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Drylab 2023: Living a Possible Future with Resource Scarcity

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Drylab 2023: Living a Possible Future with Resource Scarcity

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Abstract:

Eight female time travelers experienced a not-too-distant future of water scarcity in an isolated location in the Mojave Desert for four weeks. They could not use more than four gallons (= 15 liters) of water per person per day and consumed a water-wise vegan diet. This article reports and reflects on the experience of this art-science project. We show that the participants had no difficulty adjusting to a resource scarce environment or living in a remote location. Although many technical solutions are available to support a transition to a sustainable future, this experiment shows that behavioral changes alone could be sufficient without a negative impact on the quality of life. This leads us to reflect on the role of social and biophysical contexts in our ability to change our lifestyles.

Keywords:

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INTRODUCTION

The typical U.S. resident lives far beyond the means of Earth's carrying capacity. What does it mean to live with severe resource scarcity? In this article, we reflect on our experiences with Drylab 2023, an art-science project in which eight individuals lived for a month in a remote area in the Mojave Desert in California, enacting a potential future of extreme water scarcity (drylab2023.net). Participants were allowed to use four gallons of water a day and had to coordinate with each other in the use of their limited resources.

Living in self-imposed resource constraints is not a unique practice for artists. Throughout the 20th and 21st centuries, artists have used their bodies and time to reflect and explore new ways of being in the world. Historical precursors to Drylab 2023 include the series of endurance works undertaken by Tehching Tsieh, including "Rope Piece" (1983/84) where he was tied to another artist, Linda Montano, by an 8 foot rope for a year, and "Cage Piece" (1978/79) where he lived in a small cell-like structure for a year. Another earlier example is Eleanor Anton's conceptual photography piece "Carving: A Traditional Sculpture" (1972) where the artist spent 45 days on a strict dieting regimen, and photographed herself each day from several angles, displaying the "sculpted" results. In the "Acali" project by Mexican anthropologist Santiago Genovés, 11 people from diverse backgrounds were brought together in the summer of 1973 for 101 days to drift on a small raft named "Acali" across the Atlantic (Genovés 1975). Recent works that connect with drylab's sustainability focus include Andrea Zittel's installation "A-Z Pocket Property" (1999), a 44-ton floating concrete island anchored off the coast of Denmark, on which the artist lived for one month as an experiment in escapism and isolation; Marko Peljhan's "Makrolab," an autonomous communications, research and living unit and space, capable of sustaining four people in conditions of isolation/insulation for up to 120 days; and the ambitious "Biosphere 2" project located in Oracle, AZ. The latter project is largely understood as having emerged from a process of scientific inquiry and imagination, but was originally envisioned and manifested by an experimental theater company, with scientists joining the project in later stages of development (Smith, 2010).

In addition to its framing as an art-science project, Drylab 2023 is an example of extreme experiential learning during which the participants engaged in open-ended discovery and full-bodied engagement with each other in a harsh environment. In the rest of the paper, we provide the background to the project and a description of what happened and how the participants self-organized. We will close the paper with a reflection on the experience.

BACKGROUND

The impending water crisis

The combination of population increase, increasing wealth, smaller households, improved sanitation, more meat-heavy diets, irrigated agriculture and other lifestyle changes (Vörösmarty et al. 2000, Hoekstra and Chapagain 2007), have led to increased water use and the depletion of groundwater aquifers around the world (Konikow and Kendy 2005). Depletion of groundwater is

largely invisible from the surface. As a result, humankind has not responded in a timely manner to the depletion of this resource and groundwater extraction continues to increase every decade (Konikow 2013). Climate change is expected to amplify the water crisis through long-term droughts akin to what was experienced recently in the southwestern regions of the U.S. (Elliot et al. 2014, Cook et al. 2015).

Within the U.S., daily water use averages 80-100 gallons per person (USGS 2017). Expected droughts and the depletion of groundwater aquifers will compel the creation of additional infrastructure to bring fresh water to urban areas. This will increase the cost of water delivery. Even without these extra infrastructure demands Mack and Wrase (2017) estimate that by 2020 one in every three U.S. households will have difficulty paying their water bill should current water consumption rates continue. The rising costs of water in Mack and Wrase's (2017) study is largely caused by an aging water infrastructure that requires huge investments to maintain operations. In many cases, infrastructure needs have led municipalities to privatize control of their water systems; a trend seen globally in recent decades (Bakker 2010).

Venue

The Drylab 2023 project was implemented in the Dryland Motel of Matza Amboy (matza.net). MATZA is the general name of a series of artistic projects initiated by the Swiss artist Séverin Guelpa. MATZA projects bring scientists and artists together in various extreme sites around the world to work together to express and explore how people interact with the environment. The name Matza is inspired by a popular practice of direct democracy in the canton of Valais that dates from the end of the 15th century. Taking the form of a log with a human head, a mace (the matza) was raised as a sign of rebellion by the people against the designated tyrant and displayed in the public square. The inhabitants, encouraged to revolt, would plant a nail in a show of solidarity.

Beyond the political role it played in the history of the Upper Valais, the mace has a strong symbolic dimension forever linked to the identity of the Valais population. It reveals the determination of a community to defend itself and take control of its destiny. The social, economic and political history of the Valais is thus made up of these singular elements and inventive processes, which highlight the liveliness of a community, its deep ties of solidarity and its attachment to the land and its resources.

Elinor Ostrom (1990) who studied the ability of communities to self-govern their common resources also studied cases in Valais. The work of Ostrom is an instrumental link to connect the Valaisan experience with contemporary cases. The choice of a Californian site as part of MATZA was not accidental, as Ostrom was a native of Los Angeles and did her PhD thesis at the University of California, Los Angeles, on the governance of groundwater in California (Ostrom 1965).

Since 2015 various projects were organized in the Dryland Motel of Matza Amboy where scientists and artists work for a number of weeks together. Amboy is a privately owned, unincorporated community along historic Route 66 in California's Mojave Desert. In the distant past, Amboy had a peak population of around 700 individuals where the economy was based on hosting travelers along Route 66 and a salt and borax extraction industry (for more information about the history and culture of the Mojave Desert see mojaveproject.org). With the opening of highway I-40 in

1973, use of Route 66 dropped precipitously, causing the demise of Amboy. Currently the town hosts a gas station as well as a postal office that serve the tourists who travel Route 66.

The Dryland Motel of Matza Amboy is located in the remains of a motel as well as in a dilapidated trailer on the property. There is no running water. Potable water needs to be imported from nearby towns, of which Twentynine Palms, at 50 miles away, is the nearest. As such, Amboy is an ideal setting for enacting a water-scarce future.



Figure 1. Venue of Drylab 2023

Story line

Our intent was to create a fictional context in which participants would report from a future of water scarcity. Participants were recruited in an open call sent to sustainability and art students at

Arizona State University. The fact that the eight responding students were all female was not part of the original intent, but was employed in the story line for the project.

The experiment was set in 2023 in the Southwestern U.S. By 2023, water scarcity has been triggered by another cycle of drought; increasingly contaminated water supplies (due to reduced environmental protection as a consequence of the dismantling of the Environmental Protection Agency); and privatization of water resources instigated in response to needed infrastructure investments in California's water delivery system.

Meanwhile, national resource needs (human and financial) to support ongoing war and defense commitments have outgrown the limits of an all-volunteer military and those aged 18-34 are subject to military conscription. A "water privilege" database restricts water rights to those who have registered for or are performing military duty, are outside of the age range, are disabled or caring for young children. Our group of young, healthy, childless women have come together as a result of their "conscientious objector" status. Some have been shunned by their families because of their insistence on not serving the wars; some have voluntarily removed themselves so they do not drain their families limited water resource.

Our storyline begins when the month starts: the women have continued to move further and further away from established cities in order to find a peaceful space to live. At the crossroads in Amboy, they meet Séverin who is planning to move on from spot. He offers to leave them the space and the remains of his water tank. In the first days, he orients them to the new space.

Preparation

In the storyline we created for our project, we imagine a not-too-distant future where fresh clean water is scarce and expensive. How much water do we actually need? The World Health Organization recommends a minimum water use of 7.5 liters per person per day for basic water needs, and 20 liters per person a day if we take care of basic hygiene needs and basic food hygiene (WHO 2017). Gleick (1996) recommended a water use of 50 liters per person per day to meet basic human needs. These 50 liters included 5 liters of drinking water, 10 liters for cooking and food preparation, 15 liters for bathing, and 20 for sanitation.

We decided on a daily allocation of four gallons of water a day (=15.1 liters), twice the recommended minimum of the World Health Organization. This would give the participants sufficient water to live in a desert climate with temperatures exceeding 40 degrees Celsius with limited air conditioning. In previous years, participants at MATZA used 2 to 3 gallons a day, but previous MATZA participants also used plentiful non-potable salty water for sanitation and showers. In the Drylab 2023 experiment all water came from the fresh water container (except for limited capture of salty water runoff which was used by some participants to cool off in lieu of air-conditioning).

Besides the daily water constraint, we restricted what kinds of foods we could eat in a water scarce future. In the context of our storyline we decided we would only consume food with a low water foot print that can be grown in the Southwestern U.S. (Mekonnen and Hoekstra 2011). This means no processed food, no meat, no dairy, no coffee, no chocolate, etc. A menu primarily consisting of

squash, lettuce, kale, carrots, potatoes, tomatoes, southwest legumes, soybeans, masa, strawberries, dates, quinoa, and sunflower seeds supplied the food needs of the entire group.

In the months before the experiment the participants and faculty met a number of times. The students were exposed to the work of Elinor Ostrom and collective action problems related to water. We explored how concepts like governance design principles could be applied to Drylab 2023. We also discussed food constraints and other logistical challenges. An initial set of rules were crafted on how the group would pursue decision making during the experiment. The agreement was to work toward consensus where possible, and after that, to rely on majority vote. In addition, each participant would get one veto vote to halt a decision they were strongly against (note that no vetos were used during the project). During the experiment, faculty and staff observed the collective decision making on resource use, and were not active participants in the collective choice process.

The participants received a budget for gas (\$200 for the month) and for food (\$10 per person per day). Every three or four days a subset of the group drove the 100 miles roundtrip to the closest town, Twentynine Palms, to do grocery shopping. A water tank with 2000 gallons of water was purchased and was on site for the duration of the experiment.

The project took place from May 13, 2017 until June 10, 2017. Student participants were in Amboy for the full duration of the project (except two individuals who arrived on day five). Faculty and staff stayed in Amboy in overlapping segments for the duration of the project. They were not part of the storyline (except for Séverin Guelpa) but they followed the same Drylab 2023 water and food restrictions as the participants while on site.

RESOURCE GOVERNANCE

In this section, we discuss the way the participants governed their common resources. Although the focus was on sharing common water scarcity, the group developed a set of rules and norms covering a broad set of issues. We focus in this synthesis paper on the main observations. Just prior to commencing at the project, participants were given general parameters guiding water allotment, food and budget. Project directors offered a starting point of daily water distribution that included 2 gallons assigned individually, and 2 gallons assigned to the commons. At the start of the stay in Amboy, however, the group proposed and agreed upon a change to a daily individual allotment of 3 gallons (drinking water, hygiene, washing cloths) and a 1 gallon/day contribution to the common use (food preparation, washing dishes). Water for flushing the toilet would come from grey water collected from other uses of pristine drinking water. Water collection was arranged a few times a day. Two designated participants were assigned as water stewards who allocated the water from the tank into smaller individual and group containers (Figure 2). The water extraction was marked in a logbook and signed off by the water receiver and the two water stewards (Figure 3).

One of the challenges that emerged early on was the lack of grey water to flush the toilet (designated only for solid human waste as the group practiced “if it is yellow let it mellow, if it is brown, flush it down”). During the first few days the group used the available salty water if needed and recorded this, as if it were fresh water in their water allocation log. After a number of days more grey water was produced, especially when people showered or washed their cloths. However, there was still a lack of sufficient grey water. As such, the option of an outhouse/composting toilet

was posed and embarked upon. The entire group recycled materials scattered around the compound to erect a functional and aesthetically pleasing outhouse halfway through the experiment. This resolved the shortage of grey water.

In Figure 4 we show the weekly average use of the water per person per day. A remarkable outcome was that the four gallons of water a day was not a real constraint. The participants organized themselves in such a way that they used on average about 2 to 2.5 gallons of water a day. The private water use stayed rather constant at 1.3 gallons of water a day, while the communal water was lower in the last two weeks.



Figure 2. Water distribution at the water tank

P	5/15	5/16	5/17	5/18	5/19	5/20	5/21	5/22	5/23	5/24	5/25	5/26	5/27	5/28	5/29	5/30	5/31
Naupia	2	3	6	7	9	11	12	14	16	18	21	22	24	26	26		
Jack	2	3	6	7	8	9	10	13	14	16	18	21	23	24	29	30	
BCC	2	3		5 ^{1/2}	6 ^{1/2}	8 ^{1/2}	11 ^{1/2}	11 ^{1/2}	11 ^{1/2}	13	15	16	19	21	21		
Saf	2	4 ^{1/2}	7	9	11	13	15	17	19	20 ^{3/8}	24	26	29	31	20.5	20.5	
Kirsten				2	3	5	6	7	8	9	10	13	14	17	19		
Na.Va				1 ^{1/2}	3 ^{1/2}	5 ^{1/4}	6 ^{3/4}	8 ^{1/4}	10 ^{1/4}	12 ^{1/4}	14	15	17	20	22		
Comm. used	0	8	4	8	6 ^{1/2}	4	8	10	2	4	4	4	4	4	4		
Moso	2	1	4	6	9	10	12	14	16	17	19	20	23	25			

CASHOUT																	
Naupia	1																
Jack	1								1/2								
BCC	1								1								
Saf					1			2				2.5					
Kirsten									1								
Na.Va								6									
Comm. used																	
Moso	2																

Figure 3: Log book of water collection. Numbers show that when fewer than 4 gallons per day were used, the excess was “banked” for each person.

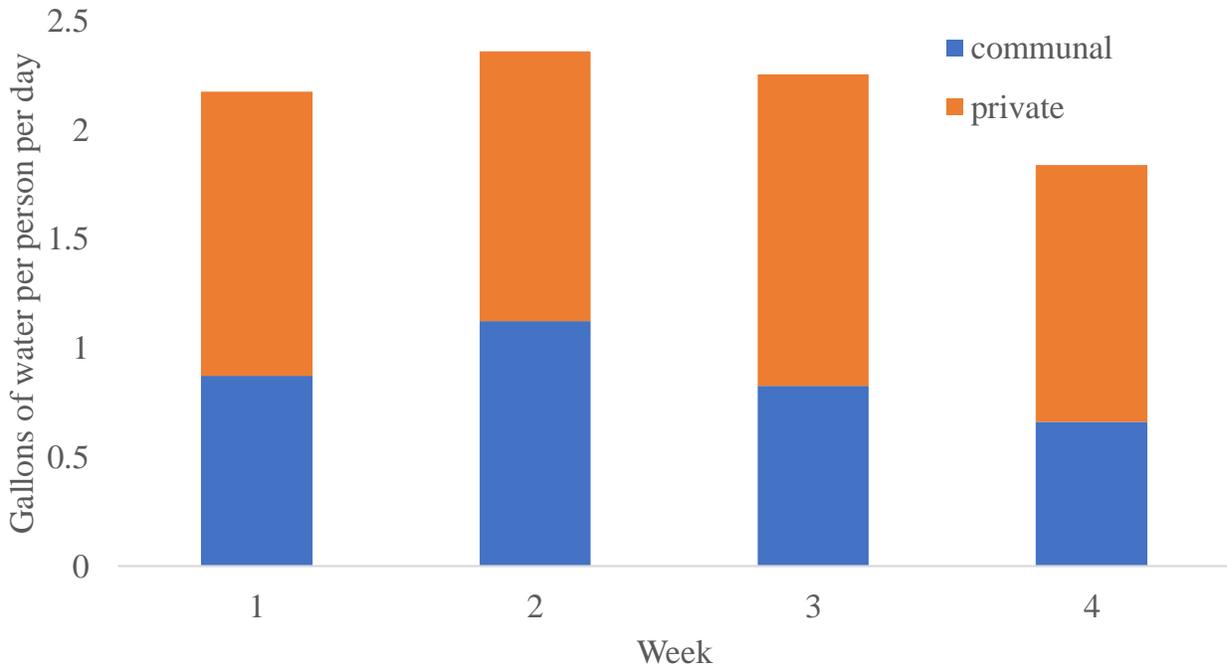


Figure 4: Graph of water use for the four weeks. Each bar shows the total amount of fresh water used (excluding greywater) per day per person for the four weeks of the project.

Another governance challenge was the preparation of food. A general lack of experience cooking for larger groups—in particular preparing diverse vegan meals—proved initially challenging for the participants. Ideally, lunch would consist of leftovers from the day before, but during the first week the group miscalculated and did not prepare enough food for the group for both lunch and dinner. As such, a lot of time was spent preparing each meal. Over the weeks those challenges were overcome.

Storage of food led to a number of collective action problems. We quickly became aware that we were not the only inhabitants of the compound and that rodents were eating food that was not stored properly. We began storing food in sealed containers, and cleaned and swept all surfaces at the end of each day. With one shared refrigerator among 12 people, participants could not use it for personal needs, such as keeping water cold. To solve this problem, a system was developed to produce a sufficient number of ice cubes during the day for making cold water.

As part of the project, participants were requested to share their experiences on a blog and disseminate the information via social media. The goal was to publish a group post each day and post an individual contribution to a personal blog every few days. The participants were free to express the way they wanted. Since the project created a fictional future scenario, some participants wrote blogs with suspense loosely based on activities in Amboy. Others used photographs, audio or video to share their Drylab 2023 experience.

The Drylab 2023 website and social media component was designed to get the broader community involved and to enable the viewing public to pose questions and the participants to respond. However, we experienced an additional resource dilemma. High speed internet service was not available in the rural area around the Amboy and most cellular phone services did not effectively

transmit to the project site. The first day the group drove a few miles out of Amboy to connect with a cellular provider. However, when the participants used the hotspot in the way they were accustomed to at home, 10 Gbytes were used in one evening (reaching the data limit). This was not a sustainable solution. Another hotspot option was purchased that could be received at the compound. However, it was decided only 20 Gbytes would be available for the rest of the project. This meant that the internet could only be used by designated laptops (with automated updates turned off) and only for project-related activities. Over the rest of the project the group successfully managed use of this limited resource and used only 14 Gbytes.

IMPACT

There were three types of impacts from this project: physical, social and behavioral. After engaging in this project people had many physical impacts from the diet change, social impacts from being confronted with a situation of communalism, and behavioral impacts from the water restrictions. While the limited water situation was what everyone focused on, the hardest part of Drylab 2023 was living together and sharing the commons of space, internet and chores. Some of the most drastic physical impacts were observed by tracking people's weights and their reactions to the diet throughout the project. An exit survey revealed that 75% of the group planned to change their diet after this project, and everyone felt compelled to save greywater at the end of this project.

Physical Impacts

The physical impacts from this project were less due to the water constraints and more because of the strict water-wise local vegan diet and lifestyle change (less stress, better sleep, more time in natural light and a focus on hydration). After taking dairy, gluten and animal products out of their diet many people felt less bloated, had more regular bowel movements, had less stomachaches and felt like they had more energy overall despite the heat and limits to water. Everyone noticed that their body odor smell was different from eating vegan and unprocessed foods. One participant recorded physical data during the project month, and all who participated lost weight, with the average weight loss being 7.9 pounds and the greatest weight loss being 12 pounds.

Social Impacts

Across the board, all participants struggled in some fashion with the social impacts. When they arrived on site they found out that almost none of them had cell phone service. This caused some to feel isolated from their communities and families back home. Both the fact that the town had only four people and that bicycling too far out in the Mojave Desert could be dangerous due to extreme temperatures added to this sense of isolation. Bicycles were the only form of transportation everyone had access to, with only one shared car with a limited transportation budget. This meant the eight women spent a lot of time together: meals were cooked together; chores were shared; grocery trips meant several of the group were packed in the car for the three-hour roundtrip drive. There was only one air-conditioning unit that worked so at first, all 8 participants spent a large portion of each day together. As they acclimatized to the setting, and settled into their new rhythms, they parsed off into smaller groups. Nevertheless, many participants had a hard time being with so many people for so long, especially in a situation where they were negotiating production of group meals and upkeep of a shared space. There was a struggle to learn to live together and adapt to communal thinking. For the first week and a half there was a lot of tension, but then people came together and started to get the hang of how to live together. However,

by the last week some people started getting restless and agitated again, perhaps due the difficult circumstances of the 40+ degrees Celsius heat.

We found that having certain skills in time and resource management, such as paying rent, allocating food budgets, gas, and so forth increased the success of living on 4 gallons of water a day in the desert. It was more difficult for participants who had not previously been burdened with these sorts of responsibilities to adapt to conditions that required forethought, cooperation, and coordination.

Behavioral Impacts

Every participant had the intension at the end of the project to be more water conscious and to start capturing grey water. Most participants had the intention of continuing the diet we had at Drylab 2023. A month later participants were contacted again and asked whether they had adopted this new behavior. All participants had a new-found awareness of water usage and consciousness of their own consumption. Many participants changed their behavior after drylab such as the adopting the “mellow-yellow” rule, saving greywater, and handwashing dishes. Those that were not as successful in changing their behavior around their water consumption had challenges related to sharing a space with other people that did not share their water consciousness. For example, for participants that shared a bathroom with other people, the other people had objections to letting urine sit in the toilet (“mellow-yellow” rule). For these same reasons, as well as constraints on time and money most participants did not keep up the water-wise diet.

Six of the eight participants used reusable sanitary products such as a diva cup, half of which started using these products because of this project, saving an average of about 120 tampons every month. Overall, while the water usage and diet changes went mostly back to normal, participants are now more conscious and aware of the consequences of their actions and try to mitigate them when possible.

OSTROM’S DESIGN PRINCIPLES

In this section we consider Ostrom’s design principles (Ostrom 1990) in order to reflect on the successful self-governance of Drylab 2023 participants’ shared resources. Their successful performance is indicated by the observation that the group used less water than the restricted allotment; used less internet bandwidth than allocated; and spent only 7 dollars per person per day on food (budget was 10 dollars per person per day).

DP 1: Well-defined boundaries:

The group was clearly defined by the eight participants who committed themselves to their month-long experiment. However, there were additional participants such as the faculty and staff who followed the same regime when on the compound. Other outsiders such as visitors did not follow the restricted use of resources, though it is important to note that residents and workers at Amboy live every day within the constraints of having no running potable water.

The water resource was clearly defined as a water tank.

The physical isolation and lack of internet had important benefits. Due to the physical isolation of the site, there were no nearby temptations of violating the strict diet. During grocery shopping trips

this could be a challenge and restraint and accountability was needed. The lack of access to the internet encouraged people to interact with each other instead of with the rest of the world.

DP 2: Proportional equivalent between benefits and costs.

Why would people sign up for this? The students were recruited via an open call and personal networks. They all perceived the experiment to be valuable for themselves and aligned with their emerging professional interests and commitments. Students received a modest stipend, course credits and food and lodging during their stay. Each student also had defined plans to pursue activities during their stay in Amboy in the context of their research and artistic interests.

DP 3: Collective choice arrangements:

When there was a group discussion, typically after dinner, everyone would have a say by passing around a “talking stick.” The group strived for unanimity, but if there was no obvious consensus, a vote was taken. Each participant was allocated one veto for the duration of the experiment in order to give her the power to reject a decision with which she strongly disagreed. No veto was used during the entirety of the project.

There were some challenges in collective decision making. Since there was no officially designated leader of the group, nor a chair during the collective meetings, some issues were left unresolved, but continued to be addressed further as needed. It is important to note that faculty and staff were only observing the collective decision making and let the eight participants self-organize.

DP 4: Monitoring

At the beginning of the project, water could only be dispensed from the water tank by the two water stewards. They recorded the water extraction in a log book and both the receiver and the water stewards would sign off. After the first week, the signatures were not continued. During the last week of the project a new rule was voted on that allowed participants to extract water as long as somebody else was present (not necessarily one of the water stewards). The rationale was to make the process more flexible. Unfortunately, this process continued successful monitoring of water extraction, but resulted in incomplete recordings of water outtake in the logbook.

DP 5: Graduate sanctioning:

No consequences were defined by the participants should people not follow the procedures agreed upon. As such, defined social norms existed, but no firm rules (Ostrom, 2005). This is not uncommon in small communities (de Moor, et al. 2016). As long as informal processes work, no specific penalties are defined.

DP 6: Conflict resolution:

Prior to the project start, one of the participants with experience in conflict resolution was designated the point person for needed mediation. Upon seeing a need, the group met every few days, away from faculty and staff, to do a wellness and emotional check-in and openly express their feelings with each other.

DP 7: Minimal recognition of rights:

As is to be expected in any group, different people involved had different rights. Séverin Guelpa was the host and did not follow the self-imposed restrictions of the project during the two weeks he was at the compound. The same holds for visitors (staying shorter than a day). Student participants were generally responsible to each other. Faculty and staff did not participate in the formal decision making on how the group wanted to organize their limited resources. In certain cases, for example in the context of excessive bandwidth use of the hotspot, the faculty set limits to stay within the project budget.

DP 8: Nested enterprises:

The project was located on a compound of a dilapidated motel behind locked gates. Interaction with the world outside the gate could be a challenge given that people were unaware of the project. Going grocery shopping required restraint. There was engagement with the few residents of Amboy. This led to some bartering of labor or self-made jewelry for some chocolate or other forbidden fruits.

This brief analysis of the design principles reveals that many of them were applicable to this experiment. However, there could have been improvements in collective choice arrangements and graduated sanctioning arrangements. Furthermore, monitoring became less strict over time. What explains the success of the group was the development of bonds and trust relationships during the course of the project. As some of the participants indicated, they did not experience this experiment as a water governance exercise but as a process of living in harmony as a community undergoing scarcity and extreme conditions.

Although the group was successful in meeting its goals, the reliance on trust relationships might not be sustainable if a serious conflict would emerge. Although there were challenges in living together, the group stayed functional until the end of the project. From historical analysis of the commons we know that new institutional rules typically emerge after events that challenge the functioning of the community (De Moor 2015). For example, new rules of water management in the Republic of the Netherlands were created in responses to serious flooding events (Kaijser, 2002). One bad apple can spoil the bunch: meaning that one person who would not follow the social norms could have led to problems that with the initial Drylab 2023 institutional arrangements that would have been difficult to resolve. An evolution of collective choice arrangements and the instantiation of graduated sanctions and penalties might be needed in such a situation. As an educational art-science project we are delighted to report that such events did not take place.

DISCUSSION

In this section we reflect on a number of aspects we experienced during Drylab 2023.

Time

Participants expressed that they experienced a different perception of time. Temperatures and daylight defined what and when activities were done, not the official clock time. During the cooler morning hours physical activities took place such as hiking or building the outhouse, while the hot afternoons were used for resting. Being from a society that coordinates activities around clock time made this an enlightening experience for most of the participants. This relates to the biggest challenges for many of the participants—the lack of internet. With limited phone reception, most

participants could not continue their online habits as they were used. Though a challenge, toward the end of the project, many participants reported being grateful for the time spent away from their screens. This may have facilitated the rich group dynamic and commitment to the project.

Structure vs. Lack of Structure

Less than halfway through the project, participants expressed concerns about shared responsibility regarding upkeep of the house. The group decided to eschew a firm structure of rotating chores, since a portion of the participants expressed an antipathy for structured time (cleaning schedules, etc). Instead, the group worked together to address the need for cleanliness and order (which must be said, varied greatly among participants) through novel ways of organizing the space. It came to light that those who identified as scientists and social scientists were invested in and more comfortable with structured time schedules, while those who identified as artists enjoyed and yearned for greater structuring of their space. Participants learned that the issue was not one of liking/disliking structure (as it was originally posed), but rather could be understood around structured time versus structured space. It should be noted that other variables such as age and experience and living independently (with the majority of the artists being older and having lived on their own for a longer time) may have impacted this split more than a cultural distinction between artists and scientists. Nevertheless, this insight could be explored further, especially as further interest in cross-disciplinary art/science collaborations continues.

Speculative Fiction Frame

During the project, the near future speculative fiction scenario became closer to fact. We developed the basic storyline in the early fall semester, and then the election of Donald Trump as President made our storyline more realistic. This was illustrated by the U.S. withdrawal from the Paris Climate agreement during our stay in Amboy (we blogged about this from the perspective of the sixth year anniversary), as well as the return to viability of a proposed groundwater extraction project in the Mojave Desert by the private company Cadiz, Inc. (Jablon 2017) and the rapid dismantling of EPA regulations.

Some participants felt comfortable with and shielded by the fictional framework—using their characters to dramatize important perspectives and struggles. Other participants chafed under the performative framework, and cast it aside; merging their identity with their character and relaxing into life as it unfolded.

Privilege

The issue of privilege loomed large for participants. Some followers of our blog posts raised the issue that the group consisted of privileged people who can go back to a resourceful society at the end of the 30 days, while many others live this life in reality. Participants held serious and significant discussions about this issue offering their perspectives and listening to others—eventually resulting in an important response posted to the Drylab 2023 site. To summarize the posted response, the participants articulated that this project was meant to raise awareness of issues of water scarcity, already a reality for many people in the U.S. and beyond. The project is an educational experience, not a solution to a problem. The project demonstrates that living in such resource-scarce environments can be a doable and pleasant experience. In the words of the participants:

“The more money you have the more water you use, there is a direct correlation between wealth and water use. If we are the ones using the most resources, then we are the ones who need to learn how to use less. If privileged people won’t change their water usage, then inequalities won’t change. Drylab is a simulation of the work that privileged folks ought to be doing: experiencing water scarcity and sustainable living, phenomena which we are currently free to dismiss. We also hope to bring this information not to people who already live in scarcity, but to other privileged people who are wasteful with their water and have never had to experience scarcity or consider the ramifications of their over consumption. We hope to use our privilege and platform that we have created to bring awareness to these issues.” Source: www.drylab2023.com

Individualism

In defining solutions to problems the group experienced, solutions were proposed in line with what they were used too. As all participants grew up in North America, private property is a default allocation of resources. This reflects observed differences in cultural upbringing and how they shape thinking and actions related to the commons. Nisbett (2003) demonstrates the difference in thinking between the individualistic Westerns and the collective Asians.

This also explains why on the first day participants immediately moved the original design from two gallons of personal water and 2 gallons of communal water to 3 personal gallons and 1 communal, reverting to the private property model. This caused a shortage of communal water, leaving us a few days where we ran out of communal water. When one participant requested to move back to the original design (2/2), there was a lot of resistance. The final vote was a tie and the idea was benched. After it was calculated in week 3 that participants would have access to more water if we moved to the original structure there was still some hesitancy, though this was reported to be related to the difficulty of making a change so late in the project.

Cultural Challenges between Artists and Scientists

Aside from the differences in relation to time and space there were some marked cultural differences that were attributed to being trained in art versus science. Those that were trained in science wanted charts, rules, structure and discipline. They had a hard time with free time and struggled with those that were trained in arts, who seemed to have an easier time with self-structured time and abstraction. The artists had a different way of doing things then the scientists understood and vice versa. One example is how the artists wanted the final presentation to the community to be a picture slideshow while the scientists yearned for a chance to interpret their data and show their results. For the artists, the final presentation-as-images had to do with thinking about the relationship between the group as author/presenter/artist and the audience, a key critical demand when creating aesthetic experiences. However, those that were interested in working across disciplines were able to work together by being mindful of their behavior, willing to compromise, as well as flexible and adaptable.

CONCLUSION

To reach a sustainable future, a transition in our society is needed in how we produce, distribute and consume our limited resources. The key focus in reaching such a transition is often technological innovation (Markard et al. 2012). However, there is a concomitant need to make a transition in everyday lifestyles (Shove and Walker 2010). Our art-science project demonstrated

that a transition to a lifestyle with a much lower environmental impact is possible. When this project was launched, some outsiders perceived this as a kind of survival project. In practice, the group did not experience the water constraints as a limiting physical factor as they successfully adjusted their everyday lifestyle and coordinated effectively with the other group members to negotiate within scarcity.

No new technologies were needed to live with water scarcity since behavioral changes were sufficient. However, this transition might largely be shaped by the distant physical location and unique site where the group was living. The biophysical environment restricted temptations to high resource lifestyles, which supported the participants' persistence in this temporary lifestyle change. Furthermore, a rich and present community developed as a result of shared challenges, open and intentioned non-hierarchical communication, natural surroundings and the foregrounding of beauty, poetics, and learning in daily activities. This underscored the importance of behavioral change for a sustainable future and the role aesthetics and community-building can play in supporting such transformation.

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