

**INTEGRAL Season Four: Environmental Justice and the Common Good**

**Bannan Institute, Ignatian Center for Jesuit Education, Santa Clara University**

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**THERESA LADRIGAN-WHELPLEY:** Welcome to INTEGRAL, a podcast production out of the Ignatian Center for Jesuit Education at Santa Clara University; exploring the question: is there a common good in our common home?

I'm Theresa Ladrigan-Whelpley, the director of the Bannan Institutes in the Ignatian Center, and your host for this podcast. We're coming to you from Vari Hall on the campus of Santa Clara in the heart of Silicon Valley, California. This season of INTEGRAL, we're examining the ways in which a commitment to environmental justice is central to our pursuit of the common good.

Today, we will look at issues of water justice and water security and consider the compounding effects of climate change, waste contamination, corporate management, and load. How can we forge a path towards greater water security that includes environmental justice and sustainability?

**IRIS STEWART-FREY:** On a local to global scale we have closed our eyes to the finite nature of water resources, leading to what many experts have described as a global water crisis.

Water security is an integral piece to the common good in our global home. Without reliable access to sufficient and clean water, for health, livelihoods, and production, no individual and no community can reach its full potential.

**THERESA LADRIGAN-WHELPLEY:** To unpack these question, we're joined today by Iris Stewart-Frey, Associate Professor in the Department of Environmental Studies and Sciences at Santa Clara, and Bannan Institute Scholar in the Ignatian Center. Professor Stewart-Frey's research is focused on past and future impacts of climate change on water resources for humans and ecosystems. In addition, she has been a collaborator on studies examining environmental

justice questions in Santa Clara County, and an interdisciplinary project looking at food and water security for smallholder farmers in Nicaragua. Welcome, Iris!

**IRIS STEWART-FREY:** Thank you, Theresa. Today I would like to reflect on **environmental justice and the common good** through the lens of water security. Let's begin by hearing from members of a community who have been living with water insecurity for several decades.

**CHIEF DEAN SAYERS [AUDIO CLIP]:** The inequity around the water quality in our community is huge...there's all kinds of issues that each one of the wells and each one of our families and each one of our communities is dealing with continually.

**CRISTAL SWAIN [AUDIO CLIP]:** The water is very bad...we don't consume it at all. I have a three year old right up to a thirteen year old...five girls in total that have been raised without good clean water.

**HAZEL SNEAKY [AUDIO CLIP]:** Our whole life we've been under a Boil Water Advisory. Our fountains all over at the school are all covered up because we can't drink from them anymore.

**IRIS STEWART-FREY:** The voices you heard are those from members of the Batchewana First Nation in Ontario, Canada. Although Canada is considered one of the most water-rich countries on the globe, the southern Prairie Region is facing increasing water scarcity due to agricultural and industrial withdrawals of surface water, and the water in many indigenous communities in Ontario is unfit to drink after decades of failing infrastructure investments. Contaminants in the water include coliform bacteria, E. Coli, uranium, and cancer causing trihalomethanes.

Every day, mostly in the developed areas of the world, people turn on their faucets and showers without giving it a second thought. Everyday, people, mostly in the developing areas of the world, have to risk their safety to walk to a well for a jug of water that must be sufficient for all the drinking, cooking and bathing needs for their family; or they are on a water system, but must carefully plan each of their days around water shutoffs, or they worry that the water they give to

their children will make them ill. Water security is an integral piece to the common good in our global home. Without reliable access to sufficient and clean water, for health, livelihoods, and production, no individual and no community can reach its full potential.

**[SOUND OF FLOWING WATER]**

**IRIS STEWART-FREY:** I am part of an interdisciplinary research team at Santa Clara University that works on issues of food and water security with smallholder **coffee growers in northern Nicaragua**. The communities draw their water from a web of springs and small streams. Several villages are clustered around the same mountain forest that serves as the water source for the region. The streams that run down the mountain side are small and bubbly. You can easily wade in them, and there are one or two streams for each of these communities. Aside from the rain that waters the crops they grow, these streams and a few springs is all the water these villages can depend on. Visit the streams and you may find women bathing their children or washing clothes or dishes. During the Spring dry season, little rain falls, there is less water seeping out of the springs, and the streams in the lower areas of the villages almost dry up.

Each community has a **small water system** which draws water from a spring up the mountain near the stream's origin. A PVC pipe above-ground brings water from this spring to a concrete tank that sits above the village. Such a tank for the entire village of several hundred people is about the size of a small bedroom. For disinfectant, people use a simple system of slowly dissolving chlorine tablets as water flows into the tank, but obtaining the tablets requires a trip to town - so there are times when these tablets run out and the water remains untreated. Overnight, the outflow valve of the tank is closed, so the tank can slowly fill up. In the morning, the valve is opened and water will drain to houses and community faucets. By midday the tank is empty again and families drink and cook and wash with the water they have stored from the morning. On average each person in these villages will get around 10 gallons of water a day from a water system of this size. By contrast, the average person in California uses about 190 gallons of water a day, with much of this water delivered over hundreds of miles from source to consumption, and with much of the water spent on irrigating decorative landscapes.

## **[SOUND OF FLOWING WATER]**

**But what actually is water security?** Are the coffee farmers in Nicaragua water secure as they have a working community water system? At what point are you water secure? Are you water secure when you can turn on your tap any time of the day and water flows out? If you can take 30 minute showers and turn on the sprinklers to your lush green lawn anytime you want to?

What if that water out of your tap is contaminated as it is in agricultural communities right here in California? What if that water is only flowing out of your tap because it is pumped here over hundreds of miles from another community and that community is now short on water? Are you water secure then, or are you just part of an elaborate water embezzlement scheme?

What if water is flowing out of your tap and no other community is short-changed on their water, but the rivers supplying that water are now running so low that much of the endemic fish have disappeared or the aquifers that your water is coming from are being sucked dry and will not be there for your children? Are you water secure if water flows out of your tap, but the ice and snow that are the source of this water are rapidly disappearing because of a warmer climate? Or if the population in your community is increasing so rapidly, that the water pie has to be divided among more and more people? Are you water secure if water is flowing out of your tap, but a prolonged drought has forced the farmers around your town to abandon trees and leave fields fallow?

## **[SOUND OF FARMER]**

**IRIS STEWART-FREY:** **Water security** is a relatively recent term. On one hand it, involves understanding the environmental system in the watershed that the water comes from - that is, how much water is infiltrating into soils or flowing through the streams and aquifers? On the other hand, water security also means that we understand and balance the needs of humans and ecosystems that depend on a watershed, that we know the capacity of the water infrastructure such as dams, delivery systems and irrigation pumps, that we understand the political systems and institutions that make decisions about how the water is extracted, used, and distributed, that we understand how water is valued or priced, and that we recognize and protect cultural norms,

human health and ethical considerations. Thus by nature, the concept of water security is rather interdisciplinary.

Framings of water security in the academic literature have become more evolved and are expanding. Initially, the focus of water security was on having sufficient quantity and quality for present human use.

A water **infrastructure and systems approach** to water security is focused on safeguarding water delivery systems, the dams and aqueducts, reservoirs pumps and pipes, and to protect against water related hazards such as contamination, sabotage, floods and droughts.

**Demand-driven assessments** of water security consider the number of people and the water they withdraw from rivers and streams compared to the amount of water available in those rivers. This type of assessment is an easy calculation, but it does not ask if water is distributed equitably or if water sources are depleted in the long term.

More recently, **human-needs-based approaches** incorporate both the short-term and long-term needs to protect the water security of the individual, community, or region. These approaches see water security as a critical part of water access, food security, and human development; all of which do not incorporate the needs of ecosystems or the long-term sustainability of the water resource.

Using this perspective, there is water security if the average human water needs are satisfied, but quantifying the variability of flow throughout a given year, or over multiple years, or the sum of water withdrawals is often challenging. In addition, defining human water needs raises complex questions. Basic water requirements for survival include drinking and cooking, but we also use water for bathing, washing, cleaning, and growing food. In addition, water is used to dilute our wastes, produce our goods from jeans to pots to cell phones, and generate our energy. The water required for each of these is dependent on the local climatic conditions, cultures and traditions, diet, technology, and wealth. What then, determines how much water we humans 'need' and how much we should be allocated? In many places, we have sucked our aquifers, lakes and rivers dry, based on what we have perceived as human need. The delta of the once mighty Colorado

River now receives but a trickle, the Aral Sea contains only a fraction of its expanse a century ago, and rainfall and water availability in the Amazon are shifting because of increased logging.

As a response, **integrative approaches** to water management have become increasingly widespread. Integrative water management acknowledges the importance to meet both human and ecosystem needs, while recognizing their interdependencies.

However, an integrative framing does not necessarily make water security easier to apply; the need to balance competing demands becomes increasingly salient as more components are incorporated into the concept, and a risk of conflating water status (such as ecosystem health) with stressors (such as the strength of governing institutions) has been recognized.

In addition, scale is a critical concept for water security. Different disciplines address water security **at different scales and across boundaries**, development studies focus on national scales and political boundaries, hydrologists assess water availability based on watershed boundaries, social scientists may focus on the community scale and boundary.

### **[SOUND OF FLOWING WATER]**

**IRIS STEWART-FREY:** Back in **Nicaragua**, village members are concerned about the presence of coliform bacteria and E. coli that periodically surface in the monthly community-based water monitoring. At least one of the communities has decided that it will need a larger and updated community water system to serve people's needs. This community is downstream on the same stream as another village. Several communities are concerned about the deforestation that is taking place on the mountain and the irrigation pumps that are dropped into the creeks without permit. These are outside of the community's boundaries.

Approaches to long-term water security will need to balance the competing demands beyond the local scale. The challenge will be to accommodate these needs for several communities with the finite water resources from the mountain.

Yet the reality of finite amounts of available water is not unique to the farming villages in rural Nicaragua. Many communities may be further removed from the management of their water, but their water sources are no less finite.

The idea that globally we have reached not only the peak of oil production, but also the **peak** of new industrial-scale **water development** has been formulated by internationally recognized water expert Peter Gleick. Gleick is the co-founder of the Pacific Institute, one of the world's leading policy research groups on water issues.

**PETER GLEICK [AUDIO CLIP]:** Peak water is the idea that we are effectively running into constraints and limits on our water use, on water availability, on water quality, on the ecosystem impacts of the consequences of our using water. Peak water doesn't mean we're gonna run out of water. Water is a renewable resource, but peak water means that we're running into limits, we're running into renewable peak limits, where we can no longer increase the amount of water we're taking out of rivers when we take all of it. We're running into non-renewable peak water limits where very much like oil we're over pumping a non-renewable groundwater supply, a non-renewable aquifer, and it becomes more and more expensive and more and more damaging and more and more difficult to pump groundwater and that's a peak non-renewable limit. And we're running into peak ecological limits, where the use of additional water causes more ecological harm than it provides economic benefit.

**IRIS STEWART-FREY:** On a local to global scale, we have closed our eyes to the finite nature of water resources, leading to what many experts have described as a global water crisis.

One of the main indicators of this crisis is the fact that we have failed to provide clean water and basic sanitation to almost a billion people on this planet. As a result, about two million people a year die due to immediate water related diseases such as dysentery, and more due the longer term effects from contaminants.

We are also facing a global water crisis as we see locally and globally the destruction of water resources in a multitude of ways. While overuse, warmer climate, and contamination are

shrinking the water resources in many corners of the globe, populations grow and water and sanitation systems are in desperate need of investment.

Conflict over water is both a cause and a result of the water crisis. These conflicts involve upstream and downstream users, inter-basin transfers, communities, industries, agricultural industries, and transnational boundaries. Most of the time they are not wars, but they are conflicts between those with power and money and those with less of both.

Another aspect of the global water crisis is that we are changing the climate. For example, in the Himalaya Region, millions of people depend on the water flowing from the mountains. But the region is in a climate warming hotspot, and glaciers are melting, and springs are drying up. In many regions of the world, a shift in the timing and amount of rain and snow, and more intense floods or droughts, are well documented. While economically strong countries are able to mitigate these effects, those that are water limited and economically challenged are likely to suffer the greatest consequences.

In addition to local use, we are transferring large amounts of virtual water in the goods we are shipping around the globe. Global trade is more extensive than ever before, and with every pound of meat and every pound peaches, we are shipping gallons of water which are not recharging the soils and the rivers in the place where these goods are coming from. With every pair of jeans and every smart phone, we accept the pollution of a water body somewhere else.

Another substantial part of our water crisis is connected to our institutions and an increasing push towards the privatization of water. We have developed a complex web of institutions to deal with water resources. In the United States alone, 20 or so agencies deal with some aspect of water, sometimes with competing interests.

For most of past 300 years, the expectation in industrializing societies has been that water and sanitation should be delivered by public utilities, at public or publicly subsidized cost. Since the 1990's, water utility privatization began to be imposed upon nations such as Bolivia, Colombia, Tanzania, and South Africa as a condition of structural adjustment and debt-relief packages. Former public water supplies were sold to subsidiaries of international water corporations, access



to water was often not improved, and prices skyrocketed, spurring widespread riots of people who could no longer afford their own water.

Amid this tangle of issues, how can we forge a path towards greater water security that includes environmental justice and sustainability? I would like to put forth that first and foremost is a change in thinking that builds new integrated frameworks around a human right to water, while requiring individual as well as institutional responsibility to investment in water systems. These new frameworks require a shift towards water systems that emphasize conservation and recycling as opposed to maximizing extraction. Managing our water systems also needs to be infused with a commitment to preserving the watersheds and ecological systems from which our waters spring - for our own benefit and for the benefit of future generations. At the same time our actions must be guided by a resolve to ensure equitable distribution on local, national, and international scales. Evidence suggests that a decoupling of provisioning water from private interests while phasing out large water subsidies for certain economic sectors would support a more equitable distribution for the common good.

In 2010, the United Nations General Assembly explicitly recognized the human right to water and sanitation. The Resolution calls upon governments and international organizations to provide financial resources, aid to capacity-building, and technology transfers to help countries, to provide safe, clean, accessible and affordable drinking water and sanitation for all. Great strides have been made towards improving water access for millions of people, but much more remains to be done.

In his visionary Encyclical *Laudato Si'*, Pope Francis connects a caring for the Earth's resources with a call for social justice and the recognition of each person's dignity. He states:

**POPE FRANCIS [TONY]:** Fresh drinking water is an issue of primary importance, since it is indispensable for human life and for supporting terrestrial and aquatic ecosystems... The environmental repercussions could affect billions of people; it is also conceivable that the control of water by large multinational businesses may become a major source of conflict in this century... Yet access to safe drinkable water is a basic and universal human right... Our world has

a grave social debt towards the poor who lack access to drinking water, because they are denied the right to a life consistent with their inalienable dignity.

**[SOUND OF FLOWING WATER]**

**IRIS STEWART-FREY:**In summary, I would like to offer that an integrative, sustainable approach to water management is a cornerstone to furthering environmental justice and central to fostering the common good in our common home. This integrative and sustainable approach is grounded in both ethical stewardship and engineering, whether we care for villages or multiple-country regions. Common-sense ethical principles include the sharing of water resources between ecosystems and different current and future human needs, the protection and allocation of water through public institutions, justice through a human right to water, and individual accountability to conserve and contribute.

When our research team visited Nicaragua last summer, we sat down with a group of smallholder coffee farmers to talk about their experiences and insights. Let me close this podcast by sharing their perspective:

**FARMER [MARTIN]:** Ahora se trata de cuidar, no se trata de destruir. Entonces, de manera general el mensaje de nosotros es que tenemos que proteger, el agua y la tierra, y el aire. Son fundamental los tres factores. Si yo siembro bastantes árboles - yo voy a tener bastantes - y si yo conservo suelo y reutilizo lo que yo saco de la finca, voy a tener tierra para futuro, y si yo conservo agua, voy a tener agua para mi cultivo y para consumo. Entonces [...] la tierra, el agua, y el aire están conectados a la vida de [todos] nosotros.

Now it's about caring, it's not about destroying. So, in general, the message from us [smallholder farmers] is that we have to protect, water, soil, and air. These three are fundamental. If I plant enough trees - I will have enough - if I conserve soil and reintegrate what I take from the farm, I will have a fertile ground for the future, and if I conserve water, I will have water for my crop and for consumption. Then, the soil and the water and the air are connected to all of our lives.

**THERESA LADRIGAN-WHELPLEY:** Thanks for listening to INTEGRAL, a Bannan Institute podcast of the Ignatian Center for Jesuit Education at Santa Clara University. Special thanks to Professor Iris Stewart-Frey for her contribution to today's episode.

Coming up next week is Chris Bacon, Associate Professor in the Environmental Studies and Sciences department, who will be examining food justice issues, particularly among smallholder farmers in Central America.

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