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Connecting the world through local Indigenous Knowledge

Margaret Sraku-Lartey*
Principal Librarian, CSIR-Forestry Research Institute of Ghana, Kumasi, Ghana

Abstract. This paper focuses upon the importance and value of local Indigenous Knowledge and how it is being threatened in today's modern world rather than being leveraged to catalyze development. The author specifically calls out three types of Indigenous Knowledge: (1) medicinal knowledge related to human health, i.e., herbal medicine; (2) sacred groves – geographic areas set aside to preserve plants and animals and that can help to mitigate the impact of climate change; and (3) living libraries – communities of people who are also holders of cultural wisdom and history and who are custodians of all knowledge relating to the history of their own community. The author makes a call to action, requesting that scientists, librarians, publishers, and others in the information community collaborate and move forward together to save and build upon global Indigenous Knowledge.

Keywords: Indigenous Knowledge, herbal remedies, Baansi, Dagbon, Ghana, living libraries, sacred groves, NISO plus 2021, miracle berry, *Synsepalum dulcificum*, neem tree, *Thaumatococcus danielli*, thaumatin

1. Introduction

This paper is based upon a plenary lecture that I gave at the 2021 NISO Plus Conference[1] which was held virtually in February 2021.

The theme of the conference, *Global Conversations: Global Connections*, is more than apt for this period of global uncertainty in the areas of global health, telecommunications, commerce, air travel, and knowledge management. The theme is also appropriate within the context of what is happening in our world today. COVID-19, a global pandemic, has virtually brought the world to its knees. The impact of this pandemic has affected every sector of the global economy, giving rise to changes in digital behavior. Due to lockdowns that have been imposed in most countries, the mobility of people has been greatly affected and normal domestic and corporate activities have virtually come to a standstill giving rise to new trends such as remote working and learning, telemedicine, and delivery services. It appears that these trends are not likely to go away anytime soon. So, within just a short space of time, there has been tremendous improvements in the way information is created, communicated, and used. Global communication has improved in the current situation to such an extent that within minutes of an incident occurring, the whole world gets to hear about it or to see it.

Moreover, the world today is connected in all spheres of endeavor such as in commerce, health, food security, and transportation. There is, therefore, an urgent need for us to talk and to connect with one another more than ever before. This is perhaps why we refer to the world as a global village. The term,

*E-mail: mslartey@csir-forig.org.gh.

[1]2021 NISO Plus Conference, held virtually, February 22–25, 2021, see: https://www.niso.org/events/2021/02/niso-plus-2021, accessed August 10, 2021.

"global village", was coined more than fifty years ago by Marshall McLuhan, who used it to basically describe how the world is connected because of modern telecommunication tools that can link everyone, even in the remotest part of the globe.[2] This concept is even more relevant today than when it was coined many years ago. Through global connections the world continues to develop at a fantastic rate.

Global development has always been propelled by research which generates new knowledge and new technologies and contributes to economic growth and development. However, high-quality research is dependent upon both the availability of up-to-date information and sound theoretical concepts. Consequently, researchers build upon existing knowledge, especially published literature to create new knowledge. The availability of high-quality information is made possible through the collaboration of researchers, publishers, and information managers, who all play significant roles in the developmental process.

We also know that development includes the diverse components of knowledge management such as the people, the process, the content, and the strategy. One cannot develop in any economy if one's information is not up-to-date and if that information is irrelevant to the development process.

So regardless of which sector the knowledge is being generated from or to which sector it is being applied, there is always the need for people to lead, sponsor, and support the knowledge sharing process. We also know that both explicit and tacit knowledge are used to catalyze development worldwide. However, explicit knowledge, which is easily articulated, recorded, communicated and, most importantly in the world of knowledge management, stored, is the most widely accepted form.

Scientists, information managers, and publishers have always been concerned and interested in explicit knowledge, perhaps because science is based upon empirical evidence that strives for objectivity, accuracy, and acceptability. All kinds of standards have been developed to ensure that scientific reportage is standardized, is of a high quality, and is able to stand the test of time. On the other hand, very little attention or interest has been paid to the tacit knowledge that abounds in our midst. This is knowledge that is garnered from personal experience and context, that is difficult to write down, to articulate, or to present in a tangible form. This is the vital knowledge that has accumulated over many generations, this is the knowledge we call Indigenous Knowledge (IK).

2. Defining Indigenous Knowledge

Indigenous Knowledge can be described as the rich body of knowledge that is unique to a given culture or community and that is differentiated from modern scientific knowledge or known knowledge systems. It is the basic component of any country's knowledge system and forms the basis for local-level decision-making[3]. IK is the main asset of the poor who use this knowledge to produce food, shelter, and medicine to survive. Most Indigenous Knowledge is being lost due to our inability to sustain it. IK thus tends to disappear after a while because of the introduction of foreign technologies and concepts that promise short-term gains or solutions.[4]

[2] See: Marshall_McLuhan, The Gutenberg Galaxy: the making of typographic man.

[3] S. Lodhi and P. Mikulecky, Management of indigenous knowledge for developing countries, *Communication And Management in Technological Innovation and Academic Globalization* (2010), 94–98, see: http://www.wseas.us/e-library/conferences/2010/Tenerife/COMATIA/COMATIA-13.pdf, accessed August 26, 2021.

[4] S.G.J.N. Senanayake, Indigenous knowledge as a key to sustainable development, *Journal of Agricultural Sciences – Sri Lanka*, **2**(1) (2006), 87–94, see: https://doi.org/10.4038/jas.v2i1.8117, accessed August 26, 2021.

This scenario is aptly described by an old African proverb that says, "When an old man dies, a library burns to the ground"[5]. What does this proverb mean and what are the implications for information management? The old man or woman is the custodian of knowledge who stores volumes of wisdom and knowledge that they have accumulated over many years. He or she has a lot to teach us about our very lives and the environment upon which we depend through the application of years of accumulated knowledge. With his or her death, all the acquired knowledge goes with that person. It is lost forever and no one can benefit from it. The value and importance of Indigenous Knowledge for development can therefore not be over-emphasized.

3. Characteristics of Indigenous Knowledge

IK is transferred orally and spans several generations. It tends to be collectively-owned and takes the form of technologies, know-how, skills, festivals, songs, folklore, food, proverbs, cultural values, beliefs, rituals, and community laws. In some communities, for example, there are strict laws that must be followed, especially about the environment. In Ghana, for example, in some communities, there are certain times one cannot even enter the forest or go to the riverside to fetch water or to fish. These are all local community laws that help in the management of the environment. IK also encompasses local languages and agricultural practices and includes the development of plant species and animal breeds that enable a community to achieve a stable livelihood.

IK is a complete knowledge system with its own concepts of epistemology and its own scientific and logical validity. And today, we risk losing these extraordinary archives of knowledge and expertise which are stored in the memories of elders, healers, midwives, farmers, fishermen, and hunters in the different cultures of the world, leaving humanity inevitably in danger of losing its past and perhaps jeopardizing its future as well.

We should, therefore, provide the avenues through which the wisdom and experiences produced over many years can be harnessed and shared. Traditional IK is of a practical nature. It is not abstract, especially in the fields of agriculture, fisheries, health, horticulture, and forestry. Sadly, such vital knowledge is diminishing at an alarming rate, making it necessary for us to preserve it before all or most of it is completely lost. And the loss of IK in any community results in cultural gaps between generations and denies that community, and the world in general, of this rich and powerful heritage of traditions that can be built upon for development. As a natural consequence, therefore, Indigenous Knowledge, together with modern scientific knowledge, should be an important component in global, national, and community development. However, current scientific discourse and development tend to ignore, underestimate, and sometimes undermine Indigenous Knowledge systems, which are often labeled as unscientific and outdated. This paper therefore discusses the relevance of Indigenous Knowledge in our lives. It highlights some of the different types of Indigenous Knowledge and establishes how it enriches scientific knowledge. The need to treat it as a knowledge gateway that must be preserved is also assessed.

[5]United Nations Educational Scientific and Cultural Organization. *Digitizing our shared UNESCO history: The treasures within*, 2015, p. 8, UNESCO.

4. Types of Indigenous Knowledge

4.1. Traditional indigenous herbal medicine

In our world today, there is the need to find new cures for diseases, and this has become even more pressing, especially since the emergence of dangerous and infectious diseases such as Ebola, SARS, and COVID-19. There is renewed interest in finding solutions from nature, and the best way of finding suitable remedies for specific diseases is just to talk to local people. For example, people are currently using all kinds of concoctions worldwide to manage COVID 19. As to whether these remedies are efficacious is not known. But in my opinion, there should have been a massive drive by now to interact with local Indigenous people around the world to identify local plants that are being used by them to curb respiratory diseases similar to COVID-19 and to at least assess if there is any chance of finding a natural cure for this dreadful disease. Identifying natural remedies to manage COVID-19 may not be far-fetched because local communities have, for many centuries, used plants and plant-derived products as remedies for various ailments. The use of these plants has led to the discovery of various cures, which in some instances, have been researched into and have produced results that have been accepted and applied globally.

One example we can learn from is the discovery of the smallpox vaccine in the 1700s when a youngster from Africa named Onesimus recommended rubbing the pus from a person infected with smallpox into an open wound on the arm of someone not infected[6].

Once the infected materials were introduced into the body, the person who underwent the procedure developed antibodies to fight the disease. This procedure now known as inoculation was thus developed to fight smallpox. The procedure was Indigenous Knowledge that had been passed on to Onesimus from his ancestors in Africa and which he had kept in his head until it was needed. This is the knowledge that gave birth to the concept of vaccinations and the concept upon which most vaccinations are based. At the time he disclosed this knowledge, there was a lot of resistance to its application. But had he not disclosed it, we may probably be still struggling to find a cure for the smallpox disease.

In Ghana, for example, a lot of people, especially those in rural communities, depend on plant-based remedies, usually referred to as herbal medicine, as a complement to orthodox medicine to solve their health problems. In some places, these herbal medicines are used exclusively in place of orthodox medicine. In a study conducted in the Offinso area in the Ashanti region, local people reported on the use of forest plants for various ailments, such as malaria, high blood pressure, respiratory diseases, and many others[7]. The neem tree[8] is, for example, a popular plant used in malaria treatment. Apart from the leaves and the bark that are used for malaria, the neem seeds produce an oil that is used as insect repellent. This is a natural product which is devoid of harmful toxic substances. Perhaps there could be a global drive to use this plant to produce insect repellent and pest products. This might go a long way in helping to preserve our environment. It is worthwhile to know that many of these remedies have been used for centuries and have been passed on from generation to generation. Unfortunately, however, the formulae and dosages administered are not documented, making it difficult to stick to standard dosages. There are many such examples, but for the purpose of this conference, two wonderful plants that have been

[6]See: https://undark.org/2020/04/02/slave-smallpox-onesimus/, accessed August 10, 2021.

[7]M. Sraku-Lartey, S.B. Acquah, S.B. Samar and G.D. Djagbletey, *Digitization of Indigenous Knowledge in the Forestry Sector in Ghana: Project Completion Report*, (Issue January 2017)

[8]M.H. Dyer, Neem Tree Information: Learn How to Grow a Neem Tree, see: https://www.gardeningknowhow.com/ornamental/trees/neem-tree/neem-tree-inforrmation.htm, accessed August 26, 2021.

used by local people for many years in Ghana and that could perhaps help change the global management of people with diabetic tendencies will be discussed.

The miracle berry[9] (*Synsepalum dulcificum*) is a plant native to West Africa with central origin in Ghana. The fruit has a unique effect on the taste buds and has been used for centuries by local people to make sour food taste sweet. These berries are well-known throughout Ghana by various local names, including Asaa or Asawa among the Akan people, Taami among the Gas and Ledidi among the Ewes. They are usually found in home gardens and consumed mostly by children. The plant is not really regarded as important by most people in Ghana, perhaps because we do not place much value on it. The berry itself has no taste, but when it is eaten, any food eaten thereafter tastes sweet. In Ghana especially, it is often used to make palm wine – a local alcoholic beverage that has over-fermented and is thus bitter – taste sweet. The sweetener effect of the miracle berry typically lasts from about half an hour to two hours, with the intensity declining over time. The fruit has been proposed as a treatment for the taste changes experienced by some cancer patients, though further studies may be needed. It is also a giant step for those with diabetes, as this could be a great substitute for artificial sweeteners. Despite its potential to transform the health sector as a sweetener, it is not as treasured as one would expect. The worrying aspect of this is that many young people in places where it is endemic have not picked up this local knowledge. Results of a study revealed that respondents between the ages of eighteen and thirty had very little knowledge about this plant, despite its apparent benefits such as bringing great transformation into the local communities from which they are endemic in the form of jobs for people resulting in higher income and a better standard of living.

The second plant is known as *Thaumatococcus danielli* [10]. This plant has properties similar to the miracle berry. It can be found in Africa, stretching from Sierra Leone to the Democratic Republic of Congo. In Ghana, the leaves of this plant are used in cooking and for wrapping food. In Nigeria, they are used to cook moi-moi, a pudding made from beans[11]. The leaves give the food a distinctive taste that is unique and pleasant. In traditional medicine, the fruit has numerous benefits. It is used as a laxative and the seeds can be used as an emetic and for pulmonary conditions. The sap of the leaves is used as an antidote against venoms, stings, and bites, while the roots are used as a sedative and for treatment of insanity. Although all these uses have not been authenticated by science, this fact does not negate the impact that the plant has on the health of local people. One of the most important properties of this plant is as a sweetener as it is the source of thaumatin[12], an intensely sweet protein of interest to diabetics. When the fleshy part of the fruit is eaten, a molecule in the fruit binds to the tongue's taste buds, causing sour foods to taste sweet. Currently, thaumatin is being extracted and exported out of the country, mainly to Europe, for use in the food industry. Despite its importance on the global markets, its use locally is still limited. It does not appear as though Ghana has benefited financially from the export of thaumatin in the same way as cocoa has benefitted the Ghanaian economy.

One of the basic things to keep in mind is that when valuable traditional products are discovered the beneficiaries are usually not the local people. For example, the thaumatin that is being extracted is exported directly to Europe. Miracle berries are also being exported to the USA. There is no evidence that thaumatin is being extracted and used in Ghana. Although the discovery is a local one, the benefits are global. From the foregoing, it is evident that there is a lot of untapped knowledge on medicinal plants. What we do not know is how widely-spread the knowledge is among local people, politicians, and managers of the

[9] Get to know the Miracle Berry; see: https://www.sweetlifemiraculin.com/blog-1.html, accessed August 10, 2021.
[10] See: https://en.wikipedia.org/wiki/Thaumatococcus_danielli, accessed August 10, 2021.
[11] See: https://www.allnigerianrecipes.com/beans/moi-moi-moin-moin/, accessed August 10, 2021.
[12] See: https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/thaumatin, accessed August 10, 2021.

economy in Ghana. There is, therefore, the need to ensure that the knowledge available is assessed and documented.

4.2. Sacred groves as storehouses of knowledge

Sacred groves are small patches or islands of remaining original habitat or forests of various dimensions that are partially- or fully-protected by local, religious, or cultural agents, and that harbor rare and threatened species. Sacred groves are common in many developing countries, but reports indicate that their impact is diminishing in some places. Indigenous local communities try to live in tandem with nature. As a result, they manage their natural resources using local customs and traditions. One of the easiest ways to do this is to create patches of forest land called Sacred groves that contain numerous valuable plants that are separated from human habitation. In these groves certain plants are conserved for medicinal purposes and for spiritual use. Locals also preserve animals that they consider to be sacred. They revere these Sacred groves and consider them to be sacrosanct. Even though the Sacred groves are created mainly for medicinal and spiritual purposes, they serve other purposes as well. A study of some of these Sacred groves have unearthed the following facts.

(1) Sacred groves are more than just spiritual groves. They are treasure troves of knowledge that are of cultural, historical, and scientific benefit and are considered to be of outstanding value to humanity.
(2) Water bodies that constitute the headwaters of major rivers and streams that supply water to entire communities and towns can be found in them.
(3) Rare plants and threatened species that are difficult to find elsewhere may be conserved in these patches of land.
(4) Sacred groves provide a habitat for rare birds, insects, and reptiles.
(5) They also create a cool micro-climate that is significantly different from adjacent lands. They thus play a major role in natural resources management.

In these groves, resource extraction is controlled by a variety of traditional rules and taboos, often invoked to placate the deities believed to be involved. Now, modern knowledge has taught us that while these traditionalists were thinking of the spiritual side of the groves, they were inadvertently conserving nature for the betterment of society.

The presence of healthy plants ensures that the ecosystem maintains equilibrium by employing selective harvesting techniques. Well-preserved Sacred groves are storehouses of valuable medicinal plants and herbs and other flora having high economic value. The people have the phenology of the plants at their fingertips. This means that they know when these plants flower, when the fruits appear, and when the plants are ready for harvesting. Indeed, these sacred groves serve as a refuge for threatened species and the custodians of such groves protect them diligently. They could possibly be used as an avenue to help mitigate the effects of climate change. They could thus be replicated in different ecological zones and could possibly be an avenue that could be explored and used in the fight against climate change.

4.3. Living libraries

Now the third type of Indigenous Knowledge is what is called living libraries. About sixteen hundred years ago, the Great Library of Alexandria in Egypt went up in flames[13]. The real tragedy of the period

[13] See: https://en.wikipedia.com/wiki/library_of_Alexandria, accessed August 10. 2021.

was not the uncertainty of not knowing who was to blame for the library's destruction, but rather the real tragedy was that knowledge of ancient history, literature, and learning was forever lost to future generations. Today, we have a similar situation unfolding right before our eyes. Only this time, it is about knowledge that does not exist in books or huge edifices such as modern libraries. It is another form of Indigenous Knowledge called "living libraries". The only difference between living libraries and a regular modern library are the books. In a living library, there are no books rather the people are the books.

Most of our local communities do not have libraries with books and computers. Rather, they have people who are substitutes for the books. Living librarians have their own way of producing, codifying, storing, and retrieving knowledge and information. Living libraries keep the memory of the people alive. This section talks about the living librarians of Dagbon[14] who are called the Baansi[15].

Dagbon, a traditional kingdom founded in the 15th century, is one of the powerful and largest traditional groups in Northern Ghana. The history of this powerful kingdom has been kept by the Baansi, who are important in maintaining the entire existence of the members of this community. Baansi is a collective name for musicians. The Baansi are court musicians who engage themselves in the art of praise singing.

Libraries are also defined as repositories of knowledge, and the Baansis of Dagbon are just that. They are repositories of knowledge and are designated as living libraries. They are holders of cultural wisdom and history and custodians of all knowledge relating to the history of the Dagbon kingdom. A study by F.D. Plockey[16] identified the Baansi as living librarians of Dagbon. They produce, transmit, and store knowledge, which they recount at important ceremonies, such as the rituals performed during the installation of chiefs, the naming of babies, funeral ceremonies, and indeed at all social fora, using what they call their Timpani drums. In the process of communication, they entertain and train people on the customs and traditions of the kingdom. They have full knowledge of the genealogy of the people, their history, and on who has the credentials to ascend the throne. They form an important source of knowledge on the political economy, history, and literature of the Dagbon Kingdom. For instance, the use of praise names to serenade royals serves as an important source of teaching for the people. The Baansi, as living librarians, have the history of Dagbon in their memory and they consider themselves to be vessels of speech. They are repositories of knowledge who harbor secrets that are many centuries old. They consider themselves indispensable, since without them the names of the kings would vanish into oblivion. They consider themselves to be the memory of mankind within the Dagbon enclave. By the spoken word, they bring to life the deeds and exploits of kings for younger generations to know. There is no doubt that they may be classified as librarians.

These living libraries can easily be equated to traditional archives whose knowledge cannot be lost. The libraries are the people, and it will be to our detriment if all this knowledge is allowed to die. We can help the Baansi and all such living libraries to preserve their knowledge and get it known by documenting,

[14]Kingdom of Dagbon, see: https://en.wikipedia.org/wiki/Kingdom_of_Dagbon, accessed August 10, 2021.

[15]F.D. Plockey, A.S. Asuri, The role of the *Baansi* in preserving the culture of the Dagbon in Northern Ghana", *Africology: The Journal of Pan African Studies* **11**(2) (2018), 154–167; see: 11.2-12-Plockey.pdf (jpanafrican.org), accessed August 10, 2021.

[16]F.D. Plockey and B.A. Ahamed, Decolonizing our Library System: The Living Librarians (Baansi) of Dagbon, Northern Ghana, *Library Philosophy and Practice* (e-journal), 1-29-2016, see: https://digitalcommons.unl.edu/libphilprac/1366, accessed August 10, 2021.

recording, storing, and digitizing, packaging, and promoting it in a way that could pave the way for society to benefit from their knowledge.

5. The role of librarians and information management personnel in managing IK

It is acknowledged that information management personnel play a significant role in the developmental process. However, they pay more attention to explicit or published information which they disseminate for use in the developmental process. It is thus imperative for information management personnel to begin to learn more about Indigenous knowledge, if they are to meet the information needs of Indigenous people and of all those who use their information.

Librarians, as a professional group, should begin to play a major role in national and global development. They need to recognize local people as contributors and recipients of the knowledge that they create. They also need to recognize that knowledge and the management of it is not the exclusive domain of technologically-advanced communities. So, revitalizing Indigenous Knowledge production, should be considered a necessity by information management personnel.

Information Management personnel need to collaborate with scientists, librarians, and publishers, to bring valuable information into the public domain and to preserve local Indigenous Knowledge not for the fun of it, but to learn from it. We, as a group, need to create local pathways that can lead to global development. As partners in development, we all must begin to be proactive in Indigenous Knowledge management and give a new meaning to development that empowers local people to use their own knowledge for their own well-being.

6. The way forward

To foster positive interactions between Indigenous Knowledge and other knowledge systems, there is the need for collaboration between various players in information management.

Each player must be regarded as an equal partner and there must be mutual respect and understanding for the knowledge shared. Dialogue between groups on what needs to be done must be transparent and open. There must be informed consent and just returns for Indigenous Knowledge holders and practitioners through the flow of rewards and benefits.

Some practical work that needs to be done to benefit from IK:

(1) Establishing the modalities for managing Indigenous Knowledge.
(2) Developing guidelines on how materials should be identified, collected, copied, organized, stored, retrieved, and validated, to meet the specific needs and management regimes of particular communities.
(3) Assessing standards of documentation and technology needed.
(4) Developing consistency of practice across many local Indigenous contexts.
(5) Assessing training needs for the local community.
(6) Identifying a champion whose passion would be to help mobilize local knowledge for development.
(7) Identifying the beneficiaries from the proceeds of this knowledge.
(8) Defining the sharing formula from these benefits.
(9) Applying Intellectual Property rights.
(10) Developing patents be developed.

7. Summary and conclusion

We have looked at three different types and characteristics of Indigenous Knowledge. All three types (herbal medicine, sacred groves and living libraries) provide useful information that can be tapped for national and global development. Indigenous Knowledge is recognized as an important source of developmental information which is priceless to those who depend on it for their very existence.

With regards to herbal medicine, I have given you two examples of valuable plants that can be important to the economy of Ghana. These plants may have the possibility of transforming the health sector in Ghana provided that sufficient local research could be conducted on them. Knowledge about these two species discussed above seem however, to be dwindling among local people. The current generation of young people do not even know some of the uses to which some of these plants can be put. Consequently, efforts at conserving the habitat of these species are minimal and we risk losing them altogether. Moving forward we face a huge challenge on how to conserve and promote Indigenous Knowledge of economically viable local products.

About the Author

Margaret Sraku-Lartey, PhD., is a Principal Librarian at the CSIR Forestry Research Institute of Ghana. She has a passion for supporting local Indigenous People – for unearthing the knowledge that exists at the local indigenous level and harnessing it within the information ecosystem to propel communities into higher realms of development. As a professional librarian, Margaret is concerned about the lack of clear guidelines in the management of indigenous knowledge. She is committed to working towards the provision of standard guidelines for the management of such local knowledge, which can only be achieved through collaboration between librarians, publishers, researchers, and policy makers. E-mail: mslartey@csir-forig.org.gh.