

From Curiosity to Epistemology : Lessons from the Wetlands to the East of Kolkata

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Nearly 35 years ago, when my age was 35, I reached the edge of the wastewater fisheries in east Calcutta. It was not known as East Calcutta Wetlands at that time. It was a visit by chance. Thereafter for the last 35 years, I have been wandering around the same place; learning every day and definitely learning from the people. I think I am not a rapid learner but I have been able to identify at least a different space where learning becomes ‘happiness’. I have identified the ‘*Kshetra*’ which is the East Calcutta Wetlands and the ‘*Kshetrajna*’ are the people who live there. So connecting the *Kshetra* and the *Kshetrajna* became my job.

I have divided my talk into four parts and I will try to complete as much as I can. The first part is termed *Peaking Glory*. On 22 March, 2017, which is the World Water Day (This year’s theme of World Water Day was ‘wastewater’), the UN declared that two wetlands from all over the world—one in Uganda and the other one in our country, the East Calcutta Wetlands—as most outstanding in the world for their ability to treat wastewater.

It has been referred to by some of my friends that the East Calcutta Wetlands is the second best; but it is not so. The wetland in Uganda is known for treating sewage and at the same time industrial wastewater. Also it is a natural wetland whereas East Calcutta Wetlands definitely is bereft of industrial wastewater and it is a ‘transformed’ wetland

system, entirely based on community knowledge. Excellence of community knowledge is unique in the East Calcutta Wetlands which, as Calcuttans and Indians, we should take pride in. As of today, we can say that this is the *Peaking Glory*.

Briefing the ecosystem

It will be my responsibility to describe the wetlands in brief. But that is one of the toughest challenges for me. It can be described in many ways and I am to choose something that will be briefest. That might of course exclude some interesting things because of time constraint. Here I have chosen to describe in a chronological order. In 1981, the State Planning Board of the Government of West Bengal decided to institute a feasibility study for using Calcutta’s wastewater as a resource. I was a chance selection because in 1980 I had completed my doctoral research in ecology although I was a civil engineer. So they thought I am the person to whom the task should be handed over. I was told that the responsibility has to be carried out by way of moving around in this big country called India and then really find out where the answer might be lying. Before I started moving around, I thought of starting from my own city. As it was about wastewater, the best way was to follow the outfall canal—so I followed the outfall canal.

In 1983, a portion of what was vaguely termed as Saltwater Lake was re-described

as East Calcutta Wetlands. At the first point when I landed up around these waterbodies, I noticed that wastewater was being introduced very carefully into these. As a civil engineer I had the advantage of assimilating what I observed because I knew it earlier that in a tropical country, if you introduce wastewater in a pond and keep that for 10-15 days, then that is the best waste treatment option that science can provide. It is an exemplary and time-tested science. So I could see that I had in front of me perhaps one of the largest natural sewage treatment plants in the world. But I did not know then that I had many wonders waiting for me.

There were lots and lots of fishes. For a civil engineer, to handle an oxidation pond, the problem lies in managing the algal bloom because the more successful the plant is, the more will be the population of algae. The easiest way for a civil engineer to handle any such local problem is to engage a contractor. The local people did not know any contractor, so they introduced fish. The fish graze on algae and we eat fish. *Where can you learn ecology better than from this simple ecosystem?*

I could see that I have got the answer straightaway. I was in the 15th day and my task was supposed to take 365 days! I had 350 days of holidays. So I asked my teacher, Prof. Richard Meier, in the University of California at Berkeley what I should do for the next 350 days since I had already found the answer. As any outstanding teacher always does, he told me that if you can stay put by those water bodies for the next 5 years, the work will have an impact on history. It is now 35 years and I am still learning and I wonder how much may be still there to learn.

Naming the baby

I had to name the wetland. After all, when a baby is born, you have to name the

baby. So I thought of naming it the East Calcutta Wetlands. That was the name given to a conceptually new born baby. Just after a baby is born, generally we ask about the weight of the baby. So the first task of course would be to map it. I took two years and a half for that. It was a kind of mapping known as Participatory Mapping Technique. Robert Chambers became famous by naming it. The technique is that while drawing the map, you take the help of local people and collect the information. In 1985, the work of mapping the East Calcutta Wetlands was completed.

You take a revenue map, known as the *mouza* map to the local people and you move with them always. I asked them: 'Where are the wastewaters exactly being used—whether in fisheries or in paddy field?' They so happily joined the exercise. After two years the map was published by the State Planning Board. This map has not been changed by anybody though many people tried it. This is also the map that is being used by the 'Ramsar' authority. I will explain in a short while what Ramsar is.

I will now say a little bit about Ramsar. It is a beautiful city in Iran and all conventions are usually held in beautiful cities. In 1991, the Ramsar Bureau had hosted a meeting of the ornithologists (bird-lovers) because they were worried about the decreasing trend of bird population. Bird population is decreasing means the habitat is crumbling and the habitat is wetland. But they did not like to call it the bird convention; instead they called it the wetland convention. They were essentially ornithologists. With that knowledge, they tried to go around the world to talk about the wetland convention. They went to Africa and had a trying time. They were almost beaten up. A scientist, who is a friend of mine, was there. He narrated the entire story to me. The people over there said—'Why is

it just about birds? Wetlands are for the livelihood; you should not talk only about birds, certainly not in this part of the world. We understand wetland only as a livelihood support system'. Then and there the scientists understood that they are to reorganize or reframe the basis of Ramsar Convention and they did it.

They developed a different focus and the focus was 'wise use'. Wise use—as they call it—means sustainable use by human beings. I am not saying that this is the most brilliant definition we can think of—because 'wise', 'wisdom', 'sustainability' are all confusing words. There is no good definition of sustainability, no good definition of wisdom either; nevertheless much better than putting emphasis on birds only. They wanted to learn what wise use is. It was not just learning. They selected 17 wetlands from all over the world and East Kolkata Wetlands was one of them. So it was among 17 wetlands in 1991, and today, it is among two. I have been hobnobbing with Ramsar people since then and I met many of them. Of course, I really had an idea of enlisting the East Calcutta Wetlands as a Ramsar site. If you are to get some blessings from somewhere, you always hobnob with the people who you are asking the blessings from. That is how we have to do it—there is nothing wrong in it.

They taught me really how to prepare a case for making it a Ramsar site. This is not a difficult thing. Students these days are interested to go for studies in universities outside our country. In the process they fill up very elaborate forms and they want to prove that they are very good, justifying why they should be selected. Similarly I had to fill up a form—which I definitely wrote in a manner that this wetland could be included as Ramsar site. So 1991 is a turning-point for the future of the East Calcutta Wetland because that is also the beginning of going towards making it a Ramsar site.

Legal intervention

In 1992, there was a legal intervention which is a milestone. There has been a good judgement debarring any construction of house and any change in land use in the entire East Calcutta Wetlands area which is 12,500 hectares. Though the 1992 judgement debarred anyone from constructing anything changing the land use within this wetland, it was a sound yet ineffective judgement. In 2002, Ramsar Bureau declared the East Calcutta Wetlands to be a Ramsar site, the only Ramsar site in South Asia which has been selected entirely for wise use and not for birds or any outstanding species over there.

2006 is the year of setting up of the East Calcutta Wetland Management Authority (EKWMA). I have described the city of Kolkata as an 'ecologically subsidised city'. Kolkata has copious ground water—you dig a hole and you can get water. It has two rivers—one river is for getting water and the other for getting rid of it. In between we have got a wetland which treats the city sewage. This makes Kolkata a unique metropolitan city in the world. In 1986, the then Chief Minister Jyoti Basu was there in the wetland. Once I had a chance of a lifetime to impress him. I drank a glass of wastewater because I wanted to tell him that this is the best wastewater treatment system in the world. I did not have any laboratory at my disposal—the only way I could prove it was to drink the water, so I drank it.

I had something to ask of him. I said, 'You are in a position to take final decisions with respect to the Ganga Action Plan, and, here, in front of you is the world's best sewage treatment plant. What I want to request you is that—let there be not a single rupee coming from the Government of India to the city of Kolkata for wastewater treatment. You please ensure that'. He had assured it and till today not a rupee from the

Government of India has come to the city for wastewater treatment. That is being done naturally, biologically by the East Calcutta Wetlands. Very few Calcuttans know this. So I call it the cheapest city in India. It is the cheapest city because it is ecologically subsidized.

But wetlands are also being rapidly filled up and I really wonder—who loves the wetlands most? Those who fill the wetlands, think about the wetlands for the entire day how to fill it up most sincerely! Are they not the true lovers of wetlands? We can have a look at some data. In 1997 there were 264 working fisheries and in 2015 it came down to 202. In 2002, 88% area was under full waterbody in a particular revenue village which came down to 19% in 2016. *The real estate has taken over the wetlands and the fish ponds.*

The forgotten genius

We have really been ungrateful to a person who changed the art, science and engineering of trash management in contemporary history of cities. He is late Bhabanath Sen, forefather of Justice Shyamal Sen who is present here today. I went to his family a few days back and very few members in his own family knew that Bhabanath was such a personality. They were very keen that I start knowing about his work and let the world know about it. I cannot describe him and his entire work in such a short period of time. I can only tell you that he is the earliest thinker in co-recycling. He started around the beginning of the 19th century and the model worked till the 60s of the last century. In 1967, the entire evidence of this outstanding heritage of co-recycling was erased because of the glaringly wrong step taken by the then Government and the Calcutta Municipal Corporation.

The historical right

Now I will be talking about a historical

sanction. On 20 February, 2015, Kalyani Mondal, a waste picker was crushed to death under a bulldozer atop ‘Dhapa’ dumpsite while working. Dhapa is the place where the city waste is dumped. I went to her house and while coming out I thought that why can they not be compensated at all? At that point of time our Chief Minister was distributing provident fund rights to the hawkers. I thought if hawkers can get, pickers should also get the same facility. That was the beginning of my effort. I wrote to the Chief Minister and she agreed to that. It took about one and half years and thereafter West Bengal became the only state in our country which allows rights to provident fund for the waste pickers. The right says—‘After careful consideration of the matter, the Governor is pleased hereby to include WASTE PICKERS within the purview of “State Assisted Scheme of Provident Fund for Unorganised Workers”’. This copy has also been given to the Labour Commissioner, West Bengal and to all Central Trade Unions because they are the implementing agencies. Not a single Trade Union is initiated in this issue because Trade Unions are never initiated unless they meet the *maliks* (owners). Here of course, there are no *maliks* as the poor people cannot reach them. If they are to get this right, they are to have their own organization and we are trying for that. Even then, this is one of the most important things that have happened to the rights of waste pickers. After 70 years, they got this recognition. They are now at least listed amongst unorganised sector workers. Rickshaw pullers are included among the unorganised sector workers. The domestic helps were also included in this category; but not the waste pickers, they are known as vandals. The Environmental Protection Agency (EPA)—a US authority had sent one consultant who had described these graceful people as vandals. I do not blame them because Americans too occasionally make mistakes; there is nothing unusual for

anybody to make mistakes. But the report was given to the Indians and they accepted it. So the mistake is not lying with the Americans but it is lying with us. The earlier we understand this the better.

The sudden death of Kalyani Mondal resulted in two things—one is the Government Order and the second is the book that I could write. The book entitled *Trash Diggers* has been published by the Oxford University Press. It is basically a collection of pictures. The Foreword of this book has been written by a waste picker. The publisher said that never in the history of publication, persons like waste pickers have forwarded a book. But my point was that Foreword should be written by someone who knows the subject and I am pretty sure that the person who wrote the Foreword knows the subject better than anyone else. The Foreword written in Bengali reads something as follows:

Ghoshbabu [the present writer] has seen us since long. No one else has ever taken our photograph and then showed us those with so much of care. All the photographs in the book are from our locality—basically we are waste pickers though some of us are involved in cultivation. You probably don't know how we manage our livelihood, how do we stay, the kind of fuel we use for cooking, the way we take our food. You may not know why pigs have holes in their ears. The photographs will let you know when you see them.

We cultivate on the Dhapa dumping ground and also segregate the garbage to sell those to businessmen at a very low price. Various waste materials picked up by us like glass, plastic, clothes, iron pieces are used for producing several items. The vegetables grown here are sold in the market at a cheaper price but no one discusses about what is going to happen to us tomorrow. We are always worried about our insecure future. I am writing these with the hope that probably you would also start thinking

about us after seeing the photographs.

They have been my teachers.

From practice to theory

Today I am going to talk especially on epistemology—how did I enter from practice to theory of the subject. Could I reach the theory at all? I really do not know. Basically epistemology is the science of knowing, thinking and deciding. I have been carefully following these three steps for all these years and came up with 10 basic postulates which I would like to share with all of you.

1. *Waste recycling comes naturally to the poor :*

I was a student of Hindu School some 50 years back or more. My mother used to sell the newspapers after reading them. I had a friend whose mother used to prepare *thonga* (paper packet) out of those newspapers and they used to sell them. *The poorer you are, the better you understand the art of recycling.* The richer you become, the faster you start forgetting the use of anything. I believe, although I am calling it a postulate, it has the ability to become a law. Postulates are not laws but laws in the making. It may take another five years to be stated as a law.

2. *To be adaptive and resilient is the lifestyle of the poorest :*

This advice should flow towards the rich people all over the world as a primary directive in climate management. From the Paris Conference there was an interesting directive given by the so-called developed nations to the rest of the world—that you have to learn to be adaptive and resilient. *They are not going to change their lifestyle at all because they cannot, and it is our responsibility to adapt and be resilient.* They are not in a moral position to advise a population who are much more adaptive and resilient than anyone else in their part of the world. So, on the contrary, we can teach

them to be adaptive and resilient. To be in Kolkata is to be adaptive. We are adapted to the level of air pollution that we have in the city! I have gone up to the top of Dhapa dump site many times in the last 30 years. If you ever go there, you can find a lady who provides lunch to the workers there. There has not been a single incidence of diarrhoea—they are habituated, they are resilient, they are adaptive to that. I was looking at a lady walking over the garbage substrate in Dhapa that was full of nails, stones, glass pieces etc. I was awestruck! How could she do it? Afterwards I could find that she has a sole like that of an elephant! Hence what they can, we cannot. This is the expression of resilience; this is what we call adaptive resilience. So who are to teach whom? Whether the rich should teach us or we should teach the rich?

3. *Greed and property loyalty is much more powerful than national policy, law of the land, regulations or international commitments. Public decisions then become business decisions and business decisions can be political decisions :*

In the East Calcutta Wetlands, we have everything. We have one of the best legal judgements in our country. We have a Ramsar declaration that it is a protected area. We also have an act that disallows construction of buildings; *but everyday buildings are being constructed.* That is why I came up with this postulate and I think I am right.

4. *Unresolved land questions are a calculated agenda for sustaining impoverishment of the poor :*

Since about 50 years after the Land Ceiling Act, lots of land were at the disposal of the government as vested land. The lands were there to be distributed among the farmers. Accordingly, they were making the *pattas* (the land-deeds). But these were not properly distributed at all in the East Calcutta Wetlands. On the contrary, what

was distributed was a blank sheet, where names of the farmers and the areas were mentioned with the signature of a political representative at the corner of it. That was flagged as the right given to them. The community members were not intelligent enough and they accepted those so-called land-deeds and went back home. With the change in the political regime the present authority questions the validity of the documents and throws it away. They say that these are not land-right at all and those farmers should leave the place. I have converted this incident into a hypothesis.

5. *Environmental commitments coming from the government, political parties and environmental professionals can sometimes be the first step to deceive the common people :*

One best example is conservation of wetlands. Governments all over the world announce their commitment to save them and silently allow 'development initiatives'/ real estate to fill up the wetlands.

6. *We can learn a lot of ecology and ecosystem management from the wisdom of the common people :*

In course of my service period, I was in a government department. In those days, I used to go to villages and in one of those visits I found that the majority of the children of that village were rickety. On asking 'why the children were rickety?' I got the answer which I will never forget. An elderly person told me 'Why will they not be? We have polluted the paddy fields by introducing pesticides and agrochemicals. The fish they used to take do not grow anymore and hence, there is no protein for the kids. The result is that the kids are getting rickety.'

So who is a scientist? Who is an ecologist? The person who could connect these two apparently different phenomena into one and explain the whole thing so easily—is he not a scientist? Is he not an ecologist?

7. *Observations can be biased and superficial unless it is multifaceted and time tested :*

This is rather simple. If you look at anything from one particular angle, it is invariably likely to be a wrong perception. This we can see every day when someone comments on some incident and another puts a counter-comment. This is not because any one of them is wrong but our views can change as we change our perspectives. What should we do then? We must develop a kind of cognitive method of looking at an object through various time frames. That can give a better understanding of the truth.

8. *Alarmists can be a big threat to ecosystem knowledge. In ecology, unlearning can sometimes be the beginning of learning :*

I have found quite a number of scientists finding toxic threats in the fishes grown in the East Calcutta Wetlands. Well-meaning alarms are welcome. What is remarkable is the inherent safety-valve which is working. These fishermen are extremely careful to avoid any toxin in the wastewater because fishes dislike toxins more than the humans. They simply die and the fishermen know it. For all these years, I have never found this caution lacking among them except for the last few years when I am pretty sure that toxic elements are entering into the East Calcutta Wetlands because there are a number of illegal plastic factories growing up along the wastewater canals. A local MLA, when asked by a reporter about these units, said that he is helpless in this matter. But the point is that the wastewater is getting polluted and the fishes may start dying.

Lester Brown, one of the most well-known environment writers in the world makes unsubstantiated statements. He once wrote that Canada has reduced its forest land to an alarming extent. Canada however could prove it easily that they have enhanced

their forest coverage and it has actually improved. So, one has to be very careful in filtering falsehood and misinterpretations. That is why in many cases unlearning is the beginning of learning. There are times when one should start unlearning and begin learning. You give three years of time for unlearning carefully and then start learning again.

9. *To avoid looking at one's backyard is never a solution to the impending disaster :*

Calcuttans avoid looking at their backyards. If we have this attitude that—I am fine, my child is going to a big school and learning English fluently—then that will not make a responsible citizen. One single message that we can bring out from today's discussion is that just being oblivious of what is happening in the backyard may not be the best way to avoid disaster.

10. *For modern civilization to survive it has to learn to live creatively with Nature :*

This is one thing I have learnt from the community living in the East Calcutta Wetlands. When they look at wastewater, they first of all look at the colour. If they are happy with the colour, then they go for the smell and thereafter the taste. I have been trained to know this method. This can replace typical laboratory analysis altogether. This is much cheaper and much more reliable. This is an example of learning to live creatively with Nature. There are many more examples like this.

Wastewater is allowed to enter into the fish ponds through bamboo sieves which disallow fishes to pass through the openings because the fishes have a tendency to flow against the tide. This is entirely a locally innovated technology they are using.

In another event, the elderly ladies come out of the house around midday with containers at their disposal; they pick up snails from pond bottoms. They utilize the time by discussing happily the best of the things in the world. They are very happy at

that time because there is no one to interrupt them. After collecting the snails, they sell these to persons waiting to buy. What they do with the money? Of course a portion goes for boozing, a portion for buying little titbits for their grandchildren and definitely a portion for the daughter-in-law. They are a very peaceful family—I've seen it. I also saw there one lady crushing the snails. After crushing she gives those to the ducks to be used as duck-feed. Then the ducks go merrily into the ponds, swim there and the duck droppings are used as fish-feed. So look at the ecological cycle! *Will you read books only or go to these places as well to learn ecology?*

The wastewater that went out of the fish

ponds was also used in the paddy field for another second crop of paddy to be grown. Previously they were not using this water for growing paddy. They keep on improvising and increasing their knowledge.

In 1985, I went to Lima in Peru for the first time to talk about the East Calcutta Wetlands. After I finished, perhaps someone who was in the chair told me: 'Tell us in one single sentence what is your take from the East Calcutta Wetlands'. I was quite young at that time, and naturally I fumbled a bit and then I said 'Give me poverty and sunshine, I shall give you food, employment and sanitation free of cost'. I may add one more—I can sequester carbon free of cost'. ■

- * Late Professor Dhrubajyoti Ghosh of Indian Institute of Engineering, Science and Technology, Shibpur, and a famous ecologist, delivered this speech at the Institute on 8 April, 2017. The lecture was organized by the Vivekananda Science Circle.

(Continued from page 25)

Despite this, some *bhaktas* may chafe at the separation. They may not be content to behold the face of their Chosen Ideal; they may want to become one with it. In such cases, they have to go beyond *bhakti*. In such cases, too, as in so many others, Sri Ramakrishna shows the way: he is the trail-blazer. In many of his *sādhana*s, he first beheld the vision of the deity he was

seeking, then merged into it, then merged into the formless Absolute.

For some of us, that may never happen, and may not need to. But if it does, *bhakti* is no longer necessary: it has already done its job. Then the *bhakta* merges into the Chosen Ideal, the Chosen Ideal merges into the Absolute, dualism segues into monism, and *bhakti* into *jnāna*. ■

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