillips, D.C. (1987), *Philosophy, science, and social inquiry*. New York: Pergamon Press, 1987.

Schroer, S. and Hölker, F. (2017), "Impact of Lighting on Flora and Fauna", In: Karlicek, R., Sun, C.C., Zissis, G., Ma, R. (eds), *Handbook of Advanced Lighting Technology*. Springer, Cham.

Tyack, P.L. and Janik. V.J. (2013), "Effects of noise on acoustic signal production", In: *Animal Communication and Noise*, H. Brumm, ed. Berlin: Springer, pp. 251-271.

National Academies of Sciences, Engineering, and Medicine (2017), *Approaches to understanding the cumulative effects of stressors on marine mammals,* Washington, DC: The National Academies Press,

Nussbaum, B. (2003), "African culture and ubuntu: Reflection on a South African in American perspectives", *World Business Academy Journal*, Vol. 17 No. 1, pp. 21-26.

Rodina, K. (2021), "Preventing human-wildlife conflict is critical for people and the planet", available at: https://sdg.iisd.org/commentary/guest-articles/preventing-human-wildlife-conflict-is-critical-for-people-and-the-planet/ (accessed 27 March 2024).

Spencer-Oatey, H. (2008), *Culturally speaking: Culture, communication and politeness theory*, Continuum, London.

Schwandt, T.A. (1997), *Qualitative inquiry: A dictionary of terms*, Sage Publications, Thousand Oaks.

Tyler, E.B. (2012), *Primitive culture.* Cambridge University Press, Cambridge.

Vygotsky, L.S. (1978), *Mind in society: The development of higher psychological processes*. Harvard University Press, Cambridge.

Willmott, R. (1997), "Structure, culture and agency: Rejecting the current orthodoxy of organization theory", *Journal for the Theory of Social Behaviour*, Vol. 27 No. 1, pp. 93-123.