

4th APSAFE Symposium

Supporting Sustainable
Food Systems:
Quality Food and Ethical
Consumption

December 3 - 16 2020

ONLINE

Individual Presentation via Slack & Google Meet
Keynote Speech via Google Meet

Proceedings complete version



The Asia Pacific Society for Agricultural and Food Ethics (APSAFE)
European Society for Agricultural and Food Ethics (EurSAFE)



Inter-University Research Institute Corporation
National Institutes for the Humanities
Research Institute for
Humanity and Nature



Proceedings complete version

Asia Pacific Society for Agricultural and Food Ethics Conference 2020
Supporting Sustainable Food Systems:
Quality Food and Ethical Consumption

December 3-16, 2020 Individual Presentation via Slack

December 11, 2020 Keynote Speech via Slack & Google Meet



APSAFE2020

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Quality Food and Ethical Consumption

December 3 - 16 2020

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Individual Presentation via Slack & Google Meet
Keynote Speech via Google Meet

We cordially welcome researchers, students, policy makers, community activists, and practitioners!

Admission Free!

Presentation and Discussion via
Slack

2 Weeks
for Networking Opportunities

New Knowledge and Ideas on
Food Ethics

Rethinking and restructuring food production methods is inevitable if we hope to make food systems more sustainable. New technologies in agriculture, aquaculture, animal husbandry, and food processing have many potentials, and research results from various perspectives such as agroecology, resilience, human-animal relationships, degrowth, gender, and food sovereignty have many visions for future. However, none of them are a panacea. To tackle the wicked problems of the food system in each place, we need a platform for transdisciplinary mutual learning. We hope that APSAFE 2020 will be one of those opportunities to create such platform.

<https://www.apsafe2020.online/>



December
3

Opening Plenary

Kirill O Thompson Taiwan National University

December
3-16

Individual Presentation

Keynote Speech

December
11

Paul B Thompson Michigan State University **Wei-Chi Chang** National Tsing Hua University
Steven McGreevy Research Institute for Humanity and Nature **Mimi Lam** University of Bergen

December
16

Closing Plenary

Organized by

The Asia Pacific Society for Agricultural and Food Ethics (APSAFE)
European Society for Agricultural and Food Ethics (EurSAFE)

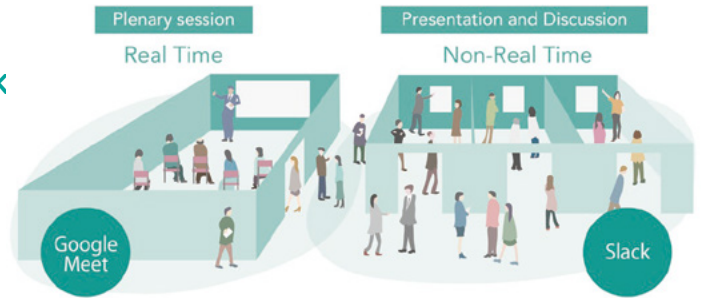


Inter-University Research Institute Corporation
National Institutes for the Humanities
**Research Institute for
Humanity and Nature**



Plenary session via Google Meet, Presentation and Discussion via Slack

Real-time events, including plenary session, will take place on Google Meet, while presentations and discussions will take place in Slack. After registration, anyone can participate in the real-time events and discussions.



Program

December 3 Opening Plenary via Google Meet & Slack 20:00-22:00 (JST)

We will post Google Meet links for Opening Plenary to Slack (#tba) on December 2 in Japan time.

20:00	Welcome Speech (Conference Schedule)	Kazuhiko Ota
20:10	Introduction of Slack & Google Meet	Kazuhiko Ota
20:20	Plans for Special Issue of the Food Ethics Journal	Matthias Kaiser
20:30	Lightning Talk (Self introduction)	Presenters (applicant)
21:15	Visioning speech Ethical Musings on Farm and Food Futures	Kirill Thompson
21:35	Discussion	

December 11 Keynote Speech via Google Meet & Slack 20:00-22:30 (JST)

We will post Google Meet links for Keynote speech to Slack (#tba) on December 10 in Japan time.

20:00	Introduction	Kazuhiko Ota
20:05	Keynote speech 01 Agriculture and Food Ethics: Is It Time to Go Back to Basics?	Paul B Thompson
20:25	Discussion	
20:40	Keynote speech 02 Food Safety or National Security? : The Impact of Global Political Changes on Local Food Systems in the Post Pandemic Era	Wei-Chi Chang
21:00	Discussion	
21:15	Keynote speech 03 Ethical implications of transitioning to 1.5-degree Food Systems	Steven McGreevy
21:35	Discussion	
21:50	Keynote speech 04 Sustaining the Global Ocean-Human System with Ethical Seafood Value Chains	Mimi E Lam
22:10	Discussion	
22:25	Closing	Kazuhiko Ota

Guest Speakers



Visioning speech

Kirill O. Thompson
Taiwan National University



Keynote speech 01

Paul B. Thompson
Michigan State University



Keynote speech 02

Wei-Chi Chang
National Tsing Hua University



Keynote speech 03

Steven R. McGreevy
Research Institute for Humanity and Nature



Keynote speech 04

Mimi E. Lam
University of Bergen

December 16 Closing Plenary via Google Meet & Slack 20:00-21:30 (JST)

We will post Google Meet links for Keynote speech to Slack (#tba) on December 15 in Japan time.

20:00	Closing Speech	Nobutsugu Kanzaki
20:10	Lightning Talk (Summary)	Presenters & Participants (applicant)
21:00	Discussion: Next steps for APSAFE and New collaboration	

APSAFE 2020 Secretariat



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National Institutes for the Humanities
**Research Institute for
Humanity and Nature**

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The 4th Asia Pacific Society for Agricultural and Food Ethics Conference 2020

The 4th Asia Pacific Society for Agricultural and Food Ethics Conference 2020 (APSAFE2020) was held for two weeks from December 3-16, 2020 with the theme of “Supporting Sustainable Food Systems: Quality Food and Ethical Consumption”. It was our first time to organize online conference, but the format allowed to attract 150 participants from 21 countries, and it ended with a great success. overcome vitamin A deficiency. The supplementary income of women has a positive impact on the nutritional status of the family.

APSAFE2020 was initially planned to be part of the International Conference on Applied Ethics (ICAE) scheduled to be held at Hiroshima University in December. Unfortunately, however, the spread of COVID-19 led our decision to hold an online conference. The following are the three main objectives.

1. To create an opportunity for participants to share their experiences and insights of unexpected situations in their locations in 2020.
2. To provide an open space for discussion that is easy for those who have difficulty in securing travel expenses and travel schedule (students, NPO workers, independent researchers...) to participate.
3. To support transdisciplinary collaborations that will contribute to improving the food system sustainability in the Asia-Pacific region.

After giving much thoughts to the design of an online international conference that would best meet these requirements, we decided on the following format.

- To extend the conference duration from three days as originally planned to two weeks, and
- To organize real-time events (plenary sessions, etc.) on Google Meet, and
- To promote exchange of opinions, information sharing, and mutual learning (individual research reports, etc.) on Slack.

I have read and taken into account many papers on the advantages and disadvantages of online communication, but the following is the one I mainly referred to.

Arnal, A., Epifanio, I., Gregori, P., & Martínez, V. (2020). Ten Simple Rules for organizing a non-real-time web conference. PLOS.

Combining administrative correspondence (email), exchange of ideas and mutual learning (Slack), and fun events (Google Meet) has been already used in many other online academic conferences and will probably become more and more common in the future.

21 Individual Presentation Channels



[#3-01-vijaya-khader](#)
[#3-02-james-sellmann--william-jeffery](#)
[#3-03-ria-fitriana](#)
[#3-04-tsaiyu-chang](#)
[#3-05-soraj-hongladarom](#)
[#3-06-charles-trappey--amy-trappey](#)
[#3-07-kirill-thompson](#)
[#3-08-ryohei-yamashita](#)
[#3-09-zollet-simona](#)
[#3-10-kunihiko-kobayashi](#)
[#3-11-christoph-rupprecht](#)
[#3-12-seola-joo--myung-sun-chun](#)
[#3-13-ayako-kawai](#)
[#3-14-archana-patnaik](#)
[#3-15-chandra-prasad-pokhrel](#)
[#3-16-norie-tamura](#)
[#3-17-chika-kondo--maximilian-spiegelberg](#)
[#3-18-mai-kobayashi](#)
[#3-19-takashi-eguchi](#)
[#3-20-nobutsugu-kanzaki](#)
[#3-21-greg-de-st-maurice](#)

At APSAFE2020, we had 21 individual presentations. A variety of initiatives and case studies were presented from India, Taiwan, Thailand, Indonesia, Nepal, and Japan, and their ethical exploration were all very thought provoking. Each presenter had their own channel on Slack and this presentation style resembles a poster presentation and the visitors to each channel exchanged opinions and asked questions. The topics of individuals presentations are as follows:

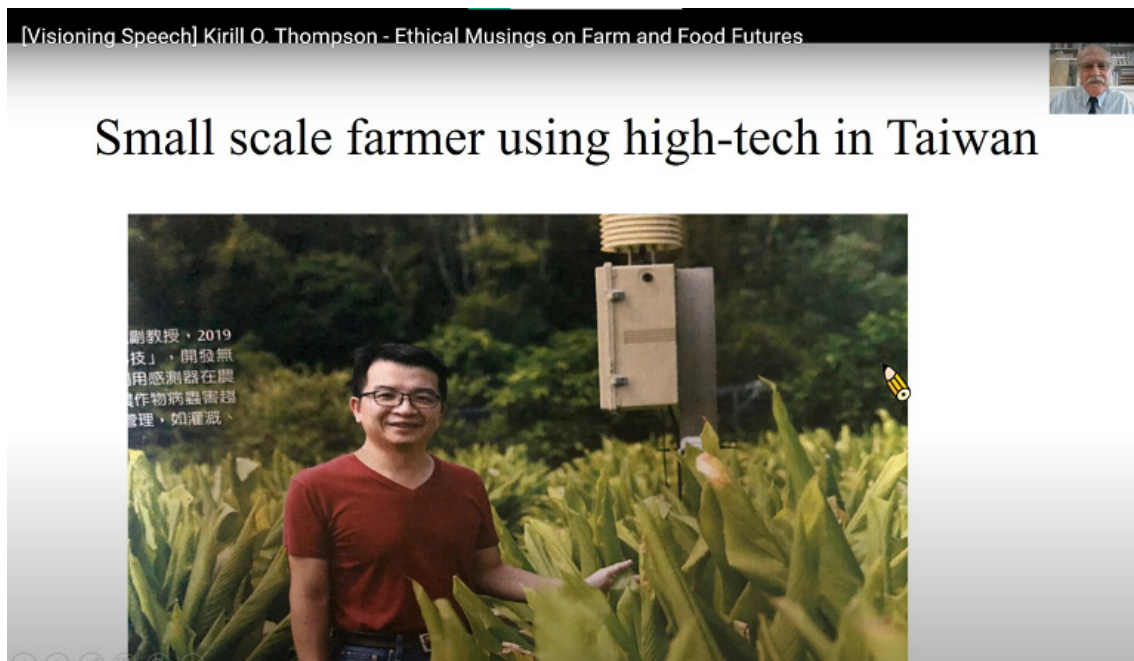
- Technology transfer and its domino effects in India (e.g. women’s empowerment)
- Virtues of ecosystem conservation observed in traditional fishing methods in Micronesia
- Rectification of the gender divide in Indonesian crab fishing
- Difficulties faced by vegetarians who travel to Japan
- Relationship between food choices, identity and exclusion from groups
- Risks in the global food supply chain: exploring from the perspective of loyalty
- The COVID-19 pandemic reveals vulnerabilities of food systems
- To what extent are urban residents interested in and willing to pay for ecosystem services?
- Alternative food networks in Japan beyond teikei (producer-consumer relationships)
- The concept of “public interest” in the debate on the revision of the Seed Act
- Why we need to move from “Green Infrastructure” to “Multispecies Cities”
- Changes in media discourse on fish at local festivals in Korea
- What is behind Japanese farmers’ seed saving practices?
- The development of civic food networks in India
- Traditional upland rice cultivation in Nepal
- Can Japan’s “Fishery Forest Movement” be the driver for a transition into a sustainable society?
- How about introducing the new concept of “everyday food” in Japan for the various alternative food concepts?
- Socio-economic and religious aspects as reflected in meat production and consumption practices in Bhutan

- How are Japanese sake localized and demanded in Brazil?
- How should food ethics researchers behave in fieldwork?
- Would social networking sites (Twitter and Instagram) promote diversity in agriculture?

Is any of these topics of your interests? You can read all the detailed short papers by the presenters for free on the APSAFE2020 website

In addition to these individual presentations, APSAFE2020 also held three plenary sessions with five distinguished guest speakers.

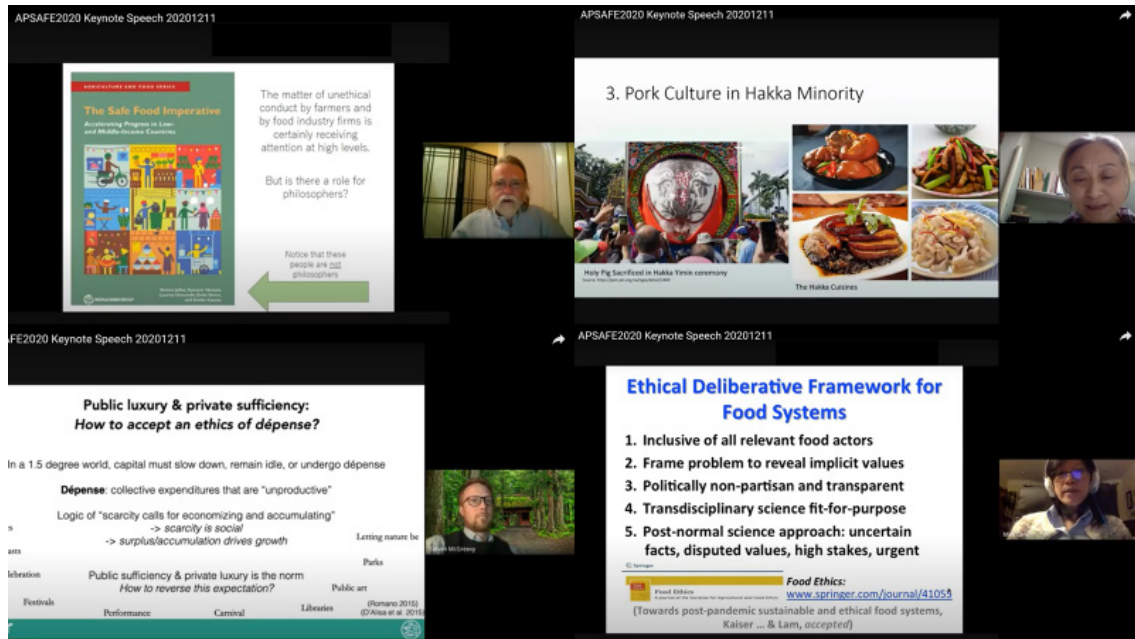
Opening Plenary



VISIONING SPEECH BY PROF. KIRILL THOMPSON

In the Opening Plenary on December 3, Prof. Kirill O. Thompson of National Taiwan University gave a visioning speech titled “Ethical Musings on Farm and Food Future”. The participants’ interest on his vision on combining traditional agriculture and advanced technology that would allow balancing sufficient food production and reduction of environmental impacts and exploitation didn’t end at the real-time discussion on Google Meet, but further extended afterwards on Slack.

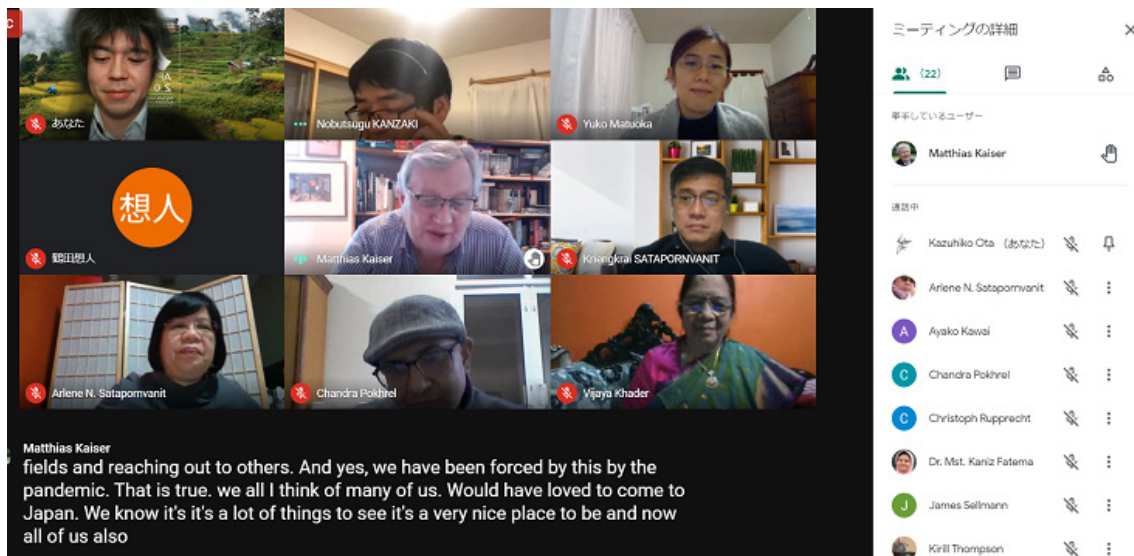
Keynote Speech



KEYNOTE SPEECHES

On December 11, the Keynote Speech session was organized. Prof. Paul B. Thompson, Michigan State University, USA, gave a talk entitled “Agriculture and Food Ethics: Is It Time to Go Back to Basics?”, which were then followed by Dr. Wei-Chi Chang’s “Food Safety or National Security? : The Impact of Global Political Changes on Local Food Systems in the Post Pandemic Era” (National Tsing Hua University, Taiwan), Prof. Steven McGreevy’s “Ethical Implications of Transitioning to 1.5-degree Food Systems” (Research Institute for Humanity and Nature, Japan) and finally Dr. Mimi E. Lam’s “Sustaining the Global Ocean-Human System with Ethical Seafood Value Chains” (University of Bergen, Norway). Although this session was scheduled from 8:00 p.m. to 10:30 p.m (JST), some of the participants continued the discussion until almost 11:30 p.m. We plan to share the recorded keynote speeches on YouTube.

Closing Plenary



DISCUSSION VIA GOOGLE MEET

And, during the Closing Plenary session on December 16, the participants shared opinions and impressions of this two-week long conference in “Lightning Talk,” and also had a lively discussion on what’s next for APSAFE such as possible topics and themes that we would like to cover in the coming webinar series in 2021 as a continuation of a discussion on Slack. Over the course of the two-week conference, 31 discussion channels were created on Slack with 3,488 posts. We will announce the details of the webinar series as soon as they are finalized. Please keep an eye out for the announcement.

As one of organizers, I was heavily involved in planning and preparation for one year. What comes up in my mind now that the conference is that a good team, good tools, and scheduling with time and room for adjustment are really important. I would like to thank all the Science Committee’s members for undertaking the review of the short papers, and the designers and secretariat staff who had created and managed a great online venue (Here is the list of our team members!).

Once again to all participants of APSAFE2020, thank you for sticking around for two weeks. May your new year holiday be full of joy and smiles!



Guest Speakers



APSAFE2020

Opening Speech

Ethical Musings on Farm and Food Futures

Kirill O. Thompson

Taiwan National University



Kirill O. Thompson teaches at National Taiwan University (Dept. of Foreign Langs. and Lit.). Major fields: Chinese philosophy, e.g. Confucianism, Daoism, etc., Western philosophy, e.g. Existentialism, early Analytic philosophy (Frege, Russell, Wittgenstein), early Greek philosophy, Hume, Kant, etc. Ethics: 20th century metaethics, Confucian ethics, agricultural ethics, food ethics and related areas. Philosophical literature: Lucretius, Thoreau, Dostoyevsky. Recently published on agricultural ethics in Chinese perspective; agrarianism; agrarianism as a way to sustainability and resilience; traditional Chinese agrarianism, etc. Co-edited with Paul Thompson: *Agricultural Ethics in East Asian Perspective: A Transpacific Dialogue*: (Springer, 2018). Keynoted the 41st Annual Research Conference at the U. of Guam on "Facing Climate Change: Changing Hearts and Minds" (March 2020). Founding member: Humanities for the Environment (www.HfE.org)

The following is the text from my power point presentation. Before reflecting on possible food and farm futures and prospective ethical issues and concerns, I remarked on humanity's connection with Nature, or the bounty of nature, as necessary to the production of food. From the beginning, the agricultural revolution, humanity has given offerings and expressed appreciation to Nature for providing the resources necessary for human farmers to produce a bounty of food that so many people — but not everyone — take for granted today.



"Emei Lake" by Yang-che Liu, Taiwan. Feeling At-Oneness with Nature

Some Recent Inspirations

- On a recent trip to southern Taiwan, my family and I chanced upon Beinan, a stone age village (3500-1500 BCE) archaeological site, museum, and park in Taitung County.
- We viewed rebuilt homes, halls, & pens, as well as original foundations, gates, graves (under homes!), and implements.
- Getting a rich impression of the social and family life, I imagined the people, who appeared my dreams for a period.



Beinan youth training lodge

- Several thousand years ago, village youth received training in crucial knowledge in such structures. One imagines that besides studying music, dance, and ritual, most crucially the youth learned hunting and farming skills-- as well as the art of self-defense and military arts.



Beinan excavation site, coffins from beneath living quarters

Beinan, site of Neolithic agrarian revolution

- During the agrarian revolution 10,000-5000 years ago, humans began to farm the land and raise livestock. Thenceforth, farming evolved as a way of life, tying people to the land.
- The Beinan people sacrificed to their ancestral spirits, fertile plain, and the sacred mountain, Dulan.
- They oriented their village, including graves, toward Mt. Dulan, in gratitude for protecting and sheltering them.
- See: <https://www.megalithic.co.uk/article.php?sid=23475>.



Beinan village was oriented toward the guardian mountain, Dulan, link given above.

Luodong Forestry Park

- On the same family trip, we also stopped at Luodong Forestry Park in Yilan county further north on the east coast of Taiwan.
- There, I saw an old photo of a shrine to the mountain spirit of Jialuo Mountain (加羅山神社), next to a huge Camphor tree.
- Erected about a century ago, this shrine also expressed human gratitude to the mountain spirit for the rich arboreal ecosystem and giant trees.



Shrine to a Mountain Spirit

Potlach Spirit

- Native American culture also expresses such gratitude to Nature for the bounty of nature. It features potlach (like potluck) feasts of thanksgiving for the entire community
- Jason Wirth discusses the Native American gratitude custom of the potlach (potluck) feast in the Northwest Pacific area (Wirth 2017).
- They express gratitude to Nature by sharing their harvest with the community in feasts, or potlaches.
- All of these phenomena reflect a human appreciation to Nature--the land, sea, and heavens.

Time is Change

- Around the world, this feeling of appreciation is diminishing, perhaps due to farm mechanization, patented gm seed, chemical fertilizers & pesticides, and the like.
- More and more, farms are run as businesses, and land is viewed as private property, “parceled” from Nature, to be used freely at the whim of the owner.
- A few decades ago, this “parceling” from Nature seemed to be unproblematic;
- People thought Nature could absorb the assaults, pollution, & waste of humanity.

- At present, however, as climate change accelerates, Nature seems less able to absorb humanity’s onslaught.
- The fragility of the biosphere is evidenced by the rapid reduction of biodiversity, the mass extinctions.

- 80 years ago, Jean Paul Sartre (1903-1980) asked his readers to imagine the collapse of a mountain village into the sea.
- He suggested that, while humanity would view this as a “disaster,” to Nature it would just be a ripple in planetary time, a rearrangement of molecules.
- In this scenario, humanity is small and fragile, but Nature vast and indifferent to human concerns and blame.

- Today’s rampant environmental devastation, mass extinctions, and climate change form a much larger disaster, but to Nature it’s still just a ripple in planetary time, mere rearrangements of molecules.
- Nature has endless time; but once humanity goes it will be gone forever-- the thread of eternal recurrence severed.
- Maybe “appreciating Nature” brings tangible benefits, after all.

- Today, Sartre would assert that while the mountain village disaster was a chance event, the disaster of today is caused by deliberate human choices & actions.
- And, every living human being is responsible. Why?
- The facts about pollution and climate change have been known for decades; human beings have no excuse for not acting.
- While world leaders have been irresponsible, most of them were elected by us, the adult citizens. So we are responsible for putting irresponsible people into positions of leadership, and endangering the future of the planet.

How have we reached this point?

- Why is humanity so estranged from Nature—and seemingly irresponsible?
- Basically, many modern people have lost their sensitivity to Nature. But how? Science shows that humans are basically sensitive to Nature; however, that sensitivity is stunted in social life, education, pop culture, career...
- Many people have fled the countryside for the “Bright Lights, Big City”-- to find their fortune and be distracted by consumer society, colorful media, & goofball politics. More and more people are urbanized.
- They want to enjoy climate controlled spaces. (Think of the Beatles’ song, “Rain.”)

The Way Back

- Science shows that humans are basically sensitive to Nature, but that sensitivity is stunted in social life, education, pop culture, career...
- In *Physical Intelligence* (2020), Scott Grafton shows how people can recover their sensitivity to Nature.
- For example, when people enter and hike in natural terrains-- focused and mindful-- they start to take in cues of the myriad phenomena and become resonant and responsive.
- Grafton shows that our modern life of routinized activities and work in convenient urban spaces dulls our senses & deadens our wits.
- The computer-guided, technological shortcuts that ease modern living result in an enfeebled, diminished humanity.
- Is the world of Herbert Marcuse’s *One-Dimensional Man* at hand (1962)?

Future Foods

- More hopefully, this is also a period of rapid advances in food science and food technology.
- There are many areas of innovation-- food architecture, functional foods, gut microbes... insect-based foods...
- And increasing food output, decreasing greenhouse gas emissions, reducing waste, and improving sustainability and resilience.
- A big challenge will be to feed the world population while reducing environmental and climate impact. More on this at the end of the talk

- Food architecture studies the structure of foods, to reproduce the best properties of foods: the sights, smells, tastes, textures, sounds.
- Functional foods are fortified with nutrition. Some functional foods also can enhance mood, mobility, and health (like vitamins and herbs).

- Biotechnology-- e.g., gene editing, nanotechnology, AI, etc.-- is applied not just for chronic diseases and health, but also for increasing food output, decreasing waste, and improving sustainability
- These and other fields of food science are making rapid advances-- advances that show promise, but also give rise to ethical questions.
- While the new high-end processed foods are safe, they are expensive, and mostly unavailable to the consumers who most need them.
- To be ethically significant, the future foods have to be made available to most people.
- At the same time, the popular old processed foods are not being significantly improved. They still contain lots of fat, salt, and sugar, and cause chronic health problems, especially for addictive or dependent people.
- The good news is that, while the superior future processed foods will be expensive in the short-term,
- The prices will drop as they catch on and economies of scale kick in.

Future Food Systems

- Food scientists suggest creating food systems... to tackle the problems of greenhouse gas emissions, chemical pollution of the water and land, sustainability, efficiency, productivity, etc.
- David McClements (2019) envisions future farms as links in larger food systems in which sensors and AI will collect, store, & share data on crops, commodities, foods, and people in farm-to-fork food chains.
- Such food systems would be aimed to enhance food quality, reduce pollution and waste, and use robots to free up labor.

Future Farm Systems

- McClements admits potential problems:
 - ✓ What if the AI-guided food systems were hacked or simply crashed?
 - ✓ Wouldn't the systems give government and large corporations too much control over people's personal health information and lives?
 - ✓ What about the workers who would lose their jobs to automation?
 - ✓ Also, wouldn't the sensors just be focused on crops and livestock, and be blind to ecological and environmental impacts?

- A key problem is that farms & food-chains leave big carbon footprints. They make nearly 1/3 of anthropogenic greenhouse gases. Agriculture uses vast land and water resources, severely impacting the natural environment and local ecology. Also, farms occupy all sorts of climate and soil conditions, and operate independently.
- Are factory farms really the way to go? Claims are made that livestock on factory farms have scientific diets and the best veterinarian services, so the animals are healthier and grow faster. Raised on less land, they produce less greenhouse gas. But, is this all true?
- Factory farms have feed issues, involve animal cruelty, cause antibiotic resistance, and produce serious pollution of land, water, and air.
- Also, the cost of setting up industrial scale facilities is daunting, so once they are in operation it is hard to get rid of them.
- How to measure the impact and sustainability of factory farms? How to get them to optimize operations? How to link them to food chains?

What is the truth about factory farms?

- What is the truth about factory farm health and hygiene?
- In the UK, gov. inspectors of factory farms have found, “dirty, spoiled, ... contaminated meat... in contact with ... the meat on the factory production lines.... ‘meat destined for the human food chain was found riddled with fecal matter’”
- Such problems arise with the press for efficiency on assembly line style rearing, slaughtering, and butchering...
- Unsurprisingly, factory farms in the US seldom permit researchers or journalists to enter the premises.

Green Future Farms

- Why not work to shift (plant-based) animal feed production to directly making human food? The ethical, environmental, and economic concerns of factory farms could be avoided by using the land that is now used for growing animal feed to directly growing human food.
- That said, much of the land (57%) used for animal feed production is not suited for human food production.
- This would encourage farmers to return those lands to their natural state to let the local ecosystem become more resilient.
- By shifting from animal to plant production, farmers would shift from monoculture to diversified cropping, for diverse human food needs, further reducing agricultural land use and green-

house gas emissions.

- A shift to plant production, would allow farmers to reduce land use for growing food (76%), greenhouse gas emissions (49%), soil pollution (50%), and water pollution (49%).
- Such a shift would result in fewer animals languishing in dirty, crowded conditions at factory farms

Green Future Consumers

- But, such a shift would be premised on consumers going-- and staying--vegetarian; how they to be persuaded to go & stay vegetarian?
- They need to be informed of the ethical, health, & environmental benefits of a plant-based diet.
- Happily, as new vegetarian and vegan foods come to market at moderate prices, increasingly more people will eat them.

Food Science view of future food production

- Again, food scientists imagine future farms and food-plants to form tight systems run by AI and robots, with few humans in the picture.
- They imagine...
 - ✓ Robot-driven tractors working the fields at optimal times, based on rich data bases.
 - ✓ Genetically edited seed for yield, resilience, and nutrition.
 - ✓ Tiny sensors in the plants and soil to monitor the condition of the crops and relay information about their status.
 - ✓ Exact doses of fertilizers and pesticides applied to crops as needed.
 - ✓ Bee-sized drones flying around, pollinating the crops.
 - ✓ Crops harvested by robots, transported to automated factories, and made into foods by robots.
 - ✓ Ideally, the system would increase productivity, decrease waste, lessen pollution, and maintain a sustainable the food supply,
 - ✓ With few human beings in the picture.

The Future is Here

- In fact, this is happening. In 2018, a robot-run farm commenced operations in California, where robots are used to plant, cultivate, and harvest crops.
- These robots have “computer vision” to recognize the crop plants and check their status, which

they report to an AI program, The Brain, which monitors and controls all farm operations.

- Why robot farms? To tackle challenges that agriculture will soon face-- labor shortages, climate change, maintaining crop yields.
- Indeed, in arid central California climate change could soon make it impossible for humans to work under the sweltering sunlight.

Let's Walk This Back a Bit: Personal Creed and Reflections

- Farming and food production involve **a covenant between humanity and Nature**.
- Raising livestock and crops takes place in natural ecologies. This is a different proposition than tending sanitized Petri dishes in a lab.
- Good farming is walking the fields, inspecting the plants, grasping the soil, catching the scents. Farmers can have cameras and sensors on their equipment, but they also should be directly engaged.
- Good farming is getting in with the livestock. Checking on their well-being. They are sentient living creatures, not just fodder for the slaughterhouse. Appreciate them for their sacrifice.

- Automation is all right, but the farmer cannot just sit at the computer monitor and let the farm run itself. Nor can he or she leave things to low-paid farmhands.
- On the plus side, with automation, the farmer has ample time to inspect the crops, grasp the local ecology, test the soil, know the livestock, interact with neighbors.
- These are all tenets of Agrarianism, which I regard as the way to agricultural sustainability and ecological resilience. (Thompson, 2020)

- Granted that large-scale factory farms and small family farms have distinctive roles and niches, they still can learn from each other!
- The small farms can adopt AI, biotech, and automation to increase productivity, reduce manual labor, and connect with food chains.



Small scale farmer using high-tech in Taiwan

Walk It Back a Bit: Personal Reflections

- Proposal: The large farms could segment their large buildings into sections, and raise fewer animals per square meter.
- This would create space for livestock movement, exercise, socialization, and care of their offspring, as well as provide land for grazing, poking, exploring.
- De-concentrated livestock would reduce pollution, greenhouse gas emissions, foul odors, and animal suffering.
- Large farms could practice multi-cropping and crop rotation, including idling land for grazing and pasturing to rejuvenate the soil and local species. (Government subsidies could offset losses.)

What about feeding the world's population?

- Just as it is a new ethical imperative to wean people from meat-based to plant-based diets, the ethical imperative to have fewer or no children is also on the horizon.
- Economic advisors fear population stabilization because growing economies need growing markets– and labor pools.
- They think growing labor pools are also necessary to support the growing numbers of retired elderly.
- The good news is that, with AI, robotics, and automation, the productivity of a single worker today is much higher than ever before.

- If economic systems were rationalized, the higher productivity of smaller pools of workers could support the needs of the retirees and grow the economy.
- Population stabilization can result in an economic soft-landing.
- Humanity can significantly reduce its impact on the environment and climate and let natural ecosystems be resilient.
- Countries like Taiwan and Japan are reaching population stabilization while maintaining resilient economies.
- Many holy books implore believers to “go forth and multiply!” But, those books were written thousands of years ago when Earth was sparsely populated.
- The bottom line: Human beings and their livestock are squeezing other species into extinction. If humanity cannot acknowledge and face its population crisis, then the environmental and climate problems will never be solved.



Living at One with Nature in Northern Taiwan

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Keynote Speech

Agriculture and Food Ethics: Is It Time to Go Back to Basics?

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Paul B. Thompson holds the W.K. Kellogg Chair in Agricultural, Food and Community Ethics at Michigan State University, where he serves on the faculty in the departments of Philosophy, Community Sustainability and Agricultural, Food and Resource Economics. He received his Ph.D. in Philosophy from the State University of New York at Stony Brook and has held posts at Texas A&M University and Purdue University. Thompson's research and teaching has focused on ethical and philosophical topics in food and agriculture. He is the author or co-author of over two hundred articles in refereed journals or scholarly books. Thompson has served on advisory boards at the U.S. National Research Council, the U.S. National Academy of Engineering, Genome Canada and for numerous academic journals, including *Environmental Ethics and Agriculture and Human Values*. He was a founding member and second President of the Agriculture, Food and Human Values Society, which awarded him its award for Distinguished Career Contribution in Research in 2013.

When people call for more attention to ethics within food and agriculture, what are they asking for? There are at least four ways to interpret the meaning of ethics in the domain of agriculture and food systems, each of which is itself subject to ambiguity and alternative understandings. Philosophers take ethics to be one of their academic sub-disciplines, with application of ethical theory and problem-generated practical ethics emerging as distinct disciplinary approaches. Activists understand ethics as alternately providing guidance for policy change, or as expressing their preferred objectives in a univocal manner. In contrast to both philosophers and activists, food ethics has emerged as a form of consumption ethic, supported either in terms of a spiritual, aesthetic or quasi-religious piety, or as a mechanism to wield market power as a force to alter the behavior of commercial firms. Finally, there is the basic sense in which ethics is a virtually universally shared set of normative expectations revolving around honesty, integrity and the avoidance of harm to others. Here, patterns of lapse or misbehavior associated with fraud or adulteration of foods become the obvious ethical problems in the food sector. Although these domains of ethics are not unconnected, a failure to recognize their distinctness can lead to miscommunication and misunderstanding.

Ethics in Philosophy Departments

Although there are many different ways in which philosophers pursue ethical studies, two alternatives are particularly relevant to agriculture and food. On one view, the fundamental terms of ethics are addressed by abstract theories. Tracing out the implications of these theories in any specific case is applied ethics. The Australian philosopher Peter Singer is, perhaps, the most influential exponent of this view. Throughout an illustrious career, he has championed an ethical theory called two-level utilitarianism, originally developed by his mentor at Oxford University, R.M. Hare. On this view, the widely shared norms of non-philosophers should be presumed to function well-enough for guiding action in the vast majority of cases. Philosophers enter the picture only when we have reason to think that this common morality fails. At this point, we should be utilitarians, evaluating the candidates for action in terms of their outcome for all affected parties. Singer has contributed important refinements to Hare's general theory, but he is best known for his work applying the theory to issues such as our treatment of animals, our obligation to help the poor and to difficult conceptual issues in bioethics (Singer, 1993). In 2007, Singer and Jim Mason applied the approach to a general evaluation of the human diet, urging readers to evaluate the outcome of their dietary choices before deciding what to eat (Singer and Mason, 2007).

I have favored an alternative approach, sometimes called practical ethics. My motivating assumption is the idea of a philosophical problem, an idea that I derived especially from my reading of C. S. Peirce, Ludwig Wittgenstein and Michel Foucault. Explaining this would send me off on a tangent, so I will recount a bit of my professional biography to show how my approach to agriculture and food ethics differs from that of applied ethics. In short, everybody has philosophical problems, and training in philosophy can help to sort them out. Elsewhere I have recounted how my attention was directed to problems in the food system, but I did not develop enough acquaintance with the

factors creating philosophical problems in agriculture for quite some time. I started my career with non-agriculturally oriented work on technological risk (Thompson, 1986; 1987). This gradually led into a productive research stream focused on the ethics of agricultural biotechnology, (Thompson 1990; 2020). My first attempt at diagnosing the philosophical problems besetting the food system was a broad overview (Thompson 1988), followed in 1995 by the book, *The Spirit of the Soil*, which I updated in 2017, (Thompson 2017).

As my research portfolio developed, there were two points of difference when compared to that of Singer. First, there is no prior commitment to the idea that ethical theory will prove to be helpful in conducting a joint inquiry, much less a particular ethical theory such as two-level utilitarianism. One has to spend time with one's co-investigators before one can make suggestions that are responsive to their philosophical problems. Second, since theory is less decisive, there is less theoretical coherence in my choice of topics or in the domains of philosophical expertise I deploy. I still find it impossible to classify my work according to the categories philosophers use to characterize themselves.

Singer's work reflects a view of ethics that is shared widely among academically trained philosophers, but many philosophers also take the approach I have taken. Both of these ways to understand the philosopher's role in ethics are recognized within university philosophy departments. Both deploy concepts and methods derived from the history of Western philosophy, a history that always identifies its origins in the world of Socrates, Plato and Aristotle. Philosophers are interested in ethics as a domain of knowledge and practice. They are not especially interested in playing the role of enforcers or custodians of a society's particular moral code. However, Singer's work has crossed over into advocacy at times, and it is in this connection that we can understand an importantly different sense of food ethics.

Agriculture and Food Ethics as Political Advocacy

Sometime between the end of World War II and 1980, the year I started teaching at Texas A&M, longstanding concerns about healthy diets and the treatment of agricultural workers morphed into general discontent with the trend toward industrialization in the food system. Rachel Carson's book *Silent Spring* (Carson, 1962) is one marker of discontent, while Ruth Harrison's *Animal Machines* (Harrison, 1964) is another. Pressure groups formed to advocate for policy change both within firms and other organizations servicing the food sector, and in regulatory agencies charged with governing the food system.

Advocates exploit an ambiguity in the way that the word ethics is commonly used. On the one hand, activists are engaged in persuasion, and they understand that they must offer reasons for thinking that their preferred course of action is the one that should be chosen. This process of giving reasons and making arguments may not be explicitly described as a form of ethics by people who are lobbying for policy change. As in philosophy, ethical persuasion is the construction and proffering of

rationales or arguments that support the change being promoted by critics of mainstream practice and established power structures within the food system. On the other hand, the changes policy advocates are calling for are “the right thing to do”. They take the position they are arguing for to be what ethics requires. In this respect, they think of doing what they advocate as ethical, and doing what they oppose as unethical. The position or prescription they advocate is seen as having been so thoroughly justified that any significant deviation is evil. This way of claiming straightforwardly that the policy being advocated is the ethical course of action may come closer to the way that the word ethics is used in many ordinary contexts. We may be moving closer to a more basic sense of ethics when we think this way.

Ethical Consumption

Activist speech gave rise to a third way of understanding food ethics: the idea of ethical eating. Whether persuaded by philosophers or for other reasons, a significant number of people have been persuaded to adopt vegetarian diets on moral grounds. However, the evaluation of one’s diet need not stop with vegetarianism. One might take the environmental impact of one’s diet into account. Here, concern that meat production accounts for a significant amount of climate forcing emissions could conjoin with animal welfare arguments to support a reduction, if not the elimination, of meat from a person’s diet (Ilea 2009). The global Fair Trade network allows food consumers to make dietary discrimination based on whether the farm-level producer receives a fair share of the final price paid by the consumer (Wempe, 2005). My point is to call our attention to the way that we have now introduced yet another way to think about what is meant by ethics in the agriculture and food sector.

In this respect, the uptick in moral concern over food choices brings together older threads with distinct lineages. The link between personal piety and diet is explicit in many religious traditions. Observing halal or kosher dietary rules can be expressed as a religious obligation peculiar to a particular faith tradition. However, to a practitioner of the faith, there may be little perceptible difference between moral and religious sanctions. Both are experienced as “should” or “musts” that conscientious action requires. The contemporary version of dietary ethics also draws upon an older consumption ethic that draws upon norms of social harmony. Here, the focus is upon loyalty to other people with whom one has some sort of sanctioning bond. The labor movement of the early 20th century provides a prominent example. Consumers were encouraged to “look for the union label” before purchasing apparel, and to support the labor movement by preferentially purchasing clothing manufactured by unionized workers, (Boyle, 1903; Tyler, 2016).

Consumer oriented food ethics has both an expressive and a coercive thrust. Similar to religiously based dietary rules, one expresses one’s fealty to an ideal or to one’s solidarity with others through selectively favoring a product on grounds that may not return immediate benefits to oneself. In addition, one marshals the forces of supply and demand to influence producers. Producers will see compliance with the consumption norm as an opportunity to capture a share of the market, or at least to avoid allowing competitors to do so, (Buchholz, 1998). People who see themselves as

performing an ethical obligation when they drink fair trade coffee or choose not to eat meat draw upon these traditional sources for making sense of their action. Their dietary choices are simultaneously acts of personal virtue and calculated attempts to use economic power to bring about good consequences.

Consumption ethics differs from academic ethics and activist ethics in three important respects. First, it expresses, rather than simply advocates, a norm that the agent has accepted as binding on their personal conduct. Second, it draws upon the agent's subjective understanding of moral responsibility. The moral norm is experienced as constraining or binding conduct by ruling out alternative courses of action. Third, consumption ethics activates the market as a causally efficacious force. This brings consumption ethics closer to advocacy, as one's personal expenditures can be interpreted either as an alternative to policy change, or as a means of exerting pressure for internal policy change on for-profit actors. In each of these respects, food ethics as dietary change differs from the conception of ethics held by either philosophers or activists. Yet, we have not reached what I call "the basics".

A Basic Understanding of Ethics and the Connection to Food

At its most basic level, ethics are the moral principles that govern human conduct in the broadest possible sense. This definition poses admittedly philosophical questions, yet there is nonetheless a striking commonality among cultures with respect to principles such as "Don't steal or rob", "Keep your promises" or "Tell the truth." Given this, we can exemplify the content of ethics at this basic level simply by listing rules or violations of them. This is what Hare meant by "common morality," and even if there are hard cases where common morality fails us, it still functions to guide action in a socially cohesive way in the vast majority of everyday cases, (Hare, 1981). Common morality would not endorse moral reasons to be a vegetarian (at least in the United States), as, according to a 2018 Gallup poll, only 5% of Americans consider themselves to be vegetarian, and not all of them do so for moral reasons (Hrynowski, n.d.). To that end, I provide some examples.

In 2016, the Food Navigator website reported hospitalizations and fatalities from exposure to anthrax in contaminated beef. The beef became tainted because of lax veterinary standards in disposal of carcasses (Vorotnikov 2016). Reporters for *la Croix International* blame a slipshod regulatory system for widespread pesticide contamination of foods produced in Bangladesh, (Uttom and Rozario, 2019). A 2017 study summarizes survey and inspection data to document the use of fraudulent methods to improve the marketability of lower quality products in Turkey, (Dunan, Onur and Mustafa, 2017). Western Europe was rocked by scandal when Dutch suppliers were discovered to have conspired with a French firm to market horsemeat as beef (Anonymous, 2019). In 2019, an Ohio man plead guilty to charges that he had brought a calf contaminated with a banned antibiotic to a slaughterhouse in Illinois. According to a Federal attorney supervising the prosecution, the man "admitted he often bought injured, ill and potentially medicated animals at a discounted price with the intention of selling the animals to slaughter facilities and maximizing his profit," (United States

Department of Justice, 2019). In 2020, an English sheep farmer was convicted on charges that he had put shards of metal into jars of baby food on the shelves of a Tesco supermarket in the United Kingdom. He claimed to be in a group of farmers resisting the power of the food industry, (Davies, 2020). The journal *Food Control* regularly publishes studies on adulteration of foods, (see Zhang and Xue, 2016; Peng and coauthors, 2017).

The Chinese contamination of baby formula was the most spectacular case of food adulteration in recent years. In 2008, several manufacturers were accused of adding melamine to milk powder, presumably to increase its apparent protein content. Pet food exports and animal feeds were similarly contaminated, suggesting that the original source of contamination may have been among dairy cows, (Sharma and Paradkar, 2010). Melamine is known to have toxic properties that can be fatal. Several infants died as a result of the contamination, and many more were found to have kidney damage (Scholl and coauthors 2017). At about the same time, officials within China's food and drug safety authority were part of a separate conspiracy in which untested medicines were approved in exchange for bribes. Zheng Xiaoyu, the one-time head of the State Food and Drug Administration was executed for his role in the scandal in 2007 (Kahn, 2007). The upshot was a loss of confidence in the safety of China's food system, and the eventual emergence of an alternative system of organic production (Bloomberg News 2017).

Although each of these examples illustrate moral failure, they are not equivalent. There may not be any morally culpable individuals in cases where there is a miscarriage in regulatory oversight. The problem may lie in organizational capacity. It is nonetheless appropriate to classify this negligence as irresponsible, and to call for greater attention to ethics. In cases where adulteration is deliberate, the conduct is itself condemnable on grounds of common morality. It is, at a minimum, misrepresentation with intent to deceive. When damage to the health of consumers ensues, the affected party's bodily integrity has been violated. Philosophers and legal scholars can be helpful in parsing out the different ways in which each of these examples involve a moral offense. Nevertheless, the larger point to stress is that when events of this sort lead to a call for ethics, people are not calling for more philosophical analysis. There is an ethical breakdown in each of these cases. Some person or group has not succeeded in carrying out a duty that common morality requires, and in calling for ethics, people want consideration and compliance with what uncontroversial expectations demand.

In conclusion, there is a potential mismatch between this basic sense of ethics and each of the other three senses. A particularly sensational breach of ethics in this basic sense will spark an outcry. The occurrence of several events that violate common morality implies a more systematic rupture in the ethos of the individuals and organizations that make up the food system. What is needed is renewed attention to ethics, but not necessarily the kind of thing that Peter Singer does when he focuses on those rare cases of cleft in the common morality, or what Paul Thompson does when he tries to help those in the food industry with their philosophical problems. Neither is this clamor for ethics a request for change in policy or for consumers to evaluate the impact of their diets. Quite the opposite, the ethical failure is non-compliance with undisputed policies. It exploits people who presume that

choosing what to eat should not create an undue burden. Those of us who participate in any of these more elevated senses of food ethics should recognize the difference between our understanding of ethics and that of someone who is simply calling for people and firms in the food system to comply with the norms of common morality.

Can Philosophers Help with Basic Ethics?

Finally, the behavioral sciences will be most helpful in developing the organizational structures that incentivize conformity with basic normative expectations, but they will encounter their own philosophical problems in doing so. For example, the management literature has seized upon the notion of “food safety culture” as a response to oversights that have exposed consumers to risk from pathogens and food-borne disease. The idea is that explicitly articulated policy and procedure issued by management percolates downward into beliefs and attitudes that determine priorities in individual conduct. These, in turn, become inculcated into unconscious habits that determine the final outcome of system behavior, whether within a single processing facility or throughout the industry as a whole. Although encouragement of food safety culture is attracting the attention of food industry firms, there continues to be debate over methods to generate the data that managers require in order to fully incorporate an objective into a management regime (Zanin, Stedefeldt and Luning, 2021).

Sociologists reviewing the implementation of food safety culture have found that workers, “...exhibit a wide range of motivations and attitudes toward food safety compliance, ranging from zealous embodiment to casual dismissal,” (Baur, Getz and Sowerwine 2017). They argue that food safety culture represents a moralization of the work environment in which people are sorted into categories of good and bad. In other words, the management objective of inculcating food safety culture is experienced as a form of power imposed upon a workforce, a form of emotional labor in which workers are expected to align their feelings with organizational objectives (Wharton, 2009). This may itself be ethically inappropriate, but determining whether it is ethical will not be the kind of judgment that common morality can support. Our most basic and widely shared understanding of ethics tells us that food industry firms must assume responsibility for the safety of foods they produce. It tells us that individuals working in those firms must not intentionally subvert procedures designed to ensure food safety. However, it does not tell us whether management goes too far in expecting employees, many of whom are low wage and unskilled, to internalize an emotional commitment. In short, the ethics of common morality does not resolve ethical questions encountered in the attempt to do what the ethics of common morality requires.

My title question has brought me full circle. Those of us who work as researchers in food ethics should recognize that the outcry for ethics is not necessarily a call for the kind of work we are most capable of doing. At the same time, managers, policy makers, members of the public and our colleagues in the social and behavioral sciences should be advised that they will encounter problems in their attempts to implement norms that are uncontroversial and basic. These problems are themselves ethical problems and there is a good chance that philosophers can help.

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Keynote Speech

Food Safety or National Security? : The Impact of Global Political Changes on Local Food Systems in the Post Pandemic Era

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Wei-Chi Chang serves on the faculty as an associate professor in the Department of Environmental and Cultural Resources, National Tsing Hua University, Taiwan. She received her Ph.D. from Chiba University, Japan, in 2004. Wei-Chi's teaching and research have focused on food sovereignty, food education, and Taiwanese indigenous food culture. She has served on the Advisory Committee of Right to Food and Health at Yilan County Government. She has assisted local small farms to establish an organic farmers' market-the Breeze Market- during the period she served as the Advisory Committee at Kaohsiung County Government. As a board of Homemakers United Foundation, she has also drafted the Basic Act on food education with members of the Foundation. The bill is now under consideration by the Legislative Yuan, Taiwan, R.O.C.

The coronavirus COVID-19 has caused not only public health problems but also brought socio-economic shocks as well as the food crisis due to the lockdown policy or international political change. Reports discussing the food crisis brought about by the pandemic have focused on such factors as loss of income and assets, supply chain disruptions, and trade restrictions, all of which make it difficult to buy food. However, these reports have paid less attention to the issue of food sovereignty and how it has been affected by political changes. This speech will take Taiwan's move to lift bans on U.S. pork imports as an example to discuss how the post-pandemic political changes impact local food systems and what food ethics issues can be related to.

Background

In the second half of 2020, China began to come under increasing criticism as the source of the pandemic. This has resulted in increased tension in Asia and is presenting major challenges to the various bilateral and multilateral economic integration systems which have been established since the turn of the century. Facing the specter of a post-pandemic economic downturn, countries worldwide have begun to adopt measures urgently needed for revitalizing their economies. In this respect, Taiwan is no exception, for even though it has long been politically excluded from various international organizations, the economic stability of its export-driven economy requires maintaining reliable connections with international markets. With these factors in mind, on August 28, 2020 President Tsai Ing-wen announced that Taiwan will permit imports of U.S. pork and beef containing ractopamine, beginning in January 2021. This announcement aroused widespread opposition, and the opposition party put forward a referendum for it.

Since ractopamine is forbidden to use in any animal products in Taiwan, the restrictions for importing ractopamine-contained meat from the U.S. has been an issue of contention for nearly 20 years. It has been regarded as a deciding measure to strengthen TW-US relations such as the resumption of TIFA (Trade and Investment Framework Agreement) and arms sales to Taiwan. Facing the complex post-pandemic political economy situation, Taiwanese people stuck in a dilemma between food security and national security.

Problematic

The trade negotiations between Taiwan and the U.S. have centered on food safety while ignoring cultural rights, which is an essential aspect of any discussion on food ethics. Moreover, in international trade negotiations on importing food, scientific evidence of food safety is generally considered more important than cultural factors. Public opinion and recommendations put forth by civic organizations, are often overridden by the "scientific" reports produced by researchers representing vested interests. I'd like to discuss pig farms and pork consumption in Taiwan, highlighting the importance of cultural rights in food ethics discussions.

Pork eating and pig farming culture in Taiwan

Taiwanese people care more about the pork containing ractopamine for three reasons. First, Taiwanese consumers consume larger quantities of haslet and pork. The figure 1 on the left shows that the annual per capita consumption of pork in Taiwan is around 35–40 kilograms, much more than poultry, beef, or lamb until 2018 (NAIF, 2020:10). According to the report, the annual pork consumption in Taiwan is around 970 thousand metric tons, self-sufficiency rate is about 90% (NAIF, 2020). After the prohibit imports of pork referendum is passed, the Taiwan’s Executive Yuan promises to maintain a 90% self-sufficiency rate for pork.

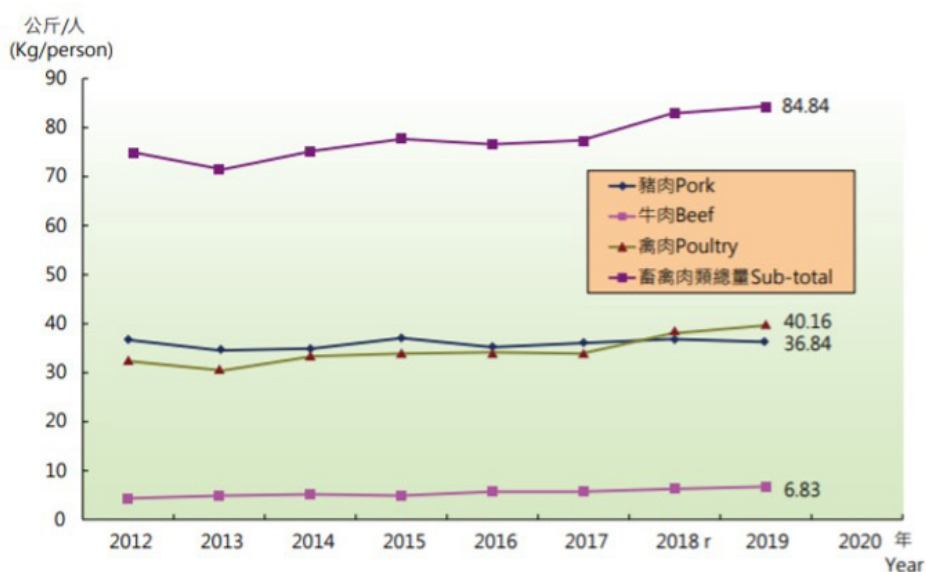


Figure 1. Pre capita consumption of red meat and poultry, 2012~2020
Info source: NAIF, 2020:10

The second is the widely followed postpartum dietary regimen culture in Taiwan, which includes the consumption of lots of pork liver and pork kidney to aid in expelling toxins and the recovery of physical strength. However, livestock organs tend to have a higher concentration of ractopamine than lean meat. So there is concern that the consumption of the liver and kidneys of pork containing traces of ractopamine could jeopardize the health of both the mother and her breast-fed infant.

The third is that the importation might impact the small local black pig farmers in Taiwan. Statistics from the Council of Agriculture 2020, the registered pig farms are less than 7000 (NAIF, 2020). 12% are small farms and are raising native black pigs interbred with foreign breeds during the Japanese ruling period. Farmers who fed leftover food add protein or other nutrients to black pigs for centuries. The leftover food recycling has been institutionalized into a cradle-to-cradle system in Taiwan. This unique feeding culture has many advantages: producing flavorful pork, saving feed cost, and reducing the amount of garbage. It even reflected the spirit of cherishing food of Hakka groups in Taiwan, who are the major groups breeding black pigs. They insist that Hakka cuisine must use black pigs raised from leftover food as ingredients.

Case study: Taiwan indigenous black pig farming in Hsinchu County

Taking the Hsinchu area where I live as an example, Hsinchu County is rural and mainly populated by the Hakka ethnicity. As already mentioned, Hakka people have a particular liking for the pork of the Taiwan's indigenous black pig. This type of pork produced on hog farms in Hsinchu County is mainly sold in Hsinchu City, where it's become a local favorite, especially in the form of pork balls (See figure 2). These farms auction off about 800 black pigs each week to local slaughterhouses, where the retailers from Hsinchu City come to buy pork. This kind of local food system has won the trust of customers. This niche market for the pork of Taiwan's indigenous black pig is rarely seen in other cities and has become an integral part of the local culture and food preference. Many locals insist on eating only the pork of Taiwan's indigenous black pigs raised on food scraps, for both daily consumption and ceremonial purposes.

Nonetheless, the practice was banned for a time as part of the government's efforts to control the spread of the African swine flu, leaving municipalities at a loss regarding how to properly deal with a large amount of food waste. In recent years, as hog farms have become increasingly large and commercialized, coupled with government pressure on hog farmers to switch to synthetic fodder, the number of hog farms raising Taiwan's indigenous black pigs in the traditional manner has been steadily decreasing. This niche market mostly creates local factors and the marketing efforts of small and medium-scale hog farms. It's not immune to the negative impact of a pandemic or an unexpected change in the globalized economy. The controversy over the pork import referendum showing that buying for food safety or buying for national security has now become a dilemma for Taiwanese consumers.

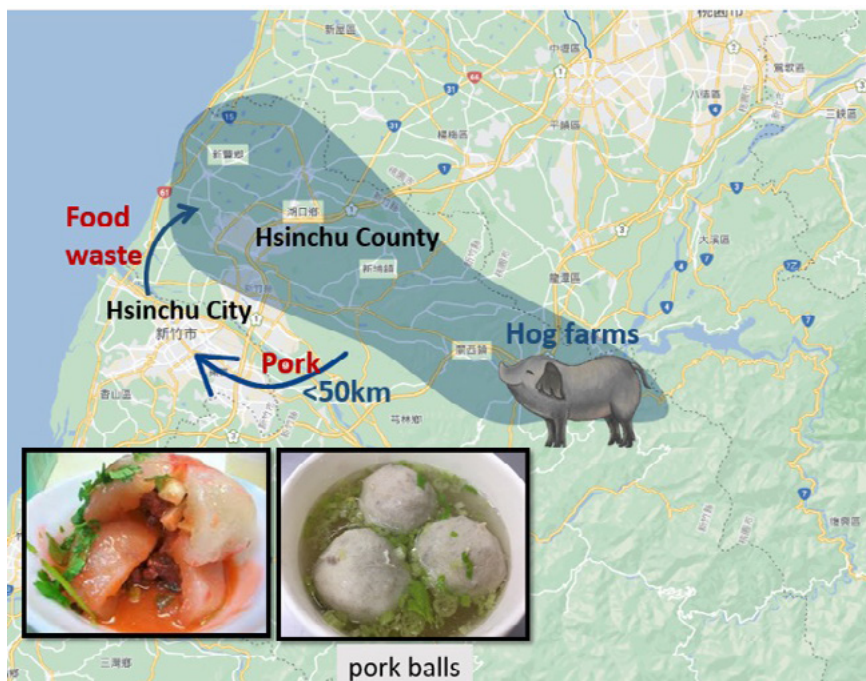


Figure 2. cradle-to-cradle system for the pig farming in Hsinchu, Taiwan

Conclusion

The covid-19 pandemic has brought to light the weaknesses of the global food system and made it essential to rethink how it works, but it would appear that this rethinking has yet to be taken up by the scientific community. In the economic reshuffling set to occur in the post-pandemic era, smaller countries like Taiwan are likely to be sidelined. Under this situation, food safety and food choice issues are likely to be routinely sacrificed in favor of the exigencies of international trade and military considerations. And as a small nation in the militarily strategic “first island chain,” it’s inevitable that public debate in Taiwan on food safety gets overshadowed by national security.

The case of Taiwan shows that in the negotiations on food commodities and food safety, scientific evidence provides sufficient grounds for pressuring weaker nations to accept trade conditions. When the debate is confined within the framework of food safety, only experts on food safety are given a voice but excluding alternative views, including those based on local culture and dietary practices. In my opinion, this is the point on which the ideas of food safety and food ethics come into direct conflict.

In light of the likelihood of the continued domination of the point of view based on food safety, based on Taiwan’s case, I’d like to propose making the food cultural rights the basis for opposing the globalized food commodity system. Stressing the importance of food cultural diversity arising from taste and emotion amounts to advocating for food sovereignty. Food culture includes what we eat, how it’s eaten, what varieties are consumed, and how it’s produced, all of which form a particular ethnic group’s food preferences. Besides the close relationship between cultural rights and food production, this debate also touches on some related issues, including local economy, biodiversity and environmentalism.

However, under the banner of food safety and public health with global standards, diversity arising from taste and emotion is amongst the first aspects to be wiped out by an industrialized agricultural system and international food system. Such diversity is regarded as an impediment to international trade and bureaucratic management.

Food sovereignty and cultural rights relating to food are the goals of food ethics.

In my opinion, the safeguarding of local flavor should be considered an aspect of food ethics. Then it will help open up a space for developing independent food systems outside the global economy. What we need to do now is to emphasize the relationship between local dietary customs and sustainable food through expanding the scope of food sovereignty and enriching research and education on food and agriculture. And I hope more scientific studies expose the diverse value of local food culture could become a support for food policy lobbying.

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Keynote Speech

Ethical implications of transitioning to 1.5-degree Food Systems

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Steven R. McGreevy is an associate professor at the Research Institute for Humanity and Nature and has a background in agriculture and rural sustainable development from Kyoto University (Ph.D. 2012). He researches novel approaches to regional revitalization, sustainable agrifood and energy transitions, and the relinking of patterns of food consumption and production through policy and practice. He leads the FEAST project (Lifeworlds of Sustainable Food Consumption and Production: Agrifood Systems in Transition), which maps food systems, analyzes patterns of food consumption, food-related social practices and their socio-cultural meanings, and takes a transdisciplinary approach to explore the realities and potential for sustainable agrifood transition at sites in Asia.

The climate scientists all agree: only massive decarbonization is going to enable societies to successfully reach the 1.5-degree climate goals set in the Paris Climate Agreements. The latest model pathways from the IPCC show that 90% of CO₂ emissions must vanish from the ledgers by 2050. This deep decarbonization will entail social change the likes of which there are no historical equivalent. A 1.5-degree society will need to be changed in fundamental ways. At the heart of that change will be a reevaluation of how to meet our most basic needs: food, water, energy, shelter. Central to that process will be the reconfiguration of food systems and the many and myriad ways food interacts with our institutions, work, and lifestyles, as well as how food forms new relationships with place, values, and ethics.

In the literature to date, emphasis has been placed on how to keep or maintain the current food system within environmental limits. This perspective sees the replacement of existing technologies or an emphasis on achieving greater degrees of efficiency as the tools to maintain the food system into the future. While shifts in diets away from carbon-intensive proteins and changes in farm management practices to conserve water, protect biodiversity, and decrease chemical use are needed, research shows that without rapid and ambitious changes in all food sectors, the 1.5-degree climate goals will remain out of reach. What this means in practice is a shift away from an industrial, large-scale food model to an agroecological, regional or smaller-scale model that merges agricultural production and ecosystem functioning in a seamless fashion.

In a 1.5-degree food system, what changes? Let us take a moment to envision what a 1.5-degree food system might entail from the production, consumption, and governance perspectives. From the production side, a shift to agroecological, local regional, self-reliant food systems based on short-chain flows of materials seems inevitable—there simply isn't any way to keep the industrial food system within environmental limits, let alone tame it enough to allow for dignified and sufficient access to food where it is needed most. Agroecological techniques, appropriate technology, permaculture and other practices that recognize the importance of indigenous knowledge and agricultural heritage will be important. Scale of production and the re-embedding of food systems into local and regional biophysical and cultural dimensions will also need to take place. This doesn't mean that food trade shouldn't take place—trade should be prioritized after the needs of community food security and self-sufficiency are met.

On the consumption side, localized and regional production will bring diverse changes away from the passive image of food consumption to which we have become accustomed. Successful models such as community-supported agriculture, cooperatives, food solidarity arrangements, and circular exchange of organic materials & waste offer a glimpse into how consumers might shift to being food co-producers. Bioregional economies may flourish with a new sense of agrarianism and work-as-craft. Since “the economy” as we know it has been propped up on an ocean of cheap carbon fuels, the primacy of home economics will once again come into focus. We can expect lifestyles to

shift in the direction of greater hybridization, with more of us involved in food production formally or informally, as a future of small-scale production, farms, and self-provisioning takes root. Hereto we have front-running examples: quiet sustainability of informal food provisioning, han-nou han-x pluriactivity, and the quest for plentitude.

Through these localized circuits of provisioning, local sovereignty, transparency, and trust will guide new institutions and forms of food governance that are more intimate and immediate than the vast distances and sense of disconnect we feel today. When food becomes “food from somewhere,” instead of “food from nowhere,” an active food citizenry can assert agency over that food and govern it as the commons it is. Food policy councils at the municipal level are already governing local food systems through diverse stakeholder participation with the idea of long-term food security and resilience in mind.

Accompanying these changes are alternative values and ethics that shift attention away from the primacy of the individual to the common welfare of interconnected natural and social systems. There are a series of open-ended questions that will need the work of food ethicists (among others!) to sort out feasible and desirable answers. Those questions include:

- What is sufficient when it comes to food systems?
- What constitutes “enough” (enough production, enough consumption, etc.)? And how can the ideas and values of sufficiency replace the treadmill mentality for greater and greater efficiency.
- Who decides where we draw the thresholds of sufficiency and by what processes?
- How do we ensure sufficiency and maximize well-being in our societies?
- How can we redefine what is a happy, healthy, and good life and how will local contexts and conditions impact the ways in which these definitions are arrived at?
- Within the discussion of a good life, how can we redefine “work” and bring about a new meaning of work in society?
- How can we change cultural narratives and stories of the good life and what role do the experiences and stories of food (growing, eating, and conviviality) play in those change processes?
- In a 1.5-degree world, capital must slow down, remain idle, or undergo *dépense*, or the collective expenditure of capital in ways that are “unproductive” from a classical economic point of view. As a society, how can the fixation on “public sufficiency and private luxury” shift to “public luxury and private sufficiency?” In what ways can we build cultures of *dépense* to celebrate the public sphere?
- Also, of extreme importance is how we can prioritize the well-being of other species as a fundamental value in food system redesign, consumption, production, and governance?

- It is also important to note that in the processes of localization and establishment of regional and self-reliant governance, there are several pitfalls that will also need to be avoided. Can we avoid falling into neo-feudalism, the reassertion of capitalistic logics, or patriarchal domination?

This list of questions is just the tip of the iceberg when thinking about the ethical implications of a shift to 1.5-degree food systems. Deep decarbonization presents a multifaceted challenge for us all, but I hope that this presentation will trigger a conversation on how to surmount this challenge in a timely and effective way. Key to any discussion are the many ways in which alternative values and ethics will play a role in transitioning to 1.5-degree food systems and a 1.5-degree world, as well as the feast that can accompany such a transition.



Keynote Speech

Sustaining the Global Ocean-Human System with Ethical Seafood Value Chains

Mimi E. Lam
University of Bergen



Dr Mimi E. Lam is a Researcher at the Centre for the Study of the Sciences and the Humanities, University of Bergen, Norway, where she is leading the project, Managing Ethical Norwegian Seascape Activities (Norwegian Research Council, 2020-2024). She is a contributing expert on the European Commission Joint Research Centre project, Science of Values and Identity in the Political Process and the World Wide Fund for Nature Global Oceans Practice Strategic Outlook report. She recently completed her Marie Skłodowska-Curie Fellowship project on Enhancing Seafood Ethics and Sustainability: A Values- and Ecosystem-based Management Approach (European Commission, 2017-2019). Notably, Dr Lam received the inaugural Conservation Beacon Award (2017) from the Society for Conservation Biology “for pioneering an ethical approach to the conservation of marine resources, both natural and cultural, through interdisciplinary research and community engagement at the science-policy interface.”

How can the sustainability of the world's ocean and human systems be improved through ethical seafood value chains? Here, I highlight the issue of sustainable food systems (see, e.g., Willett et al. 2019) and the implicit values these food systems have. The goal of my research is to make these values explicit (Lam 2019ab) and to develop tools to reconcile these values, both market and non-market, in the policies, management, and governance of food systems (Kaiser et al. 2021), particularly seafood systems (Lam 2021). Many conflicts in fisheries management, for example, arise from conflicting values, such as the case of the Pacific herring fishery in Canada, where local and indigenous communities are in conflict with the fishing industry over how herring should be managed, and what values of herring – ecological, cultural, or socio-economic – should be prioritized by the federal government (Lam et al. 2019).

In this keynote, I showcase my own research. I will focus on my two-year Marie Skłodowska-Curie Individual Fellowship project, Enhancing Seafood Ethics and Sustainability (eSEAS): A Values and Ecosystem-based Management Approach, conducted at the University of Bergen in collaboration with Professor Matthias Kaiser and funded by the European Commission (<https://eseas.w.uib.no/>, Lam 2019b). I will also present research from my current project, Managing Ethical Norwegian Seascape Activities (MENSA), funded by the Research Council of Norway (<https://mensa.w.uib.no/>). The goal of eSEAS (Figure 1) was to highlight the interplay between seafood ethics and sustainability and to develop ethical deliberation and decision-support tools (Lam 2019b). The overarching aim of MENSA (Figure 2) is to develop an integrated ethical approach to the sustainable management of Norwegian seascape activities by making explicit their values and valuation and negotiating their ensuing trade-offs with the input of diverse marine stakeholders and citizens in Norway. Drawing upon the natural and social sciences and the humanities, my transdisciplinary research aims to foster ethical reflection and analysis to reconcile competing values and interests over ocean use and protection towards sustainable and ethical marine resource management and governance.



Figure 1: Enhancing Seafood Ethics and Sustainability (eSEAS): A Values and Ecosystem-based Management Approach project (#753937), funded by the European Commission (2017 – 2019).



Figure 2: Managing Ethical Norwegian Seascape Activities (MENSA) project (#303663), funded by the Research Council of Norway (2020 – 2024).

First, what do I mean by the term “seafood ethics”? Seafood ethics is an integrated approach to sustainability through the descriptive, evaluative, and normative study of values, value-based trade-offs, and ethical dilemmas of multiple stakeholders and citizens interacting via diverse seafood value chains (Lam 2019ab). Seafood ethics is a gateway to addressing the global challenge of how to sustainably manage the world’s oceans, as it first recognizes, and then offers practical ethical tools and approaches to reconcile the plurality of values represented by the global oceans. This focus on the ethics of seafood broadens the values considered in the management of marine resources, which can stimulate the design of more coherent and effective seafood policy and governance schemes.

Seafood value chains are diverse: they can be short (local), medium (national/regional) or long (global), include commodity or specialized niche markets, and involve various individuals along the chain or corporations that are family-run or vertically integrated (Lam 2016, 2021). Consequently, they reflect a plurality of values as diverse aquatic species flow among diverse actors, including producers, processors, distributors, wholesalers, retailers, and consumers. Figure 3 depicts schematically a fish value chain. Producers, that is, fishers or aquaculturists, catch or farm fish. The fishery or aquaculture facility can be a large- or small-scale operation. Diverse marine life, not just fish, can be fished or farmed, with differential consequences on the environment and to society. From production, fish are often processed as canned, dried, or frozen commodities. They can be distributed locally, but more often regionally, nationally, or globally, typically to wholesalers and retailers, from

whom consumers buy the seafood products. Fish can also be sold fresh or flash frozen, typically in direct sales from producers to consumers or in local value chains, such as in alternative seafood networks (Stoll et al. 2021).

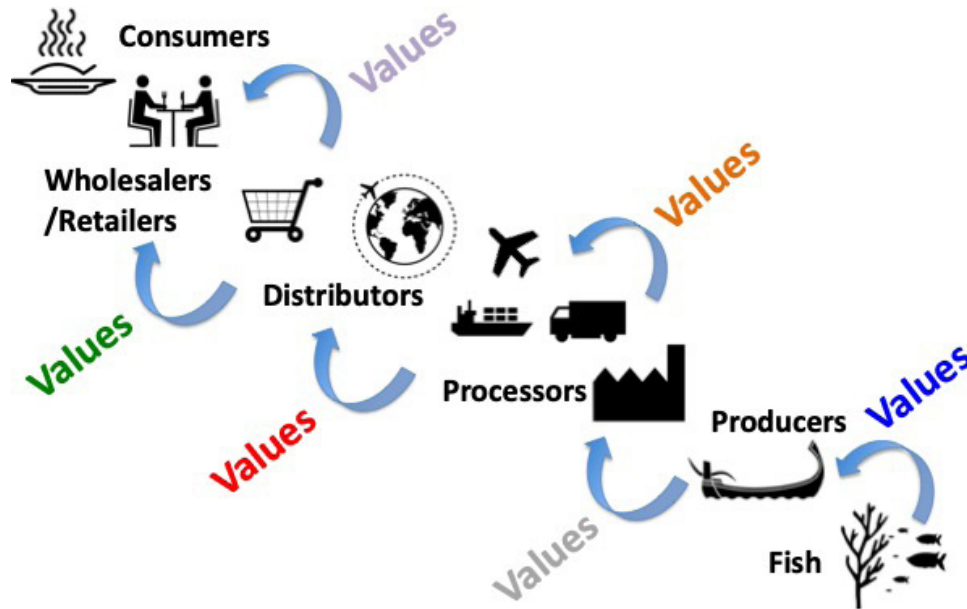


Figure 3: Diverse values of human actors in seafood value chains in the flow of fish among fish producers, processors, distributors, wholesalers, retailers, and consumers (Lam 2016).

Traditionally, the focus of value chains, as supply chains, has been on the commodity market value of fish exports and landings (Lam and Pitcher 2012b). Little attention was devoted to the non-market values that exist, and often drive fish workers and other social actors in their behaviours, as they move fish along complex value chains (Lam 2016, Kaiser et al. 2021). These diverse values of fish and fishery resources (Lam 2019a) include: food and nutritional, socio-economic (livelihood and income), cultural, and ecological values. Fish and fishery products are among the most traded food commodities (FAO 2020) and are a vital source of food and nutrition for people all over the world, particularly those in coastal communities (Hicks et al. 2019). In addition, fish contribute to the livelihoods and income for many fishers, both small- and large-scale, as well as a variety of other fish workers, employing 10% to 12% of the world's population. Fish also have important cultural value, embodying shared cultural identities and ecological knowledge, as well as ecological value, as organisms interacting in complex marine food webs.

Given this diversity of seafood values (and identities), it is important to understand the context and scale of seafood value chains when trying to design effective strategies and approaches to sustainably manage global marine resources (Lam 2021). There will necessarily be winners and losers in the allocation of fishery resources across multiple geographic scales among different gear types, stakeholders, and nations. Deciding how to distribute fishery resources and their products leads

to ethical dilemmas of complex value trade-offs. How these ethical dilemmas within and across seafood (and food) value chains are resolved in fishery management, policies, and governance has direct and indirect consequences on the sustainability of the global ocean-human (and food) system (Lam 2021).

Numerous ethical issues can arise at each node of the seafood value chain (Lam 2016). At the production end, the production method, impacts on ecosystem integrity, fish welfare, worker conditions, and provenance of the seafood all have ethical implications and consequences. The production method distinguishes capture fisheries and aquaculture, but also gear type. For example, bottom trawling, which involves scooping large numbers of fish out of the sea and destroying critical benthic habitat, is seen as unethical. Ethical issues in seafood transport, processing, distribution, and trade include the legality or illegality of fish, traceability, fish identity and origin, fish welfare, commoditization, end use, and trade wars. On the consumption end, ethical issues include: food security, food sovereignty, food waste, consumer choice, public health, niche markets, and distributional equity. All these issues relate to the concept of justice, which has often been overlooked in fisheries management but is increasingly highlighted (Lam and Pitcher 2012a, Kittinger et al. 2017).

Next, I overview a framework proposed to facilitate ethical deliberation for sustainable food systems, including seafood systems, that consists of five key elements (Kaiser et al. 2021):

1. Include all relevant food actors;
2. Frame the problem to reveal implicit values;
3. Be politically non-partisan and transparent;
4. Use transdisciplinary science fit-for-purpose; and
5. Adopt a post-normal science approach, as facts are uncertain, values are disputed, stakes are high, and decisions are urgent.

These are key foundations for rethinking and transforming the future of food. In the wake of the COVID-19 pandemic, many are looking at values to reconfigure different aspects of society, not only food systems (Kaiser et al. 2021), but also for the common good in society (Sandel 2020) and the market economy (Carney 2021).

The COVID-19 pandemic offers an opportunity to transform the management of marine resources in seafood value chains by adopting an ethical governance approach that recognizes diverse marine values and identities (Lam 2021). By revealing the differential vulnerabilities, resilience, and impacts on seafood actors in diverse value chains, COVID-19 has brought “ethical opportunities” to transform the global fisheries and seafood supply chains. In India, for example, in

response to COVID-19, a local, collaborative multi-stakeholder initiative emerged new norms of fixed, weight-standardized prices that were fairer for fishers. In Canada, COVID-19 restricted the flow of seafood within regional and national supply chains, increasing demand for locally sourced, high-quality, traceable seafood, which benefited a community-supported fishery with short supply chains and existing direct online sales from fishers to consumers. Meanwhile, in New Zealand, COVID-19 brought a shortage of skilled migrant crews, as the country closed its borders, first denying entry, and then subjecting crews, once deemed essential workers, to a variety of health restrictions, focusing attention on the need for safer work conditions. These three cases of local, regional and national, and global seafood supply chains illustrate potential value trade-offs and conflicts in managing global fisheries and food systems that can be deliberated upon with an ethical governance approach.

To conclude, seafood ethics adds a value dimension to marine resource management that can enhance sustainability by broadening the plurality of values and identities considered. It offers deliberation and decision-support tools within an ethical framework that can foster transparent and accountable decision-making in science for policy. Such an integrated ethical and scientific decision-analytic framework would foster more ethical governance, defined as participatory, deliberative, transparent, and accountable decision-making that seeks to synthesize diverse sources of knowledge and to reconcile the plural values and identities of affected stakeholders and citizens (Lam et al. 2019, Lam 2021). Such an ethical governance framework has the potential to transform global seafood and ocean-human systems by enabling and facilitating not only sustainable, but also ethical development (Lam 2021).

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APSAFE2020

Individual Presentation



Diversification of Agriculture on Food, Nutrition & Health Security

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Abstract

Intervention of various viable technologies to improve the food & nutritional status of the population proved the following facts: Promotion of malt based small scale food provides opportunity for rural women to develop entrepreneurship and employment. It also provides food and nutritional security through additional income. Several technologies like value addition to fish & prawn products, artificial pearl culture, processing of salted fish were developed under National Agricultural Technological Project which helped the self help group women of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu to improve their economic status. Received two patents for fabricating **I) Low Cost Ice Cream Freezer** (to prepare ice cream with small quantity of milk in rural area) **and II) Fresh Fish Vending and Display Table** (which helped the fisher women to reduce their drudgery and also preserve the fresh fish for a longer time without getting spoiled) The technology was licensed twice. Food Product development can be taken as an income generating activity in the rural areas by the illiterate women which can be included in supplementary feeding programs mainly to improve the nutritional status of the children .The horse gram which is commonly used for cattle feed can be diversified for human consumption with less investment. Mothers as well as Anganwadi workers preferred amylase rich supplementary foods preferred as these supplementary foods better as compared to earlier supplied food i.e. ready to eat food. Introducing red palm oil is beneficial to overcome vitamin A deficiency. The supplementary income of women has a positive impact on the nutritional status of the family.

Keywords

Technology Intervention, Nutrition Security, Health Security and Economic Empowerment.

Introduction

Food processing has huge potential to improve rural livelihoods by raising farm income through value addition in agricultural produce. Rural employment opportunities should be increased by promoting post harvest opportunities and value addition, entrepreneurship at the village level and this will increase the net income of the farmers. The promotion of agriculture, small scale rural industry,

the rural economy gets a big boost and also corrects the rural- urban imbalance and prevents migration.

Methodology

Surveys, Chemical analysis, Biochemical estimations, Product development, value addition, bio-availability studies on rats as well as human subjects; clinical observations were used as per the study design.

Results

Research carried by Vijaya khader on impact of diversification of agriculture on food, nutrition and health security is discussed under *Diversification of Agriculture; Horticulture; Mushrooms; Fisheries; Value addition and Economic Empowerment of Women*

A) Crop diversification / cropping systems

Intercropping of ragi and red gram in 8:2 ratio gave additional income of Rs.5, 500/- ha compared to single crop of ragi. Ground nut intercropped with either red gram or castor in 7:1 ration recorded maximum .Red gram based cropping systems with cluster bean in 1:7 ratio gave highest. Among different alternate crops tried to groundnut during late rabi, black gram recorded maximum net returns (Rs.26801 /ha) and followed by sesasum (Rs.20697 /ha). Cluster bean and field bean are excellent alternative crops for rain fed crops.

B) Horticulture intervention

This focused on increasing the supply of micronutrient rich crops through the promotion of home gardening or Nutrition garden . Horticulture intervention will involve the Ministry of Agriculture for the supply of *seeds, extension services, and storage support*. Vitamin A and Iron Nutritional status of nutritionally vulnerable segments of population subsisting on Horticulture crops and dairy farming in East Godavari district of A.P.(Aruna,1997) showed very significant improvement in their nutritional status. Significant impact of Nutrition Garden / Home garden reflected on Iron & Vitamin status of the families under study.

Operational feasibility of Red Palm Oil (RPO)

Vitamin A deficiency causes many health problems especially among children. A study was undertaken to screen the effect of supplementation of RPO obtained from the fruits of tree *Leis guineensis Jac*.The oil is rich in B-carotene, a precursor of Vitamin A .Supplementation of crude RPO to Anganwadi Children increased the attendance of children, increase in heights and weights of children was observed. Decrease in Grade 1V and Grade 111 malnutrition was also observed in boys as well as girls (Vijayakhader and Aruna, 2008) .

C) Mushroom cultivation

Every woman is an entrepreneur as she manages, organizes and assures responsibility for running her house. It has been increasingly realized that women possess entrepreneurial talent which can be harnessed to create employment opportunities. In the rural areas a woman can easily manage 4-10 beds depending on the space available, helping them to earn Rs.180 to Rs.450 per month. The results revealed that *spawn multiplication can be done by women as a co-operative venture and mushroom cultivation can be undertaken at household level as an income-generating activity(Vijaya Khader, 1994).*

D) Studies on Intervention of Fisheries

To elicit the information on the food consumption of preschool children population of 2203 (1072 ♂ :1131 ♀) were selected in the 28 coastal villages of 13 districts spread over 4 states viz. Andhra Pradesh, Karnataka, Kerala and Tamil Nadu with a total of 5744 Households. A detail information on the food consumed, frequency and amount purchased were noted and the total amounts of each food consumed for a period of one month was noted. This was divided by per Consumption unit (C.U.) to get the food consumption / C.U. / day.24 hour recall method combined with one day weighment was employed to assess the nutritional status of preschool children (1-5years). The purpose of diet survey was explained thoroughly. i.e., food items served in plate before eating. The cooked ingredients were measured through cups and were then converted to raw ingredients.

Fisher women in Coastal Eco-System of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. (Vijaya Khader, R.Sathiadas and H.Mohamad Kasim , 2005) reveal fish eaters in the study area comprise 47 per cent of the total population ranging from 23.7 per cent in Tamil Nadu to 85 per cent in Kerala. Though the position of Tamil Nadu is high in terms of number of coastal districts and possession of coast line including the number of landing centers, the number of fish eaters in the state is minimal. *Andhra Pradesh employs 32 per cent of its fisherwomen in fish curing/drying/net making and 27 per cent in processing plant works.*

Two Equipments namely *I) Low Cost Ice Cream Freezer ,II) Fresh Fish Vending and Display Table* have been fabricated and received Patents and the technology was licensed to a woman entrepreneur for manufacturing these two equipments for a period of two years(Vijaya Khader,et.al. 2004) . After expiry of two years the technology on low cost ice cream freezer was licensed second time to other women for a period of 6 years. *These equipments were fabricated mainly to improve the Health & Nutrition Security.*

Nutritional status of preschool children in coastal fishing villages of South India Andhra Pradesh, Karnataka, Kerala and Tamil Nadu

The consumption of vegetables, fruits was found to be low, milk consumption was fairly low

among the preschool children & fish consumption was found to be 34 gm/ CU. The intake of nutrients in case of preschool children was found to be less than the RDA. It was observed that macro nutrient intake was fairly better when compared to the micro nutrient intake .31 % of preschool children were anemic. The other clinical symptoms like angular stomatitis, chelosis & dryness of skin were 35 % on an average .The reason for high anemic might be due to low consumption of iron rich foods, poor health ,hygiene & sanitation and also might be due to lack of nutritional awareness (Vijayakhader, et.al, 2005)

Success Stories

The National Agricultural Technology Project entitled **Studies on Fisherwomen in coastal ecosystem of Andhra Pradesh, Karnataka, Tamilnadu and Kerala** explored the socio-economic status of fisherwomen and found the families wherein women are actively involved in one or other occupation has flourished and achieved all round development. *Seven Fisherwomen (3 from Kerala ;2 from Karnataka and 2 from A.P) have attained the Training and Awareness from National Agricultural Technology Project, implemented in their places and enhanced their socio-economic status through various skill oriented training programmes and continuous day-to-day discussions with the Scientists.*

E) Value addition :

1) Low cost energy protein rich preparations using Horse gram

The horse gram which is commonly used for cattle feed can be diversified for human consumption with less investment. Processed horse gram flour was prepared using Puffing and Roasting, Processed Soya bean flour was prepared by Dehulling and Roasting. The low cost energy protein rich products namely RAGINA and EPRF were prepared using the simple home scale processing methods like germination, roasting and puffing, to improve the nutritional status. Horse gram has been identified as potential food resource for the tropics and also occupies an important place among pulses because of its ability to resist severe drought conditions. Soya bean (Glycine max) is one of the best vegetable proteins and has tremendous potential to meet the protein deficiency in the cereal based Indian Diets at a low cost. Product development can be taken as income generating activity in the rural areas by the illiterate women. Products can be included in supplementary feeding programs in order to improve the nutritional status of the vulnerable groups of the population (Vijayakhader & P. Ashlesh, 1998)

2) Effect of feeding malted food on the nutritional status of vulnerable groups (Vijayakhader & Umamaheswari, 2012)

Amylase Rich Malted Mixes (ARMM) two types were formulated using Ragi / Wheat and suitable products namely *Laddu, Roti, Kheer, and Porridge* were prepared using

formulated malted mix. The ARMM's found to be nutritional dense. For the supplementation of malted mixes 8 villages of Lepakshi Mandal, Ananthapur District was selected. Preschool children (400), pregnant women (100) and Lactating women (100) were selected and fed with two types of malted mixes (Ragi / Wheat) for a period of 3 months. Anthropometric data, Food intake showed a significant increase in the preschoolers, pregnant women and Lactating mothers. Clinical assessment showed considerable reduction i.e. (50%) in nutritional deficiency symptoms and morbidity rate of all the subjects. Training programmes were conducted to 40 members by lecture and method demonstrations using developed education material such as Posters, Flip book, Manual and CD-Rom. After the training 60-70% improvement was observed in Knowledge, Attitude and Practices scores of the trainees, project profile for bulk production was also developed. Supplementation of ARMM's helped to improve the nutritional status of the vulnerable groups of population in rural areas especially with regard to protein, energy, iron, and calcium and B-complex vitamins. Promotion of malt based small scale food industry not only provides opportunity for rural women to **develop entrepreneurship and employment but also provided Food and Nutritional Security through income generation.**

3) Therapeutic food supplementation in ICDS projects of Andhra Pradesh (Yasoda Devi & Vijayakhader, 2004)

Total 2267 children of age range of 1-3 years were selected (892 children from rural ICDS project, Saravakota; 507 children from new ICDS project, Kottam; and 778 children from tribal ICDS project, Seethapeta) for a period of 1 year. The three types of supplements were prepared and distributed by A.P. Foods, Hyderabad. The supplements were distributed either in the form of Laddu or as in the form of powder. Nutritive value of 100g of supplements provides 400 to 480 Kcal 12.5 to 13.8 g proteins. It was very encouraging to note that **92% of grade III children showed improvement in their weight and height; 80% of moderately malnourished; 42% of mildly malnourished and 44% with normal grade showed improvement.** It was also observed that there was positive correlation between the calorie and protein intake and also improvement in weight and height. All 100% of mothers as well as Anganwadi workers preferred these supplementary foods better as compared to earlier supplied food i.e. ready to eat food.

F) Economic Empowerment Of women:

Family income and nutritional status of pre-scholars' in rural areas of Tenali division (Vijayakhader & Kavitha, 1993)

The increase in the annual per capita income of the family increased slightly the nutritional status of pre-scholars. The results also reveal that no significant difference was observed between the body weight of children and income of the parents in all the age group. In spite of having high purchasing power, **lower educational status of the mothers** and also low nutri-

tional awareness, majority of the children are in Grade 1 degree malnutrition.

Impact of women’s supplementary income on families’ nutritional status (Vijaya Khader, 1999)

The study was carried in 4 villages of Rajendarnagar Mandal & Ranga Reddy District on vegetable venders, Shop Keepers, Washers, Fruit venders, Tea & Snack Venders. The results reveal that the supplementary income of women has a positive impact on food & nutrient intake of the family.

Conclusion

The impact of intervention of various viable technologies improved the food & Nutrient intake of the family contributing towards Food & Nutrition security.

Acknowledgments

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Yapese Environmental Philosophy and Food Sustainability

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Introduction

Environmental philosophy provides a gateway to develop a heuristic model to understand Yapese philosophy. Because Yapese philosophy is contained in oral traditions and various practices expressed in cultural rituals, forms of life, mores, habits, attitudes, beliefs, and thoughts, we will attempt to explicate Yapese philosophical values from rituals, beliefs, and especially fishing techniques, regarding the environment as they relate to sustainable food practices. We present the use of fishing techniques especially the tidal stone-wall fish weirs, called aech, as a classic example of a traditional sustainable fishing practice that should be rejuvenated. To study Yapese environmental philosophy is in large part to examine Yapese sustainable food practices. The aim of this short paper is to illustrate how Yapese maintain balance and harmony in acquiring their major staple fish, in association with their traditional ecological knowledge, and the spiritual world.

Location of Yap

In Western Micronesia, the arch of islands extending from just North of Indonesia to South of Japan, that is the Palau-Yap-Mariana island chains share important material goods and spiritual values. Through the spiritual (magical) power and natural resources of Yap, some of its shares values and trades goods moved Eastward through the Caroline atolls. Yap, or Waab, the traditional name, is located 840 km south-west of Guam, and 1,850 km east-south-east of Manila in the Philippines. It comprises four high volcanic islands, Maap, Rumung, Marbaa, and Gagil-Tomil. Combined, the islands are 24 km in length, north-south orientation, and 10km at its broadest, east-west, with a total land area of about 95 km² and the highest elevation is 174 metres above sea level. The high islands are referred to as “Yap proper,” and together with seven small coralline islands and about 130 atolls that form the “Outer Islands,” they comprise Yap State, one of the four States of the Federated States of Micronesia (FSM), the other three states are Chuuk, Pohnpei and Kosrae (Fig. 1).

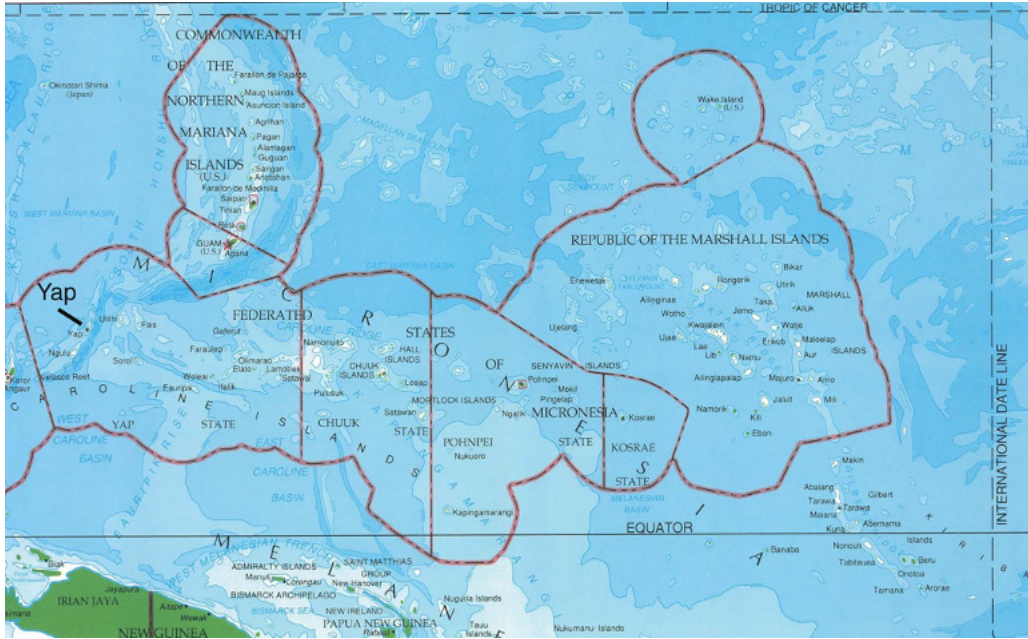


Figure 1: Yap Locality Map (USDA-NRCS National Cartography & Geospatial Center, Pacific Basin Area, 1:20,000,000, Fort Worth Texas, 1999)

The population of Yap today is about 11,700, immediately after the WWII it was estimated to be 2,400 (Takeda 1999: 4), and before western contact the population was estimated to be in the range of 20,000 (Hunter-Anderson 1981) to 40,000 (Takeda 1999: 3). Yap is divided into ten municipalities and 134 village communities that are ranked into nine classes under three paramount chiefs from Gagil (Gachpar village), Tomil (Teb village), and Rull (Ngolog village). While there are complexities, variations and alliances that influence the ranking of many villages, what this established was a system of higher-class and lower-class villages, i.e. lower-class villagers that served the higher-class Yapese, and higher-class villages that supported lower-class villagers at certain times. Land, and the adjoining submerged land ‘sea-plots’ (and in some cases, beyond the reef flat) was owned by various family estates from within the village. Lower-class villagers could not own land, it was owned by a “landlord” from a higher-class village. These villagers sought access to food grown on the land and within the sea where they could be granted limited access to certain types of food and fish.

Traditional fishing methods

Fish were and continue to be a major source of protein for the Yapese and they developed a number of fishing techniques incorporating cultural and social practices (see Falanruw 1992; Hunter-Anderson 1983; Suriura 1939; Takeda 1999). The types of fishing practices include the use of various types of nets, line fishing, spear fishing, fish traps, and bamboo and stone weirs on the reef flat, using a bamboo raft or canoe. The various fishing practices can involve just a few men or a large number of men working together. Rites and magic are used in many practices, as when fishing outside the reef, and where villagers of the lower class are prohibited from fishing (Suriura 1939: 2; Pitmag

2008 personal communication). In some practices, men would gather beforehand in the faluw (men’s meeting house) at the times of the year that is conducive for catching the fish sought after. Group fishing provides for the sharing of the catch with participants and others in accordance with local customs, and if just a few people carry out the fishing, contributions, gifts, and tribute need to be made to others in accordance with local customs (Suriura 1939: 4).

There were a number of traditional fishing methods used on the reef flat, and the most lasting example is the tidal stone-walled fish weirs (aech), of which it is estimated there were a total of 700-800, and they are all privately owned (Fig. 2). Yapese talk about the first seven aech being built by spirits. In an interview conducted by the Historic Preservation Office in 2002, a relative of an owner of an aech in Gagil, stated that this aech, being one of the initial seven was built by the ghost of a man named Mer many years before European contact, to “learn from and for catching fish... in a sustainable manner” (Jeffery and Pitmag 2010). Fish were caught at prescribed times, for a few days only, then the aech was opened up, “to let fish come and go, so as to make them feel at home” (James Lukan, personal communication, 2008). Those around seagrass beds caught rabbit fish, goat fish, emperor, or needle fish; while those built further out on the reef flat caught parrot fish, surgeon fish, trigger fish, giant trevally, barracuda, shark, grouper, stingray and turtle (Jeffery and Pitmag 2010:116-117) (Figs. 3 & 4).

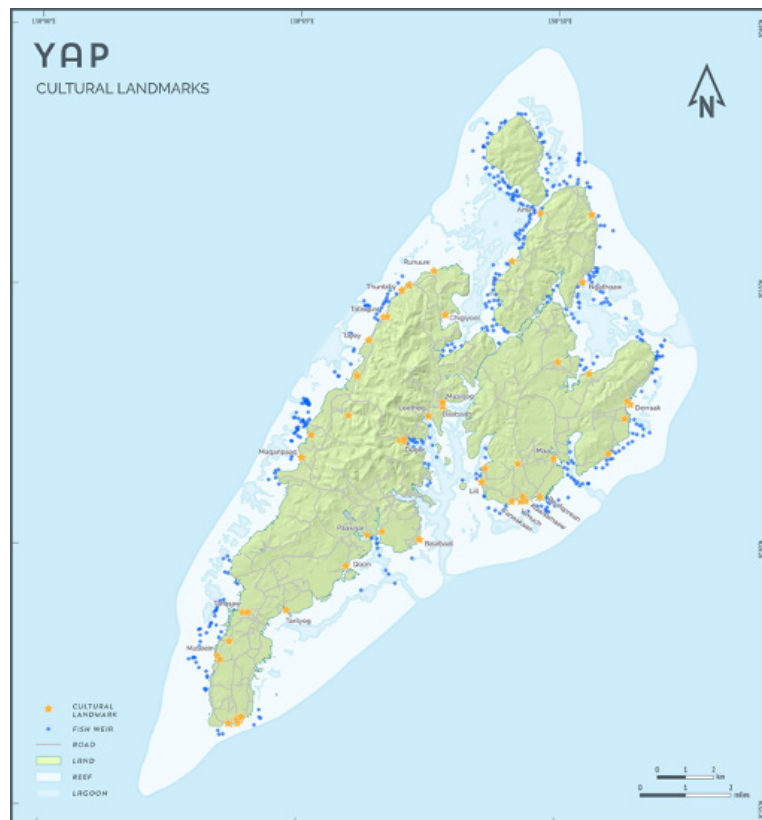


Figure 2: Yap proper, the reef flat and location of about 450 aech (www.islands.fm/atlas)



Figure 3: The arrow-shaped aech adjacent to the coastline (Bill Jeffery)



Figure 4: An aech placed adjacent to a blue-hole, located away from the coastline (Bill Jeffery)

Results

It became clear during a 2008-2009 project that documented 432 aech, that the cultural landscape created by the aech and the associated cultural practices reflect a Yapese cultural identity. They highlight Yapese ingenuity and the harmonious, spiritual and sustainable relationship they had with the marine environment. The traditional council of chiefs, the Council of Pilung regard aech fishing as “sustainable fishing methods utilizing traditional ecological knowledge and practices.” (James Lukan, pers. comm., 2008). Today, they want to revive the use of the aech and the cultural practices, and to reduce the amount of fish taken by unsustainable, so-called modern, fishing practices.

Discussion

The subsistence life-style, as affluent as it was, keeps people in contact with the natural environment. As such Yapese describe their world in dynamic terms. Myths describe the islands as the remains of a primordial ancestor-giant, or other narratives describe how culture heroes fish the island out of the sea, or build the island on top of a submerged reef (Lessa, 1987, and Poignant 1967: 70-82) The hylozoistic world is full of creative energy, life power, spirit power, and spirits of the ancestors. Micronesian languages have their respective words, denoting a concept similar to the Polynesian mana (the life force permeating the universe and linking people to their ancestors and the land). In Yap the power is called kael. The CHamoru of the Mariana islands call it aniti. In Pohnpei and Chuuk it is called manaman. These terms denote the creative, life sustaining power of nature, consisting of a balance of two opposing yet interrelated energies, male/female, light/dark, right/left, life/death, and so on. The interpenetration of the two forces generate the creatures, plants, and things of the world. Depending on the amount of life power (kael or manaman) perceived or believed to be dwelling in the person, creature, plant, or thing establishes that person or thing in a hierarchical order, granting it a superior or inferior position. In human society the life power dictates the social, economic (land-ownership), and political power and status of the upper caste (chiefs, land-owners, navigators, warriors) over the commoners.

Conclusions

Yapese environmental philosophy contains an environmental ethic. Catching fish on the tidal reef flat employing the aech was implemented using traditional ecological knowledge of the whole marine environment, in association with traditional cultural practices, as shown to them by the spirit world. This contributed to achieving a sustainable food source in balance and harmony with the natural and the spiritual world. Conflict in this balance and harmony has come about through modern fishing techniques. In recent years, Marine Protected Areas have been declared at the village level, with State/Federal government support to incorporate traditional ecological knowledge in their management. This is an area of conservation/collaboration that is relatively new, and is now expanding across Oceania. In living on the edge between harmony and conflict, a person can move in either direction. There is an ethic to promote balance and harmony within the forces of nature and within human interactions with nature. This might be called the ideal Yapese environmental

ethic. However, there is also what can be called the practical Yapese environmental ethic that is exhibited when people find the forces of nature or the human interaction with nature are out of sorts such that imbalance and conflict arise. This practical ethic pits humans against the forces of nature. It may well explain why some contemporary Yapese embrace an anthropocentric view of nature and the self-interest benefits of capitalism. When environmentally minded scientists or eco-tourists discover that Yapese property holders want to build hotels or oil refineries or develop a fishing industry despite the environmental degradation that will result, they may be mystified because they naively think that the only cultural value is harmony. The experience of conflict, however, gives credence to another value of domination and exploitation. Yapese living on the edge between harmony and conflict with nature are currently shaping and re-shaping their cultural ocean and landscape.

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Can Fishery Improvement Project (FIP) Help Accelerating Gender Recognition in Fishery Sector? Case Study Blue Swimming Crab in Indonesia

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Abstract

Gender recognition in fishery sector starts getting attention from many stakeholders. However, there are still uneven progress in accounting gender issues and mainstreaming gender in fishery sectors. Blue Swimming Crab fishery, as a case study, is one of main export commodities for Indonesia. Both gender, male and female, play a significant role along the value chain. Fishery improvement project, is a project designed to improve fisheries towards sustainability, is considered as an entry point to mainstream gender in fishery sector on the ground. The proposed interventions in Fishery Improvement Project of Blue swimming crab can be a tool to implement gender strategy and address gender inequalities.

Keywords

FIP, MSC, Gender, Blue Swimming Crab, Indonesia

1 Introduction

All fishery improvement projects (FIP), ultimately, work to achieve a level of performance consistent with an unconditional pass of the Marine Stewardship Council (MSC) Fisheries Standard. MSC certification is an internationally standard in sustainable fishing and seafood products. FIP is a step process to get MSC certification which is a market driven process to ensure the sustainability of fisheries and governance. The demand for environmentally sound seafood increases, in parallel with the growing demand of socially responsible seafood. The recognition of human rights in certified seafood would be harnessing in combating human right violation including against any abuses and gender discrimination.

Blue Swimming Crab (BSC) Fishery in Indonesia is implementing FIP as a step to get MSC certification. Indonesia was the second largest producer of crab globally in 2014, with production reached 100,000 ton, valued at USD 313,000 (MMAF 2019). In 2018, volume of blue swimming crab contributed to 17% of total fish exported from Indonesia. Blue swimming crab fishing in Indonesia involves small scale fishery and larger industry at processing level. Stacey et al (2019) highlight both

gender, male and female, play a significant role in small scale fishery. Therefore, female and male must share benefits and receive no impact due to intervention of Fishery Improvement Project (FIP). The government of Indonesia has put noteworthy effort to mainstream gender in fishery sector. Several regulations and gender mainstreaming guidelines in fishery are provided at national level. Despite this greater awareness, moving beyond well-intentioned efforts in reducing gender disparity in fishery remains a critical challenge. Unclear picture still exists among stakeholders in fishery sector on how to integrate gender aspect in policy, program and project activities. FIP, where there are a wide range of activities from production, processing, fishery management and policy, is an opportunity to highlight ways to integrate gender aspect in fishery.

2 Method

This study combines several approaches for gender analysis framework in FIP. The gender analysis follows every stage along the value chain. Value chain analysis is a method to analyse how the market works by identifying core processes, range of activities (e.g., production, processing and distribution) conducted by actors, their relationships and the values produced; those values are transferred along the chain to final consumers (Kaplinsky and Morris 2001, M4P 2008, Hempel 2010). There are several factors contributing to how the value chain works: 1) core process in the value chain, 2) activities conducted along the chain by actors, 3) key actors, 4) relationship among actors, competition between actors and concentration of power, 5) benefit sharing, and 6) assets and resources. The core process in the value chain involves input, production, trade, and wholesale and retail marketing. Then, activities in every stage of the core process were identified, along with the actors and relationships among actors, in order to determine gender relationships, disparities and differentiated impacts of inequalities along the value chain.

The results of gender analysis along the value chain was then applied to assess the interventions of FIP to explore the best practices of gender sensitive FIP. FIP, fishery improvement project, draws upon market forces, which include suppliers, retailers, food service providers, fishing industry actors, etc. The FIP identifies environmental issues that need to be addressed, sets the priority actions to be undertaken, and oversees implementation of the action plan (The Conservation Alliance for Seafood Solutions, 2015). There are three core principles (MSC 2018):

Principle 1 (P1): Sustainable target fish stocks. A fishery must be conducted in a manner that does not lead to overfishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.

Principle 2 (P2): Environmental impact of fishing. Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

Principle 3 (P3): Effective management. The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require responsible, sustainable use of the resource.

The data collection combined a desk review of secondary data and primary data. The secondary

data includes assessing publication, available reports from previous research and statistic. This study focuses on blue swimming crab in Madura Island, East Java Province, one of BSC production center in Indonesia. The primary data were based on interview with 69 people at input stage, fishers, traders, mini plant, association, government officers at village level, and University. The primary data were collected in Sumenep, Pamekasan and Bangkalan Districts, East Java in 2019. In depth interview was used for exploring gender issues. This method allows exploration and deeper discussion on gender concerns.

3 Results

3.1 Fishery improvement project of blue swimming crab

The fishery improvement project of blue swimming crab follows three core principles of MSC which are sustainable fish stock, minimizing environment impact and effective management. The FIP of BSC consists of 28 activities, cover all performance indicators in FIP (Table 1). There are six main activities under principle 1; 15 main activities in principle 2; and seven main activities in principle 3. Activities in principle 1 involve data management that contributes to harvest strategy and harvest control rule. In the FIP of BSC, all landed BSC must be recorded to measure stocks and then is used to calculate the harvest strategy and harvest control rules. Activities in principle 2 also involve data management and ecological aspect of crab, including secondary species, endangered, threatened and protected species (ETP), habitat and ecosystem. Activities in principle 3 are effective management that consists of exploring governance and national law and fishery specific management system.

Table 1: Main activities in FIP of BSC

P1: Sustainability of Fish Stock	P2: Minimizing Environmental Impacts	P3: Effective Management
1. Stock Assessment of BSC	1. Stock Assessment of Primary species	1. Establish Co-Management of BSC fisheries at local level
2. Stock Enhancement & restocking	2. Management Strategy of primary species	2. Governance and policy: Consultation, Roles & Responsibilities
3. Contribute to development of harvest strategy of BSC	3. Information/Monitoring of primary species	3. Governance and policy: Long Term Objectives
4. Fishing Effort Studies: Data collection of fishing gear	4. Secondary spp: Outcome Status:	4. Fishery Specific Management System: Fishery-Specific Objectives
5. Information & monitoring: Contribute to development of harvest strategy	5. Management Strategy of secondary species	5. Fishery specific Management System: Decision-Making Processes
6. Stock Assessment of BSC	6. Information/Monitoring of secondary species	6. Fishery Specific Management System: Compliance & Enforcement: Implement control document to improve compliance and traceability
	7. ETP: Outcome Status	7. Fishery Specific Management System: Monitoring and Management Performance Evaluation
	8. Management Strategy of ETP	
	9. Information/Monitoring of ETP	
	10. Habitat: Outcome Status	
	11. Management Strategy of habitat	
	12. Information/Monitoring of Habitat	
	13. Ecosystem: Outcome Status	
	14. Management Strategy of Ecosystem	
	15. Information/Monitoring of Ecosystem	

Source: <https://fisheryprogress.org/fip-profile/indonesian-blue-swimming-crab-gillnettrap-apri>

3.2 Gender disaggregated roles along the BSC value chain

The discussion in this section follows value chain analysis of blue swimming crab. The core process in value chain includes input, production, trading, processing and retail marketing (Figure 1). The exploration of BSC in this study covers from input to mini plants in Madura. In East Java, there were 5,181 fishers, 81 mini plants and 2194 pickers (APRI 2019). Pickers are workers in mini plant whose task is to take the meat of crab out of its shell. The number of people in blue swimming crab industry would be more as input providers and traders at village level are not counted in this census. Almost 100% pickers were female based on the discussion with APRI in September 2019. Mini plant owners in Madura also described that all their pickers were female (St, Sk, October 2019).

This study found the most gears used in BSC fishery in Madura Island were nets and traps. Traps and nets were purchased for most of the cases. The fishers bought 3-4 sets of nets for example, 2 sets of nets were used while the rest were stored at home. Nets were bought but still needed to be adjusted with weights and floating stones. Nets had to be renewed weekly and broken nets were stored on the beach or burnt. There were several types of trap: iron, collapsible and bamboo traps. One fisher might have 150-200 traps. In one district fishers used iron traps while in other district fishers used bamboo traps and made by themselves. In trap fishing, bait was important aspect. The form of bait was sun dried fish where the fish were caught by other fishers and sundried by processors.

The discussion about BSC value chains starts at input stage (Figure 1). Female dominates at input stage by making the nets and traps. Male involves at input stage by preparing logistic of fishing trips. While male at sea, most female prepares all fishing equipment, nets and traps at home. This involves making and mending nets/traps, cleaning the nets and traps, and preparing baits. Female had to sit for more than 8 hours daily to knit the nets or constructing traps. The activities in preparing baits include re-sun drying fish, and insert baits into plastic bag to be used in trap fishing. The sundried fish itself was sold by female traders & processors. Female engages in more time consuming and manual tasks. This also shows that female plays significant roles at input stage.

At production stage, male dominates the work. Male operates the boats, sets the net and traps in the sea. Having caught crabs, the fisher unload the crab, bring to traders and sell it. We also found female involve at production stage by going to the sea as male counterpart. Female conducted fishing by themselves in several places in Talango Island, Sumenep, Pamekasan and Bangkalan Districts. Female also went for fishing with their male spouse/siblings. When female went to the sea, the activities were similar with male counterpart. We found female as the owner of vessels but did not go to the sea. In this role, the female boat owner provided all logistics and fishing equipment.

At trading stage, actors varied between male and female. The activities at trading stage started when a boat landed, the wives of fishers collected the crab and brought to weighting point. During low season, the male fisher brought directly to a trader. Thus, a trader received crabs, dripped water and weight them. A trader paid to those who brought the crabs, either male or female. Relationship between traders and fisher was unique. A trader had permanent clients or fishers who always sold to them. Even though a fisher did not have debt they still sold to a particular trader. This kind of relationship was built through trust, family kinship, and emotional bonding due to regular selling to a

particular trader. New trader would be hard to enter, unless they provide good service to fishers and higher price

Thus, the crab was sold to mini plant owner at processing stage. The link is not necessary as a straight line (Figure 1). A fisher could also sell crabs to mini plant where mini plant owner cut the trader function. This depends on the dynamic relation between fishers, the nearest trader and mini plant. At processing stage, female conducted activities as owners, record, pickers and sorters. Females who work at mini plant as pickers were provided with tools and bench for picking the crab meat. These females had to wear working uniform and all equipment for food safety. The relationship between mini plant and traders was kinship relationship and business. By product from mini plant at processing stage, such as water from boiling crab, is utilized by food snack industry. The water from boiling crab is used to make crackers and condiment sauce 'petis'. This home industry is mostly owned and conducted by female actors.

The gender disaggregated role shows high participation of female at input stage. Male and female conduct activities at production stage although number of female involves much less. Male dominates tasks at production stage, except for selling the catch and receiving payment. Both female and male involve at trading stage. Female dominates at processing stage. Looking at these actors' roles, female and male engage in activities along the BCS fishery. Therefore, any intervention to improve BSC fishery must engage both actors.

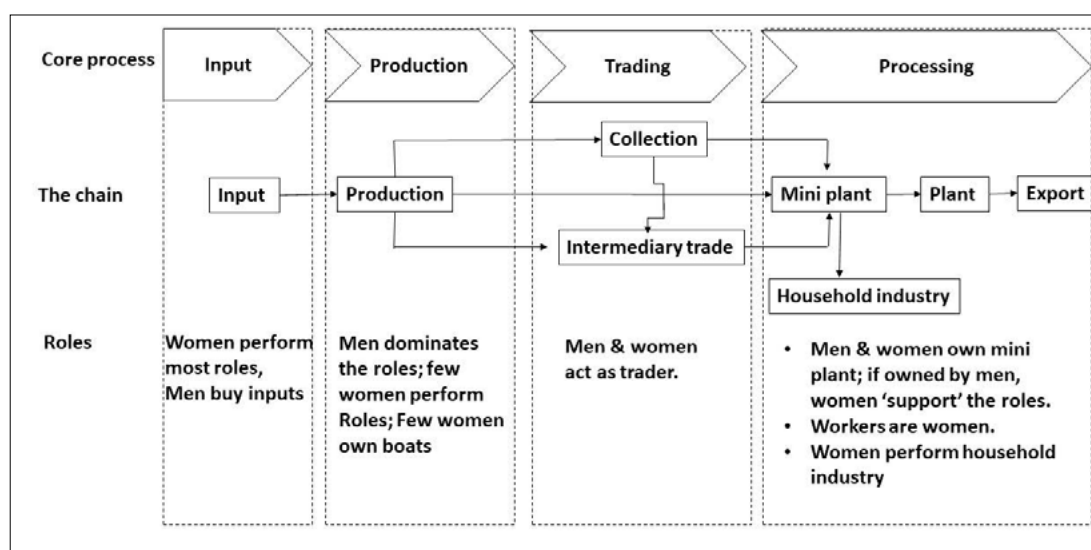


Figure 1: value chain of blue swimming crab in Madura, Indonesia

4 Discussions

FIP is a step to get MSC Certificate. In this blue swimming crab (BSC) case, the intervention of FIP aims at meeting the MSC principles which is basically to achieve the sustainability of BSC fishing. FIP of BSC has a strong focus on biological and environmental aspects. Especially in Principle 1 and 2, the activities have a strong focus on biological aspect. Examining biological outcome is a key

to evaluate the sustainability. This is not a surprising considering the aim of FIP to ensure sustainability of certain fisheries. However, managing a fishery is about managing people. The involvement of people is one of key successes in managing fisheries. Principle 1 and 2 lack of human focus, what is more gender aspect. Activities in P1 and P2 seem lack of involvement of main actors: fishers or traders. Refer to activities in FIP, data are collected by enumerators and discussed by scientists. No mention about gender of the enumerators. However, we found one female enumerator on site. This shows although the activities are gender blind but female still has opportunities to be enumerator. In addition to that, the results of data collection (stocks and ecosystem) should be available for male and female fishers, traders and processor. Discussion about stock is about sea resource where male dominates at fishing as believed. In practices, both male and female engage to marine related activities and have interests. Female should know about harvest strategy. The most powerful actor along the value chain is actually the trader because of fishers' dependency and bridging the fisher to market world. Information and management about stock would be strategic to work with traders, either male or female. Working with a female trader in Pamekasan, one site, is a good case where it has positive impact to her fisher clients.

Principle 3 discusses about governance, on how fisheries comply with relevant national laws and international agreements as well as fishery management system. This is an opportunity to empower fishers and primary key players on the ground to take role in the governance process. Decision making process should be accessible for male and female fishers, traders and processor. Exploring about regulation is considered as "big guy" work not fishers. On the other hand fishers and traders have to comply with the regulation. It is crucial to engage main actors in exploring regulation as it will impact to them as main actor on the ground. Activities in Principle 3 are opportunities to involve fishers & traders in the discussion about policy in fishery management.

Considering the gender disaggregated roles along the value chain of BSC, at least information about stock & ecosystem as well as intervention in FIP have to be disseminated to all key actors male and female. The involvement of all key actors along the value chain, female who works at input stage, male and female at production stage and traders will eventually contribute to the implementation FIP in achieving sustainable seafood.

Discussion about FIP should be available for all gender. It is essential to invite male and female in meeting for management establishment. The meeting committee needs to invite name of persons if number of female participants is expected to increase. It would be impossible for female to attend a meeting without their name on the invitation. Attending meeting is male or head of household's work at local level. Female is likely not invited or contribute to exploring the policy and decision making process. In addition, time and venue also needs to enable female counterpart to attend the meeting. Therefore steering committee of meeting has to invite specifically and consider female's time management.

In different case, discussion about BSC fishing was conducted through fishing association where no female as member. This situation makes female left behind on accessing information and improving capacity in general information. Improving the recognition of female as main actor in fishing orga-

nization will be strategic to encourage female's participation due to lack of female participation in fishing group and discussion in public. No one should be left behind on the discussion about regulation.

FIP examination highlights about sustainability and compliance along supply chain. In fact FIP focuses more at production stage in the value chain of BSC. Pre-production tend to be ignored in the discussion. Indeed, bait is important for trap fishing. Addressing bait issue would help decreasing females' burden in supporting crab fishing. A long hour work (more than 8 hours/ day and almost every day) would have significant impact to fatigue stiff muscles and eyes concern to female. No one force female spouse to work in a long hours. Due to aiming at going to the sea daily and catching more crab, then female spouse has to provide fishing equipment as much as they can.

In addition, the load to support their spouse as fishers tend to be ignored and not protected by the labor law, contrarily with labor in larger scale industries that is protected by the labor law. The importance of their contribution to BSC fishing needs to be acknowledged as the first step. Then intervention to improve the working environment and health concern of female spouse in making fishing equipment could be addressed respectively.

The interventions in the FIP of BSC are more focus at production stages to result sustainable crab fishing. This might lead to miss overall sustainability issue and intervention for sustainable fishing might have impact to female's burden. Lack of gender recognition in understanding key stakeholders and labor practices creates gender disparity. The debate about sustainable concern is deeply rooted in food ethics. The sustainable values have to consider environmental and social concerns, engages in a range of ethical values include protecting the environment as well as ensuring economic well-being, providing fair access and equal benefit for all key stakeholders, male and female. Recognition of female counterpart as key actors in crab industry as well as paying careful attention towards the invisible support of female counterpart at input and production stage contributes to discussion about the ethics of the current state of food system.

The assessment process of socio economic monitoring in MSC/FIP is an opportunity to incorporate gender concerns in FIP. At the moment, the socio economic has no gender aspect. Socio economic monitoring could benefit gender analysis and contribute to gender sensitive and responsive activities in FIP. Therefore, monitoring of social impact is a key to ensure no gender disparity in FIP.

After all, long term goal of mainstreaming gender in FIP is to have MSC as market driven for seafood certification that ensure environmentally and socially responsible seafood products. The growing awareness about ethical food is an opportunity to incorporate gender perspective in the FIP/ MSC. The objective is to have gender sensitive and responsive FIP. This could be done by:

1. Gender segregated data on the actors along the value chain and contribution of each actors by gender.
2. Gender concern is incorporated in socio economic assessment as part of MSC (FIP) process
3. Gender issues addressed adequately in process, plans, and implementing actions of FIP.

5 Conclusion

FIP is a step process to get MSC certification which is a market driven process to ensure the sustainability of fisheries and governance. This is an opportunity to enhance fishers and primary key players on the ground to be part of the governance process. Improve understanding on heterogeneity of key players on the ground will improve understanding on the socio economic impact and drivers of actions, including gender concern. Fishery Improvement Project (FIP), as one way to address the sustainability issue of fishery must also be enjoyed by both male and female. Gender mainstreaming in FIP is meant to be a strategy for promoting empowerment of female to ensure that male and female in BSC fisheries benefit equal rights and opportunities. This is particularly relevant to ethical food production. FIP, within the MSC certification process is expected to ensure the ecologically sustainability and make change in more socially responsible seafood initiative.

Acknowledgement

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Qualitative Analysis of Vegetarian Dining in Japan as Experienced by Taiwanese Tourists

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Abstract

This study aims to investigate the practice of vegetarianism in Japan through informal interviews with Taiwanese vegetarians who had visited Japan on self-catering trips. The interviews reveal that, despite the difficulty and high searching cost of finding vegetarian food, travelers' level of satisfaction was low. In addition, there is a lack of understanding of vegetarianism in Japan. Vegetarians are at times forced to behave as flexitarians at restaurants in Japan, since they cannot find vegetarian Japanese food. Vegetarians who travel with non-vegetarian friends often have to eat only desserts or cold foods to avoid animal products. Because there are no clear vegetarian labels, vegetarians often find it difficult to buy processed products because of animal-derived additives commonly used in Japan, such as gelatin and fish flakes (bonito).

Keywords

Vegetarian, Japan, Taiwan, Flexitarian, Vegan, Tourism, Vegetarianism

1 Introduction

There are few vegetarians in Japan, although there are no official statistics. Japanese food is often thought to be primarily vegetarian, but most of the food is heavily flavored with animal ingredients such as chicken stock or fish flakes (bonito). In Japanese cuisine, dashi is the foundation of taste. Typically, Traditional dashi comprises a stock made from seaweed and bonito. However, many commercial (instant) products are available, but commercial products are made using flakes of dashi broth.

For this study, vegetarians from Taiwan, who had visited Japan, were interviewed to assess what they ate during their visit. The study used informal interviews; participants were asked to describe freely what they liked about the food they ate during their visit to Japan.

2 Background

In general, the main categories of vegetarians include lacto-vegetarians (consume dairy but not eggs), ovo-vegetarians (consume eggs but not dairy products), lacto-ovo vegetarians (egg- and dairy-eating vegetarians), and vegans, who eat only plant products. The term "flexitarian" is a term

used to describe a person who is normally a vegetarian, but may on occasion eat animal products. It is estimated that about 14% of the Taiwanese population is predominantly vegetarian or practice vegetarianism at certain times (Huang and Chen, 2019). Many are lacto-ovo vegetarians, and some do not eat the five pungent vegetables (onions, garlic, scallions, leeks, and asafetida) proscribed by Buddhism. In addition, similar to the flexitarian, there are also people in Taiwan who do not eat meat or fish but frequent restaurants with a meat menu. If there is only non-vegetarian food available, they will ask clerks or waiters to prepare a dish that is as close to vegetarian food as possible, or they will avoid animal products from the existing menu. In recent years, many restaurants in Taiwan have introduced vegetarian menus; however, there are still some eating situations that cannot be adapted to vegetarian meals, such as eating in small restaurant with a limited menu. The acceptance of these flexitarian situations by vegetarians depends on their individual beliefs and the environment they face.

3 Methodology

In this study, we used face-to-face interviews with Taiwanese vegetarians to record the content of meals they consumed in Japan and to examine the difficulties encountered in choosing a restaurant or a meal, and what kind of vegetarian meals they would have liked to eat. The interviews were conducted between 21 and 28 December 2017.

The interviewees were located via a social networking site using the snowball sampling method. Since vegetarians do not differ from the general population in appearance, no rosters exist for random sampling. The interview took on average between one and two hours to complete, including recall of travel experiences. People who had been introduced by a personal reference were more likely to participate in the study, since they were asked to provide photos and other materials for corroboration. Although there is a possibility of bias in the content of the sample because it was not a random selection, this did not interfere with the goal of gathering a variety of opinions about their experience of vegetarianism. A total of 21 people were interviewed. As the problems experienced by vegetarians on package tours differ from those on self-catering trips, and because the employment and education of participants also have an impact on research interviews, the following analysis is based on only 10 cases of full-time workers with a university degree or higher who went to Japan on a self-catering trip.

4 Surveys and Findings

Table 1 shows the results of this survey. Since all participants were self-catering travelers, this study also investigated their past experiences of visiting Japan on their own.

While 9 of the 10 interviewees were not flexitarians in Taiwan, 6 out of 10 interviewees adopted flexitarianism in Japan. In addition, the choice of flexitarianism was not related to how many times they had visited Japan or their ability to speak the Japanese language.

Table 2 reports on interviews conducted with the same 10 people about their meals. As the first row reveals, 4 of the 10 people traveled with the expectation of good meals as part of the experience.

The second row shows that most people took time to investigate the Japanese vegetarian diet in advance. Of the 2 people who did not, 1 was flexitarian.

Generally, when traveling, the participants enjoy different meals whenever possible, but 8 of these 10 people ate the same meals repeatedly in Japan. After they investigated vegetarianism in Japan, they knew there may be no vegetarian food; therefore, 5 of the 10 interviewees brought their own meals from Taiwan, such as instant noodles.

Table 1: Information of 10 vegetarian self-catering travelers

ID	1	2	3	4	5	6	7	8	9	10
age	24	24	25	30	31	33	35	39	52	54
flexitarian in Taiwan	Yes	No	No	No	No	No	No	No	No	No
flexitarian during trip in Japan	Yes	Yes	Yes	Yes	Yes	No	No	No	No	Yes
how many visits to Japan	5	6	1	1	3	4	3	3	20	5
how many self-catering trips	3	1	1	1	2	3	3	3	20	2
How many days in the recent self-catering trip	11	20	14	5	74	6	6	8	9	5
study in Japan before	Yes	No	No	No	Yes	No	No	No	No	No
I speak some Japanese	Yes	Yes	No	No	Yes	No	No	No	Yes	No-
recent trip year	'17	'17	'14	'15	'15	'17	'17	'17	'17	'17
Visited city	Osaka Tokyo	Tokyo	Osaka Tokyo	Tokyo	West Japan	Kyoto	Kyoto	Tokyo	Nagoya	Kyoto

Although most hotels do not serve vegetarian meals, 8 out of 10 interviewees indicated that they would choose hotels that did offer vegetarian meals. All the respondents answered that they were less satisfied with their meals during the trip in Japan than with their usual meals in Taiwan.

Table 2: Vegetarian tourists' eating experience in Japan

ID	1	2	3	4	5	6	7	8	9	10
Food is a trip purpose or not.	Yes	Yes	Yes	No	No	No	No	No	No	Yes
Time to examine the food.	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
I ate the same food more than twice.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Take your own meals from Taiwan	No	Yes	Yes	No	Yes	Yes	No	No	Yes	No
Willingness to stay in a hotel that explicitly states that it offers vegetarians	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Compare Japanese meal to you often eat in Taiwan	worse	worse	worse	worse	worse	worse	worse	worse	worse	worse

Word frequency analysis in Table 3 performed on the interviews reveal that few traditional Japanese meals were mentioned in the interviews. Instead, “Indian,” “curry,” “Chinese,” “bread,” “pasta,” “burger,” “salad,” “buffet,” and “caf” were mentioned. “Tofu” and “udon” (noodles) are the only Japanese meals mentioned. The names of ingredients often appear, such as “fish,” “rice,” and “eggs.” Many of the interviewees were worried about animal-derived food additives, and words like “gelatin,” “sauce,” and “bonito” were often used. Another category related to Japanese food is dessert, e.g., “sweets,” “fruits,” “matcha,” and “ice.” Words related to communication are “communicate,” “English,” “Japanese,” “clerk,” and “ask (asked),” which indicates that many of the interviewees were troubled about communication regarding food. “Guesthouse” also appeared as a word because many people chose to stay in guesthouses where they could prepare their own meals.

Table 3: Word frequency more than 3 times during interviews

Words	frequency	Words	frequency	Words	frequency
vegetarian	20	sweets	6	asked	3
food	15	tofu	6	bonito	3
sightseeing	13	bread	5	burger	3
restaurant	12	checked	5	clerk	3
japanese	11	convenience	5	eggs	3
time	11	matcha	5	foreign	3
delicious	10	meals	5	fruit	3
rice	9	salad	5	hot	3
soup	8	ask	4	information	3
breakfast	7	bother	4	izakaya	3
fish	7	chinese	4	kitchen	3
friends	7	communicate	4	milk	3
hotel	7	english	4	ordinary	3
meat	7	gelatin	4	own	3
pasta	7	google	4	pudding	3
sauce	7	guesthouse	4	shibuya	3
store	7	ice	4	shops	3
buffet	6	restaurants	4	small	3
curry	6	tasty	4	style	3
indian	6	temple	4	supermarket	3
meal	6	times	4	sweet	3
nothing	6	vegetarians	4	udon	3
stores	6	advance	3	vegetables	3

The following are some of the participants' answers directly related to meals. "Most of the time, we fill our bellies with something not meal, such as sweets (ID 2)". "I have not been eating any meals that look like meals. Sometimes, three meals a day are served at a convenience store. There are hot meals I can eat (ID 4)". "Mostly, I was eating pasta, which is just fine. Sometimes in Chinese restaurants, if you communicate with them, they make something for you (ID 5)". "I ate more than usual, but I do not think it was a proper meal (ID 5)". "I was not able to eat lunch properly because I usually go to the tourist attractions. I ate dinner at a restaurant, I checked (ID 6)". "The first time I went there, I could hardly eat anything. By the third time, I found out that a curry shop had a vegetarian curry, so I could have a proper meal after that (ID 7)".

The participants felt disappointed that they could not eat Japanese food. They had to behave as flexitarians at Japanese restaurants, although most of them were not usually flexitarians. They struggled to find Japanese vegetarian food. There are few vegetarians in Japan. The interviewees often had to eat desserts or cold foods to avoid animal products. Almost all the participants, regardless of whether they could speak Japanese or not, cited communication problems. If their travel companions were non-vegetarians, the restaurants they went to were often non-vegetarian. In restaurants that did not have vegetarian options, waiters were not necessarily familiar with the requirements of vegetarianism. Some waiters asked detailed questions such as "Do you eat fish or shellfish?" or "Would the dashi broth be fine?" but such communication was often lost during the process. Those respondents who had studied in Japan were familiar with the situation in Japanese restaurants, so they tended not to ask those clerks. As a result, once they found a place where they could get vegetarian food, they always ate the same food. In addition, even if they did not eat in restaurants, it was also difficult to buy processed products because of the additives commonly used in Japan, such as gelatin and bonito, which are often unlabeled. It is worth mentioning that most of the respondents traveled in cities; they mentioned that they might have more difficulty in rural villages with less diversity, so they had not yet travelled to the countryside.

From this study it is clear that the vegetarian environment in Japan is not friendly to travelers. Therefore, there is much scope for improvement. Although this study is aimed at vegetarian travelers to Japan, the small number of vegetarians in Japan may also face similar problems that need to be solved.

Acknowledgement

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Identity-Policing and How One Changes One's Identity for the Better

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Abstract

In a recent paper (Dean 2019), Megan Dean argues that identity-policing in eating, where social pressure forces one to change one's eating habit, which is related to one's own identity, could engender harm precisely because of potential dehumanization and loss of self-esteem. This is so because identity is connected with eating habits, so attempts to change the latter result in changes in the former. For example, attempts to change the eating habit of some men so that they turn to eating vegetarian food is contrary to their identity as "real men." In this presentation I analyze Dean's argument and propose that her argument is based on a presupposition that one's own identity is fixed, and is something that one is attached to. This, however, does not have to be the case. A reason why one is attached to one's identity is that one's identity is tied up with how others perceive oneself. The reason why the men do not want to eat vegetarian food is perhaps that they do not want to be perceived by their peer of having changed their identities (i.e., of becoming less masculine). However, as many philosophers have shown, identity is very fluid and temporarily constructed. A consequence then is that the argument that identity-policing could be harmful because it leads to loss of identity is rather tenuous. One can always change one's own identity for the better.

Keywords

identity, eating, ethics, identity-policing, fluidity, consumption

1 Introduction

As the common saying goes, we are what we eat. This statement is true in many ways, one of which is that food and identity are much interrelated. That is, the food we eat tells us very much of who we are. For example, Thai people usually have a conception of who they are which always consists of eating rice. It is as if someone who does not eat rice, or who dislikes rice, is not a Thai person. Furthermore, the fact that a certain group prefers to eat in one specific way often is a mark of the group's identity. An obvious example is the Mahayana Buddhist monks¹, who by rule have to eat

¹ Theravada monks, on the contrary, do not have a rule against eating meat. This is one of the main differences between the monastic practices of the two main Buddhist sects.

vegan food. Eating vegan food is thus a mark of being a Mahayanist monk as having one's head shaved, wearing a yellow robe, and so on.

What I would to do in this brief paper is that I would like to discuss the argument put forward by Megan Dean on identity-policing and its perceived threat to identity (for both an individual and a group). In a recent paper (Dean 2019), Dean argues essentially that one should at least consider some of the ethical implications emanating from what she calls "identity-policing" regarding food and eating. Policing the identity of another person could be harmful to that person because that could result in the loss of her identity, as well as dehumanization or shaming, which are deeply harmful. For example, someone may eat too much and gains weight as a result, identity-policing occurs when her social group warns her not to eat too much; this could engender harm when it goes too far, such as when dehumanizing practices are involved. She may be taunted and shamed by her social peer because of her appearance. Dean acknowledges that identity-policing generally is beneficial, but she proposes that the harms and the ethical implications of the practice should at least be noted.

My argument in the paper is that Dean's argument here relies on an assumption that one's identity is fixed. The men's group which does not approve of eating vegetarian food, thinking that doing so would result in the loss of their identity, apparently believes that their identity is more or less permanent. If they did not believe so then it would be difficult to see how they would view eating vegetarian food as a threat to their identity. On the contrary, it would be possible for them to believe that they can remain who they are while eating vegetarian food. However, this option is closed by their own viewpoint.

This means that there is a way out: one can retain one's identity while changing one's eating habit. After all, as I have argued in an earlier paper (Hongladarom 2018), identity is a construction and is a fluid entity where there is nothing that permanently fixes it. This of course implies that a marker of one's identity, such as one's eating habit, can change without having to threaten the identity in question.

2 Ethical Implications of Identity-Policing

Identity policing is an act where one's peer group pressures one into maintaining a conception of identity that the group identifies for one. If one strays from the conception, then the group has various means at its disposal to bring one back to line. Thus, identity policing is an age-old method where the group can maintain order and discipline. In the case of eating behavior, what is deemed correct and appropriate by the group is then imposed on each individual in it. If the group thinks that eating certain kind of food and eating too much are unacceptable behaviors, then the group can police the identity of each member. Those who found to violate the social norms are then sanctioned by the group.

According to Dean, there is nothing inherently wrong in such means of social pressure with regards to eating. However, there can be complications, such as when a group pressures a member to act in such a way that violates the identity of the member. A member might believe that a certain form of

bodily appearance belongs very closely to her identity. Maintaining this form may rely on a form of eating behavior. However, if such form is found to be objectionable by the group, then a conflict ensues. Identity policing can become ethically problematic when the group threatens to take away the kind of identity that a member is bodily and mentally aligned with. To go back to the Thai example mentioned earlier, this would mean that to deprive a Thai person, say, of rice and forcing him or her to eat bread or pasta instead would be a harm to his or her identity, since the identity is tied up with rice.

3 Fluid Identity

However, this type of argument rests on the premise that identity is fixed². In a nutshell, Dean's argument runs as follows: As identity of a person or a group is fixed, and since food is intimately connected with identity, changing the kind of food that one eats, as well as the habits associated with the eating, is tantamount to changing one's own identity. This then brings about the ethical implications mentioned earlier. The argument relies on the assumption that identity is fixed because in order to be able to police someone's identity through observation and admonition of his or her eating behavior, there has to be a fixed connection between the eating behavior and the identity. Otherwise the policing would not be able to achieve its aim because such aim cannot be found. If identity is a fluid concept, where the markers constitutive of the identity constantly change, then the group would not know which identity they need to police.

However, many theories and arguments lead to the conclusion that identity is indeed a fluid concept. The detailed argument cannot be presented here, but the main idea is that the very concept of identity depends on a set of essential properties such that they constitute the very being of the entity in question. Thus, the identity of a triangle is constituted by its definition: a figure consisting of three sides and three angles. Nevertheless, the identity of actual things outside of geometry is very imprecise and depends on a host of factors. In other words, the identity of an entity always depends on its environment and other entities.

One of the main arguments in favor of this is a Buddhist one. A thing derives its putative identity through its relations with other things. As such, the thing by itself is only a thing because it is

² In fact, the idea that food is an indicator or a fixer of identity is a contested concept and can be viewed in many layers. The fixing of identity through food can always be negotiated and depends on various factors. For example, one may assert one's own identity vis-à-vis others through ostentatious display of the food that one eats; in this sense, food is a means by which one displays perhaps one's nationalistic tendency. Food can also be a means by which one consciously shows one's wealth, or the means by which one wants others to perceive one's acquired social status, and so on. In these cases, food functions as a factor among many which one can use to construct one's own identity. Furthermore, traveling and exposure to foreign culture do tend to lessen the fixation of one's identity through food, either through necessity (one has to eat foreign food out of necessity) or choice.

Identity, in addition, can also be stereotyped and codified through cultural artifacts such as cookbooks. Sherrie Inness (2006) argues how cookbooks are used by women to express their values, desires and beliefs. However, other cultures do not rely on cookbooks at all, but on words of mouth and learning by observing, as someone observes others cooking and remember how to cook particular dishes. In Thailand, for example, there are cookbooks, but they are so imprecise that it is close to being useless as a guide for cooking: One needs to know how to cook already before one gets useful information from Thai cookbooks. Thus, in addition to Inness' observation, the cookbooks are by themselves cultural artifacts.

bounded by other things, since any essential property that would enable the thing to remain the thing it is without such relations cannot be found (See, for example, Nagarjuna 1995).

4 Conclusion

This points to a view that considerations of the ethical implications of identity-policing needs also to take into account the fact that identity is fluid and is always a construct. What this means is that identities can change, and one does not have to remain fixed with the identity that one imputes on oneself or is imputed by others. The harms associated with identity-policing, such as anxiety when one gets rebuked by one's peer, are then seen in a clearer light as the desire by the group that the individual fall into line. In the end, the individual has all the means by which she can consider whether to follow the line or to strike out on one's own. The harms do not stem from loss of identity; they instead emerge from the desire for uniformity by the group. It is up to the individual herself whether to follow that or to consider it and change oneself for the better.

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Disrupting Consumer and Brand Loyalty: The Potential Risk to the Global Food Supply Chain

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Abstract

Consumer and brand loyalty related patents and non-patent literature (NPL) are surveyed over a twenty-year period. The first goal of the study is to determine the domain boundaries of research and development (R&D) for enforcing ethical consumer and brand loyalty programs. After analyzing the domain ontology of the consumer and brand loyalty, the second goal of the study is to disclose how the loyalty systems can be corrupted by unethical practices, especially in the food supply chain. The collective intelligence of patents and NPL identifies the key innovative R&D topics, their technical components, and viable applications that enhance brand and consumer loyalty. Patents and NPL are mined using the natural language processing machine learning approach to discover the semantic distribution and clustering of key technologies. This research discovers four clusters of topics over the past twenty years. The research systematically analyzes how these applications, intended to enhance food quality and safety through brand loyalty and consumer trust, could be exploited and disrupted by unethical competitors or entities. These disruptions, such as distorting the values of trademarks, misleading the source of food supplies, and other types of unethical behavior in the omni-retail food channels, can be used to form effective strategies to ensure trust and safety in food supply chain.

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Keywords

Brand and consumer loyalty, unethical channel behavior, food supply chain, AI, machine learning

1 Introduction

In this section, machine learning (ML) is used to perform semantic analysis of patents and NPL publications over a twenty-year period. The method uses the R&D collective intelligence created over this time period to create consumer and brand loyalty solutions. Three main text mining methods applied in this research are reviewed in Section 2. The ontology map of the mainstream topics (clusters) and the key terms of each topic discovered are described in Section 3. Section 4 demonstrates how these systems can be corrupted through unethical means to disrupt the global food supply chain and consumer brand loyalty, damaging the trust and brand equity of food suppliers and services.

Our research explores the recent topics and trends of technologies and applications used for enhancing brand and consumer loyalty. The methodology includes a comprehensive literature and patent document collection and review from a pay-for-use search engine. A total of 910 documents (605 patents and 305 NPL articles) are collected using the InnovationQ Plus search engine (InnovationQ 2020). These articles form the document corpus for e-discovery of the leading brand and consumer loyalty R&D topics and trends. This research uses unsupervised machine learning approaches to text mine and extract the key topics and key terms (including words and phrases). The Latent Dirichlet Allocation (LDA) algorithm is used for topic modeling, K-means for technology clustering, and normalized term frequency-inverse document frequency (NTF-IDF) for key term discovery. The results generate a comprehensive overview and ontology schema for further depiction of unethical (or even illegal) acts and risks affiliated with these brand and consumer loyalty solutions. Ethical in the sense that they may be legal but also may be intentionally misused, especially in the global food network.

2 Literature Review

This section reviews past research literature related to brand and consumer loyalty and AI machine learning. A collection of articles and patents related to brand loyalty are collected as a corpus for analytic research and review over the past twenty years. The research trends and methods related to brand and consumer loyalty are organized so that an ontology can be constructed to better understand the clusters of approaches used and the main node and relationships among techniques over time. The numbers of patents and literature (NPLs) published from 2000 to 2019 are collected for review and analysis. The patents are collected from global patent offices and the literature are from major global online libraries: IEEE Xplore Publications, PubMed Central, an online archive of journal literature in biomedical and life sciences, and the IP.com journal documenting new disclosures that have never been published anywhere else in the world. The multi-organizational library comes from 20 publishing partners who provide access to over 180,000 items with new content being

added weekly (InnovationQ 2020). In Section 2.2, we will briefly review the literature about AI and machine learning (ML) (Alpaydin 2009), which will be adopted as Section 3's document content analysis methodology.

2.1 Brand and Consumer Loyalty

E-commerce has changed retail business models where mobile devices and social networks underlie retail innovations and enable data transfer and communications between buyers, sellers, and supply chain intermediaries. Many suppliers or intermediaries have built omni-channels. The concept of omni-channel distribution and logistics is to integrate online and offline resources to provide versatile and satisfactory shopping experiences for customers (Trappey et al. 2017). Retail brand and customer loyalty has changed over time since omni-channel (online and offline) sales are linked to social, legal, economic, government policy, and technological standards. For example, emerging technologies and standards for the Internet-of-Things (IoT) enables solutions supporting smart logistic services and smart payment methods for state-of-art omni-channel e-commerce (Trappey et al. 2017). Due to the massive growth of commerce through omni-channels, means to enhance brand and customer loyalties becomes critical to minimize the un-ethical conduct of buyers, sellers and intermediary players during the transactions. The most common case example is to promote a company's brand awareness and its consumer loyalty by affiliating the brand with the company's high-quality goods and services. Thus, the un-ethical act of purposely confusing consumers with fake goods (labeled using a similar brand-name) can be prevented through the application of new technologies (e.g., QR code or embedded chip) or laws (e.g., registered TM or patents).

Global consumer food demand requires that most stores include physical locations, virtual channels and e-commerce sales systems. A company will lose competitive advantage if it cannot create customers that are loyal to both the store's internet-based system and the physical store. Omni-channels were introduced in the literature around 2007 to enable businesses to interact with consumers through multiple channels rather than a single point of contact. After the academic research matured, companies began applying for patents around the year 2011. The omni-channel concept has evolved from single-channels, multi-channels, and cross channels (Yan 2014).

The greatest difference between omni-channel sales and traditional sales is that the former integrates the services and resources of more than two sales channels. Combining the sales data using intelligent methods, sellers can analyze the behavior of customers and develop an appropriate sales strategy to achieve consistent shopping experiences with high satisfaction for customers. To accomplish this task, sellers must provide a variety of logistics storage and distribution methods that satisfy the customers' service and delivery demands (Verhoef et al. 2015; Brynjolfsson et al. 2009; Beck and Rygl 2015; Khan and Greaves 2008). Channels which are co-dependent provide a flexible and seamless shopping experience for both online or offline customers. Omni-channel sales use logistics models, cash flows, and information

flows for both domestic and cross-border sales. The application of strategic analysis and planning provides a smart, integrated logistic model, and system. These omni-channel systems, however, are not risk free and can cause the destruction or boycott of a food brand and the loss of a large group of customers almost instantaneously. Such practices are being coming more frequent in the news, without verification and without proof especially if politically motivated. Examples include the boycott of Chick-Fil-A franchises (Lucas 2020) and most recently Goya canned good products (Nguyen 2020).

The social environment over the last twenty years has significantly changed the behavior of consumers. Innovations such as social networking and the ubiquitous internet has greatly enhanced e-commerce popularity. The models of consumer behavior using omni-purchasing channels are quite different from the traditional retail sales approach. In order to improve the social environment for omni-channel electronic commerce activities, environmental changes are needed. For instance, a cloud sharing system can provide dynamic trading information between suppliers, customers and intermediaries. Data mining and analytical approaches are used to model the changing demands. These data assist suppliers to rapidly dispatch and fulfill orders for all channels using socially accepted processes. These processes can also become grey channels if the true supplier of food and services do not continuously monitor the internet for infringement or other trade abuse.

With the development of O2O (online to offline), and O2M (online to mobile), companies integrate virtual and physical sales channels to maintain customer loyalty. Governments must pass relevant laws to provide a regulated and protected environment that allows fair and ethical operation of omni-channel sales and distribution across the global environment. For example, governments created intellectual property laws to protect IP rights and avoid infringement of copyrights, trademarks, patents, business processes, and designs during commercial operations. Firms that introduce new technology to build an exclusive omni-channel model require IP law protection. Governments also regulate the return and replacement of goods and legislate laws to prevent customers from entering into sales channel disputes. Changes in the economic environment require companies to continually re-evaluate their competitive strengths and their business processes. Companies that fail to re-configure their business processes lose strategic competitive advantage and are faced with the inability to better manage inventories and lower costs. Food retailers connect with new customers through many channels. These channels are also known as touch points and include internet sales. Retailers experiencing low sales growth via omni-channels are facing operational inefficiencies that increase costs and lower profit margins.

The policy environment for omni-channels and smart logistics create the foundation for governments to promote national economic growth (Beck and Rygl 2015). China, with a large land mass and a widely dispersed population centers, emphasizes the integration of consumer shopping behavior through internet sites, social media, mobile devices, and online advertisements. Taobao and Alibaba are leading industries that have created a retail revolution across

China by implementing omni-channels. Industry 4.0 was promoted by the Germany government in 2011 as a means to create and stimulate the use of smart factories. The implementation of these technologies (Prime Policy of Japan, 2013) requires horizontal integration of the value network, vertical integration of the manufacturing network, and communication linkages with workstations and cyber-physical systems (CPS). The 2013 Japanese industry revitalization plan was proposed to facility investment in R&D for equipment to revitalize manufacturing and retail businesses. The objective was to improve the interaction between machines and improve supply chain flows. By developing new sensors, control and drive systems that use cloud computing and artificial intelligence, the internet linked robots have become the core of omni-channel smart logistic system development. Productivity 4.0 was proposed in 2015 by Taiwan government (Executive Yuan 2015). The policy emphasizes applications of new information and communication technologies for networking, cloud computing, big data analysis and the creation of artificial intelligence for domestic and global value chains. Food suppliers, distributors, and retailers can use big data, IoT, and cloud services to facilitate the development of omni-channels.

The technical environment and standards play an important role to enable collaboration, integration, and inter-changeability in technology environment. Some key technologies are cloud system that enables Internet of Things (IoT) technology to monitor and exchange product and sales information. Consumer behavior is better monitored in real-time and demand, preferences, attitudes, and opinions help create a more competitive environment. The voice of the customer is clearly heard and quick adaptations to products and preferences can be made to enhance consumer loyalty to the brand (Trappey et al. 2017). The omni-channel data collected via RFID or IoT devices are modeled and analyzed using big data analytics. The analyses, then, yield insights to predict consumer demands. The results help food retailers and supply chain modify marketing strategies and provide greater customization.

2.2 Artificial Intelligence

The development of AI can be traced back to 1940's. AI covers any techniques which enable computers to behave like a human (Russell and Norvig 1994). In other words, any intelligence demonstrated by a machine that leads to an optimal solution can be included as an AI application. Since the 1980s, the concept of Machine Learning (ML) started to be increasingly applied to analyze trends and form large scale searches. ML learns from past data and experiences to find rules for optimal behavior and decision making. Over the past decade, Deep Learning (DL) has become the replacement technology and a research mainstream in artificial intelligence. Inspired by the function and systems of the brain, DL can learn data patterns using multi-layers of neural networks.

The new methodologies of AI have been applied to a vast range of fields including engineering, medicine, finance, and driving. All aspects of human lives are moving towards the inclusion of intelligence enhanced applications. For this ubiquitous process to succeed, cloud

computing, big data, and DL capabilities are indispensable. The development paths of AI, ML, and DL over a timeline from the 1950's to the year 2010 and further are described in (Li et al. 2019). This research has adopted AI machine learning algorithms for systematic reviews and analyses of patents and NPL publications to discover the R&D trends in consumer and brand loyalty solutions.

3 Methodology

The first step of the research is to determine the domain boundaries of research and development trends of ethical brand and customer loyalty programs by analyzing the knowledge, methodologies, and system developments disclosed in the related patents and NPL publications. The second step is to investigate how these systems can be corrupted in the food supply chain by unethical practices. Total of 305 papers and 605 patents relating to brand and consumer loyalty between the years 2000 and 2019 are collected. The abstracts and introductions of these publications are used to analyze the frequency and importance of terms and phrases for the domain ontology construct. The text mining methods, including LDA, K-means, and key term extraction (NTF-IDF), are adopted and cross-referenced for e-discovery of the main technical topics and sub-topics defined by key terminologies³.

4 Topic Clusters of Consumer and Brand Loyalty Discovered

Using the LDA probabilistic-based topic modeling technique and the k-mean clustering verification, the consumer and brand loyalty ontology has been defined and categorized in four clusters with respective topic interpretation (Hartigan and Wong 1979). Cluster 1 focuses on “Customer Transaction Business Intelligence (BI) Analysis”. Table 1 highlights the cluster key terms. The use of transaction-based loyalty services enables merchants to provide personalized recommendations or reward program to attract customers to return and increases customers’ trust and loyalty to the brand.

Table 1: Top 10 key phrases of Cluster 1 - Customer transaction BI analysis.

Key phrase	Probability	Key phrase	Probability
transaction information	0.1060	member loyalty	0.0594
loyalty card	0.0892	purchase transaction	0.0560
card issuer	0.0843	loyalty account	0.0538
reward program	0.0820	service provider	0.0506
loyalty reward	0.0715	loyalty benefit	0.0495

³ For the detailed methodology, please refer to the authors’ full research article, A Twenty-Year Review of Brand and Consumer Loyalty Patents and Academic Literature (by Trappey, Feinberg, Trappey, Li), 2020, which is available upon request.

Cluster 2, Device and Platform Apps and User Interfaces, covers the topics of online applications (apps) and their user interfaces (UIs). Many documents in cluster 2 discuss systems or medium related to users, such as social networking systems, mobile applications, websites, and messaging functions as listed in Table 2. These systems collect and analyze the user’s profile in order to improve online service with well as improve the user experience.

Table 2: Top 10 key phrases of cluster 2 - Device/platform applications and user interfaces.

Key phrase	Probability	Key phrase	Probability
user account	0.1305	digital content	0.0527
social medium	0.0947	user profile	0.0505
user interface	0.0824	customer payment	0.0484
mobile application	0.0712	alphanumeric sequence	0.0442
web site	0.0604	real time	0.0428

In Table 3, the top key terms of Cluster 3 indicate that the main topic is Customer Relationship Management (CRM). In cluster 3, patents and NPL mostly deal with tracking customer satisfaction and loyalty information.

Table 3: Top 10 key phrases of cluster 3 - Customer relationship management (CRM).

Key phrase	Probability	Key phrase	Probability
customer loyalty	0.5462	customer relationship	0.0765
customer satisfaction	0.2375	relationship quality	0.0660
relationship management	0.1045	customer equity	0.0650
service quality	0.0825	customer engagement	0.0550
customer database	0.0765	customer value	0.0550

Cluster 4 is relevant to brand equity assessment. Brand equity refers to the perceived value of ethical brand and consumer loyalty, established brand names, and logos. This is a crucial concept in the field of brand management and marketing. The measures of brand equity are composed of factors indicating customer’s preferences. Table 4 shows the key terms appealed in the related publications.

Table 4: Top 10 key phrases of cluster 4 - Brand equity evaluation.

Key phrase	Probability	Key phrase	Probability
brand equity	0.3497	famous brand	0.1166
brand community	0.2616	consumer brand	0.1072
social medium	0.1768	online brand	0.0931
brand value	0.1514	brand experience	0.0804
brand relationship	0.1291	Co-brand	0.0799

5 Corrupting Brands, Consumer Loyalty and Supply Chains

Section 4 discovers four clusters of consumer and brand loyalty programs and their unique enabling techniques. These scopes are (C1) Customer Transaction Business Intelligence Analysis, (C2) Device/Platform Apps and UIs, (C3) Customer Relationship Management, and (C4) Brand Equity Evaluation. With the growing popularity of these consumer loyalty implementations, they are common targets for unethical use with potential disruption. In Table 5 ~ Table 8, we present examples of unethical or illegal practices in each cluster, which require strategic attentions to prevent the disruption of consumer loyalty and trusts in global food supply chain. The ontology of the four areas of consumer and brand loyalty programs and their typical unethical or illegal acts are shown in Figure 1.

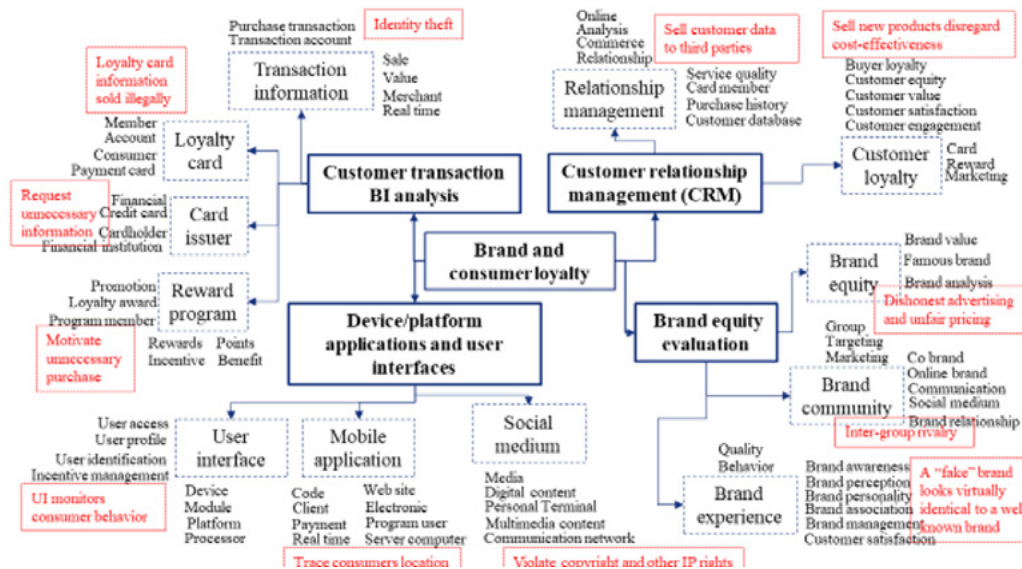


Figure 1. The ontology of consumers and brand loyalty programs and examples of disruptive acts (in red boxes).

Table 5: Unethical or illegal acts related to the scopes of customer transaction BI analysis.

Customer Trans BI	Unethical (or illegal) acts
Transaction Information	Transaction information can be stolen from ATM's, internet interaction with the food retailer or service provider, and of course, identity theft is an ongoing threat. Getting money at the supermarket or from isolated automatic tellers is not a risk-free activity.
Loyalty Card	Loyalty card information can be sold to others without the user's permission and essentially provide a complete profile of what you eat, what you wear, where you travel, what you read, and identify your network of friends. Data mining makes it possible to create a network of people like yourself. Loyal cards at food stores create databases that can be sold and the profit to the retailer is seldom passed down to the consumer.
Card Issuer	Card issuers requested information may not be necessary.
Reward Program	Reward programs are often a means to entice unhealthy overconsumption, the unnecessary purchase of goods to obtain a reward that is less valuable than the expensive of the purchases needed or services used.
Loyalty Reward	Loyalty rewards are often tiered value cards (elite membership cards) that may have fees that do not justify their use. Of course, there is prestige value in holding certain loyalty cards or being allowed entry to the airport lounge to consume food and beverages before a flight. The question is the fairness to all customers who should be treated equally and fairly and the cost of the reward should be fairly valued which frequently is not worth the money.
Member Loyalty	Membership loyalty can be a promotional campaign where the value of being a member is more beneficial in value to the provider than the customer. Five-year members may get a 5% discount on special items that may be marked up in price and are not a discount or special offer in exchange for their loyalty.
Purchase Transaction	Purchase transactions can be monitored. The latest is the use of an application on the user's cell phone that reads a bar code. New apps for unknown food stores appear on your phone in an attempt to lure you away from brands that you trust. A new food store should always be approached with suspicion and a lot of questions about country of origin and the supply chain. Brands need to be carefully inspected for infringement if you are in a new food sales environment.
Loyalty Account	Loyalty accounts keep track of you and what you are buying and where you are going and have people calling you to ask you questions that you may find to be intrusive. A store may also use a push strategy to lower inventories of food items that are near their due date or not popular.

Table 6: Unethical or illegal acts related to the development of apps and UIs.

APPs and UIs	Unethical (or illegal) acts
User Account	User accounts can be stolen by phishing, embedded devices on ATMs, hacking into cloud servers, and a growing number of cons that trick the consumer into providing a thief with privileged account information. Sometimes, the user account information is stolen from the product or service provider which is corporate espionage. Be particularly careful of open market and street food market vendors with old credit card machines.
Social Medium	Few consumers read the user agreements on the social medium that they use on their computers and cell phones. If I am using a social medium, what are the copyright and other ownership rights that I have to the content that I provide? Where is the data being stored and is my content being sold without authorization?
User Interface	Every user interface can be a recorder. Your user interface monitors your consumer behavior and every interface is potentially a data collector that you have no knowledge of its functions.
Mobile Application	A mobile application traces the consumers location. Your movements can also be linked to the people you meet which creates a network of your social world. Which vineyards you visit identifies your income.
Digital Content	Digital content such as e-mail is read, and sorted, scanned for topics, linked to friends, stored in auxiliary databases without your control to edit or delete.
Web Site	Web sites can be designed that look exactly like the web site that you use to do bank transactions or preform any online activity. Consumers must continuously be on the lookout for fake websites.
User Profile	Your user profile is unknown to you and may be discriminatory. Attempting to verify your user profile in relations to others using computer applications and social media sites is a fruitless endeavor for most consumers.
Alphanumeric Sequence	Applications can generate sequence numbers to identify themselves or can be generated to allow catching of transaction information. However, viruses can change the alphanumeric sequence on your computer or mobile application to substitute another app that may look the same as the app you are affiliated and steal information from your computing device.
Real Time	Have you ever entered a website and started to fill in an application in real time only to receive a reply like "application timed out for inactivity?" Then you try and get back in and it does it again. Be careful, this is a good way to collect a lot of personal data. Everything from online voting applications to professional resumes and school applications use this unethical practice. There are many unethical real time data collectors online.

Table 7: Unethical or illegal acts related to CRM.

CRM	Unethical (or illegal) acts
Customer loyalty	Enterprises may abuse customer loyalty as they believe their customers will buy their new products regardless of usefulness, cost-effectiveness, or quality. Conspicuous consumption of food and beverages, particularly in today’s environment, is definitely viewed as unethical by the public and diminishes the standing of the brand and the consumer (https://www.amazon.com/Apple-MWUG2LL-A-Pro-Stand/dp/B082LQSZB8).
Customer satisfaction	Some mobile phone application developers hire public relations companies to fake reviews on food store and merchandise assortment ratings as well as restaurants. The purpose of misrepresenting the ratings of customer satisfaction is to draw customers to a store that may be selling food items of extremely low quality, that are trademark infringement and not genuine, are have disguised sources of origin, selling homecooked, non-regulated food to the public, or may contain illegal ingredients (https://www.npr.org/sections/thesalt/2012/09/12/160755775/five-ways-to-spot-a-fake-online-review-restaurant-or-otherwise).
Service quality	Genuine brand merchandise often comes with an augmented service such as replacement parts, discounts, and warranties that reinforce the quality of the brand. If you purchase a branded good from an unauthorized channel, you cannot receive a refund.
Customer database	Selling customer data to third parties without customer consents.
relationship quality	Exploiting emotions, evoking rage or sadness to manipulate consumer decisions

Table 8: Unethical or illegal acts of cluster 4 – Brand equity evaluation.

Brand Equity	Unethical (or illegal) acts
Brand equity	Dishonest advertising and unfair pricing are harmful to the customer’s brand attitude and lowers the brand equity.
Brand community	A brand community deliberately provokes negative views of rival brands and their users. Using a sense of inter-group rivalry, an anti-brand community can denounce other brand by "trash talk" and “negative word-of-mouth”.
Social medium	Use social media to get consumer-specific, intimate data. Based on data collected mainly on social networking sites, marketers and branders can know almost all of a person’s information- they can know information such as interpersonal relationships, dining habits, preferences, political opinions, religious beliefs, hobbies, and shopping history.
Brand value	A brand deliberately lowered its brand value, intending to make foreign investment.
Brand relationship	Unethical advertising creates many permanent stereotypes or encourages people to buy things that are not really needed.
Famous brand	After gaining consumer trust and reputation, a brand secretly sells genuine and fake goods in turn, relying on consumer trust.
Consumer brand	Brands that mislead, exploit or spam consumers is considered doing unethical marketing behavior. Unethical marketing practice may include intentionally evoking rage or sadness to manipulate consumer decisions, using fear tactics, targeting disadvantaged people or tricking customers into buying a product or service.
Online brand	Since online marketers can collect numerous information about people's personal characteristics, online shopping behavior, and use of information, it is easy to invade individuals' privacy rights by selling information to other sources and divulging confidential information.
Brand experience	When a store brand is packaged so that it looks virtually identical to a well know national brand.
Co-brand	After a brand knows that it has a debt crisis, it intends to blame others' brands or cause others to fall into crisis by so-branding with other.

6 Conclusions

This technology overview discovers the state-of-the-art R&D of customer and brand loyalty related technologies. Four dominant areas in R&D progresses are depicted (i.e., customer transaction BI analysis, devise platform applications and user interfaces, CRM, and brand equity assessment) through the collective intelligence of the past 20-year patents and NPL portfolio. After identifying the four key areas of customer and brand loyalty technology progress and implementation, the research emphasizes the critical challenges faced by the global food supply chain that could severely threaten and disrupt consumer and brand loyalty and destroy customer confidence. The systematic overviews of patents and NPL in the fields have provided a solid and reliable guidelines and technical solutions to avoid these disruptions. The research methodology and discovered outcomes are applicable to the consumer and brand protections for many industries that must value their consumer trusts and loyalty as the top priority. As we have identified, industrial ethics, such as in food, medicine and health case, are most relevant to the quality and well-being of our life. They must be well guarded and assessed through a systematic approach such as the continuous evaluation of brand and consumer loyalty.

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Impact of the Covid-19 Pandemic on the Food System: An Overview

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The present study explores how Covid-19 is impacting the food system and food security as well as intensifying future food challenges. We first consider the pre-Covid-19 understanding of the major food system issues and challenges, then on the eve of the pandemic on the eve of the pandemic in early 2020, finally focusing on these issues and challenges during the onset of Covid-19.

I. The previous normal

Samir Dani (2015, p. 235) asserted that the main problem “for sustainable food security [on a global scale] is the continuously expanding human populations.” A UN study found this population growth to be concentrated in low-income countries and identified several major contributing factors: GDP growth, educational attainment, access to contraception, reduced infant mortality, and improved gender equality, and notably female education (Dani 2015 p. 236).

As to meeting challenges to food production, several approaches were being advocated and taken: experts from private and public organizations were dispatched to work with small farmers and other producers to improve efficiency and productivity; policy was formulated to address operational difficulties, tackle food waste¹, and develop new technologies. Food trade issues remained complex and sensitive, as governments prioritized food security over crucial free markets and trade. While the mantra of the early 21st century had been for the nations of the world to adopt a cooperative approach to food trade, protectionism has seen growing popular and thus political appeal.

Challenges for the food system, from more to less urgent, included balancing food supply and demand, reducing volatility in the food system, ending hunger in the world, reducing food system emissions, and maintaining biodiversity and ecosystems.

Climate change and its uncertain impacts were viewed as looming stressors on agricultural production and global markets. It was known that food production would be impacted by the resulting ecological change and unstable weather. And, it was foreseen that the resulting food shortages and price rises would engender public health problems, as hungry populations are more

¹ Food waste remains a problem. For a recent overview, see Lauren Stine (July 17, 2020).

susceptible to disease. Moreover, the unhealthy populations would be less productive, increasing poverty and reducing the ability to purchase food, creating a vicious cycle.

Other problems for the food system included overuse of water, expanding use of energy, and dwindling arable land. Stressors on farmland included not just development, urbanization, desertification, salinization, and sea level rises, but also soil degradation and erosion². The intensification of agriculture, with increased use of chemical pesticides and irrigation, created higher yields; however, it also reduced land fertility in the mid-term and adversely impacted local ecosystems in the long run.

As noted, the central challenge for the food system was balancing food supply and demand. Several levers were indicated: (1) increasing productivity to augment food supply. The approach was to remove inefficient steps from food production, including sources of waste, and make innovations in science and technology for better soil, seed, machinery, automation, etc. (2) Reducing waste, in the field, storage and transit in developing countries; in grocery markets, restaurants, cafeterias, and consumers' homes in developed countries. (3) Improving food governance for quality and safety. National agencies needed to be made more consumer-minded and freer of industry influence. Global organizations, like WTO, needed to be strengthened. (4) Educating consumers-- with food information, school trips, public announcements, etc.-- to think more carefully about the food products they purchase and eat and to be more open to trying different kinds of foods.

II. Early 2020: the eve of the Covid-19 pandemic

By 2020, the global food supply system was actively adapting to internal and external trends and forces. Internally, trends included effectively transferring knowledge and technology to farmers to improve crop yields and introduce new crops, as well as the provision of improved access to water, waste recycling, and soil analysis. Internal forces included the opening of global markets to global players that would sell farm supplies and purchase crops. Externally, trends included declining soil fertility, dwindling biodiversity, and economic uncertainty. External forces included blights, diseases, weather anomalies, and accelerating climate change.

The internal trends and forces also included increased competition for farm production by local, regional, and global markets. The external trends and forces stirred farmers to introduce sustainable practices that reduce emissions and enhance the ecosystem and biodiversity, which in turn would improve soil fertility and the local ecology. Moreover, farmers increasingly heeded climate

² In some developing countries, large tracts of jungle and forest were, and are, being cleared to grow cash crops, to the detriment of ecosystems and natural absorbers of greenhouse gases.

and weather trends and were relatively prepared to change their crops and livestock to suit new conditions. The catchwords for farmers were to adopt sustainable practices, be flexible, and aim for resilience.

A dominant force in the food system is big agribusiness. Big food corporations consolidate sourcing and centralize processing and distribution. Whereas farmers traditionally have raised crops and livestock for local and regional markets, big corporations seek to contract production, like chickens or hogs, grown in large facilities. Initially, the farmers liked the prospect of selling livestock directly to a food corporation, and avoiding the uncertainty of open markets. Over time, the monetary rewards declined because the corporations slyly over-contracted supply, driving down livestock prices³. The large food corporations also disrupted local markets by siphoning producers and supply and by hooking consumers on more expensive non-local processed foods.

As to the external trends and forces, the inroads of industrial scale agriculture weakened farmer attentiveness to external issues, such as by insisting that they focus on crop management, including use of GMO seeds, chemical fertilizers, herbicides, and pesticides. Moreover, many farms themselves were consolidated to larger scale operations; where the small farmers had once tended their crops and heeded the eco-setting with care, low-paid hired hands now brusquely ran large machinery roughshod across the fields. The monolithic large farms have proved slower to adapt to changes of climate and ecosystem.

III. March 2020, Covid-19 strikes in earnest

When the Covid-19 pandemic struck in earnest during the 2020 planting season, it was the centralized, large-scale food systems that proved to be the most vulnerable, particularly as centralized slaughterhouses and meat processing centers became Covid-19 hotspots. In consequence, a group of scholars in agriculture, food, ecology, and climate issued “a blueprint” in June 2020 for making food production more resilient to both climate and non-climate shocks” (Gustin July 7, 2020). Bruce Campbell, a member of the group, remarked, "The disruptions caused by this terrible pandemic have ... awakened the world to the fact that our food systems are far more vulnerable than many realized.... Climate change is already compounding these problems, but the solutions we present—which seek bold transformations in everything from farming to trade, diet, and government policies—offer an opportunity to pursue a much brighter future for people and our planet" (Gustin July 7, 2020). The sort of transformation this group proposes is ambitious, complex, and far-reaching. They suggest a range of new commitments and shifts, such as incentivizing

³ The meat packers could claim they were over-contracting meat supplies as a hedge against supply shortfalls due to unforeseen problems on the farms, such as disease, fire, or natural disaster. (While the occurrence of such problems on the farm would be unlikely, the benefit of lower supply price to the meatpackers would be assured.)

farmers to cut CO₂ emissions, prohibiting the opening of new farmland, shifting to less carbon-intensive diets, reducing food waste pockets, and conserving soil fertility by growing carbon-retaining crops in the off-season.

Covid 19 has disrupted food production and imposed rigorous stress tests on the entire food system from field to table. Few realize that the number of “deaths from starvation” due to this disruption exceeds that from “the disease itself” (Godin 2020). The pandemic has caused weaknesses in the global food system to become glaring. Oxfam reports that 120+ million additional people are at risk of starvation due to the disruptions in food supply and distribution in hand with reduced aid and economic recession throughout the world economy (Oxfam July 7, 2020). COVID-19 is the tipping point for millions upon millions of people who are already buffeted by conflict, migration, and crop failure. According to UN estimates, a quarter billion people are already at risk of starvation this year due to these causes. The most affected areas include Sub-Saharan Africa, South America, and South Asia, as well as Haiti and Syria.

Besides the international and national policy measures needed to ameliorate the food crisis and looming famine, farmers must strive to make their food production more sustainable, climate friendly, and resilient. While the global economy is prosperous and food production and supplies are at unprecedented highs, food is not equitably distributed, and it is most scarce where it is most needed. Ironically, with a more equitable distribution system, present-day food production and supply would be sufficient to provision teeming humanity without sacrificing the quality and variety of foods expected in advanced economies and markets.

IV. Conclusion

How to set the conditions for provisioning teeming humanity while maintaining the quality and variety of advanced food economies? How to make the food supply sustainable, resilient, and resistant to looming risks? Market mechanisms need to be made fairer and more efficient and transparent by rational official policies and mechanisms⁴; the organizations responsible need to engage in regional and international cooperation, dedicated to the ideals of equitable distribution, on the one hand, and fair competition, on the other.

⁴ Official policy needs to be objective, scientifically-based and yet nuanced to accommodate the vast variety of food production operations: According to a UNFAO report, “Appropriate governance mechanisms need to be established at regional and country levels. At global level, the Committee on World Food Security (CFS) provides a unique platform for food security governance. At regional, national and sub-national levels, various sectoral policies and programs need to be designed and coordinated in ways that ensure relevance and purposeful action towards the eradication of hunger, food insecurity and malnutrition. Good practices that lead to greater impact, including through human rights-based approaches and gender-sensitive policies, programs and investments, need to be promoted;...” (“What Needs to be done,” under “Food Security and the Right to Food,” UNFAO (current) *Sustainable Development Goals*.”).

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Nexus of the Awareness of Ecosystem Services as “Public Benefit Value” and “Utility Value for Consumption”

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Abstract

Japan's rural areas are known for their natural environments being a source of ecosystem services. Today, the management and utilization of natural resources are important themes for the sustainability of rural areas in Japan. And, since population decrease and aging are simultaneously advancing in the rural area, the contribution of the neighboring urban area residents is indispensable. However, empirical studies on how the value of ecosystem services is understood by urban residents and contributes to their intentions in rural development strategies that promote regional vitality by encouraging their behavior change, such as participation in community activities and the purchase of traditional products, are insufficient. This study investigated the influence of public awareness on the hypothesis that ecosystem services are of public benefit value on investment related indirect conservation activities. The contingent valuation method was employed to estimate the willingness to pay (WTP) of citizens against the results of regional revitalization activities in which special branding was used for local agricultural products and traditional recipes. A full model analysis of the determinants of WTP was conducted. Revitalization plans for rural areas involving specially branded Japanese pickled vegetables offered ~40% added value compared to that of ordinary commodity foods. However, the tendency to regard ecosystem services as a provider of public benefits was not a significant factor influencing participation in conservation efforts; the two were not correlated. That is, general value recognition of ecosystem services in the agricultural mountain village region and concrete value recognition as a consumption object were not linked.

Keywords

Ecosystem services, Public benefit value, Consumer behavior, Contingent valuation method

1 Introduction

How to increase the number of individuals and groups contributing to natural resource management is an issue in many rural areas in Japan. Therefore, it is important to increase the momentum of spontaneous environmental conservation movements. Spontaneous actions require consensus that ecosystem services and the traditional culture of rural areas are “public benefit values,” which must

be protected. Regarding the link between general value recognition for these ecosystem services and value recognition as a consumption object, not only academic interest but also practical needs from policymakers and regions aiming at regional activation are high.

A marketing strategy based on stakeholder perceptions and evaluations of goods (ecosystem services) is essential to the above scheme (Collis, David J. and Montgomery, C. A. 1997). This study analyzed consumer behavior to determine whether empathy for ecosystem services and the importance of traditional culture can result in changes in consumer consciousness based on the contingent valuation method (CVM). In particular, a sense of “public benefit” is used as a key concept in this analysis and is expected to lead to spontaneous participation in the conservation of the natural environment. If this study can attribute the environment related behavior of urban inhabitants to their cognition to values of the “public benefit” of ecosystem services, the results will be important for regional planning and environmental management.

A local project in a rural area in Japan was used as a case study to explore how the socio ecological system of a mountainous area could be revitalized. The local revitalization project studied in this analysis is the Kinameri settlement in Hakusan City, Ishikawa Prefecture (K--project). The study site produces high--quality vegetables, such as carrots and Japanese radishes; therefore, residents decided to launch a signature agricultural product made from products harvested in this area: additive--free Japanese pickled vegetables (JPVs) produced via traditional methods from agricultural products grown locally. Money earned from the JPVs was assumed to contribute toward the conservation of the natural environment. The main purpose of the study is to evaluate consumer consciousness for this particular case.

2 Research framework

2.1 Data collection

The questionnaire for CVM was distributed to the residents of Nonoichi City, which is contiguous with Hakusan City, Ishikawa prefecture, Japan. The important characteristics of the K--project are the establishment of manufacturing sites and the subsequent sale of JPVs and other specialty agricultural products in a farmer’s market.

The questionnaire was used to quantitatively analyze respondents’ attributes, experiences, and the influence that their view on natural resource benefits has on consumer behavior. Hence, the questionnaire focused on the following key determining factors: site, quality, and price. The key indicators used to characterize urban residents were age, the use of and excursions to a natural environment, subjective awareness of natural resources as public benefits, and the intention to visit a farmer’s market in the Kinameri settlement (K--settlement). In addition to the offer price used for the analysis, goods, for which these factors were combined at random, were described on the questionnaire sheet, and the data were then compared with the data of the other goods to evaluate consumer preferences. 1365 questionnaires were distributed and 917 were completed. The overall completion rate was 67%.

First, the “site” was assessed, based on a comparison of the typical supermarket visited by residents

and the farmer’s market that was to be set up in the K--settlement. Next, an objective indicator was used to assess the “quality” (i.e., a product containing standard preservatives commonly seen in JPVs in the market and natural products without preservatives were compared). For the “price” factor, a standard price of ¥200/200 g was used, which was based on the results of the market survey conducted near the target area. Finally, the amount that the consumers were willing to pay for JPVs considering the previously discussed determining factors was calculated using the double--bounded dichotomous--choice CVM.

2.2 Analytical procedure

Four JPVs with different characteristics, including price, material, and the manufacturing method, were presented as alternatives to similar goods in the study. Each respondent chose JPVs four times in response to different questions (Fig. 1).

The questions included in the survey, to understand the personal attributes and characteristics of consumption behavior, and a summary of the statistics of the survey results, are shown in Table 1. The questionnaires where respondents selected response 3): “Do not want to visit at all” to Question 8 were excluded. Based on responses to the first question regarding preferences (see Fig. 2), the proposed price was increased or decreased. The double--bound dichotomous--choice method was adopted to estimate the WTP based on the responses to different proposed prices (described in Table 2 concisely).

Samples lacking one or more answers to the questions and those with option 3 selected for Question 8 were classified as protest responses. There were 109 protest responses, which were excluded from the analysis (exclusion rate = 109/917 or ~12%). The distributions based on the type of sense of public benefit (TSPB) determined using Questions 5 and 6 are shown immediately below the row containing Q6.

Table 2 presents the cross--tabulation of the answers to the questions used when calculating the WTP. As shown in Fig. 1, four different patterns were presented for each questionnaire, and the respondents were asked to choose one. “Yes” means that JPVs produced by the K--settlement were selected, whereas “No” means that competing goods were selected.

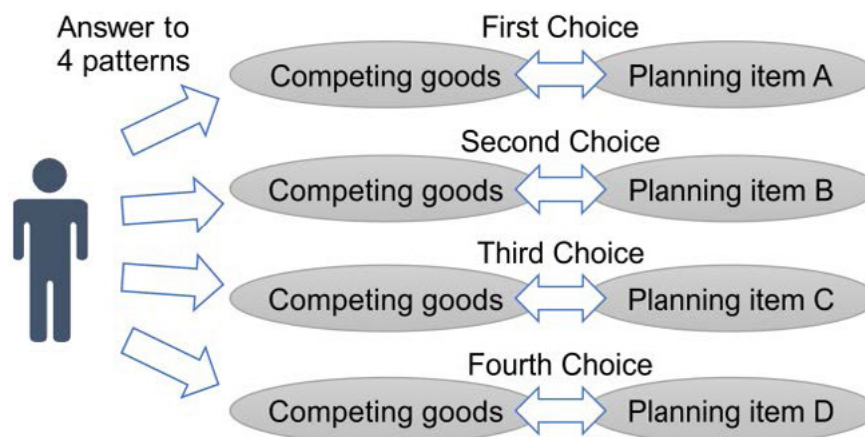


Figure 1: Flow of replies to four repeated questions

Table 1: Willingness to pay (WTP) influence factors and responses to each question

No	Content of Items	Question Choices	Frequency	Remarks
Q 1	Generation	1. Under 39 years old,	1. 134	Explanatory variables (personal attributes)
		2. Those in their 40s,	2. 481	
		3. Those in their 50s,	3. 460	
		4. Those in their 60s,	4. 650	
		5. Those above 70 years old.	5. 820	
Q 2	Gender	1. Male,	1. 920	Explanatory variables (personal attributes)
		2. Female.	2. 716	
Q 3	Experience with natural environmental conservation activities	1. Has experience,	1. 980	
		2. Does not have experience.	2. 710	
Q 4	Interest in participating in natural environmental conservation activities	1. Would like to participate if there are opportunities,	1. 351	Explanatory variables
		2. Has no interest and would not like to participate.	2. 457	
Q 5	Subjective awareness of the scope of beneficiaries of ecosystem services in rural areas “Who is benefiting from it?”	1. Only people who live in the area,	1. 199	Explanatory variables
		2. People and companies located within the area and in neighboring urban areas,	2. 990	
		3. People living within the prefecture,	3. 496	
		4. All people across a vast region (nation) or beneficiaries are unlimited	4. 140	
Q 6	Subjective awareness of the scope of the burden of managing the natural environment in rural areas “Who is responsible for environmental conservation?”	1. Only people living in the area and public officials there,	1. 630	Explanatory variables
		2. People and companies located within the area and in neighboring urban areas;	2. 630	
		3. People living within the prefecture,	3. 327	
		4. All people across a vast region (nation) or there is no limit to who is responsible for conservation.	4. 355	
	Type of sense of public benefit (TSPB)	1. Public benefit-oriented type	1. 456	determined using Q 5 and Q 6
		2. Neutral type	2. 325	
		3. Free-rider type	3. 370	
Q 7	Subjective awareness of the differences between benefits from urban convenience and ecosystem services from the natural environment	1. Cannot distinguish and may complement each other,	1. 287	Explanatory variables
		2. Don't know (cannot decide own opinion),	2. 310	
		3. Can distinguish and understand each unique value.	3. 211	
Q 8	Intention to visit if a farmer's market is established by the K-project	1. Would definitely like to visit,	1. 291	Identifying and excluding biased responses
		2. Don't particularly want to visit,	2. 132	
		3. Do not want to visit at all,	3. excluded	
		4. Don't know (cannot decide own opinion).	4. 385	

Table 2: Willingness to pay (WTP) influence factors and responses to each question

First proposal	Yes / No	Second proposal	Yes / No
Case 1¥260	520 / 562	¥300	362 / 158
		¥220	168 / 349
Case 2¥320	297 / 511	¥360	213 / 84
		¥280	159 / 352
Case 3¥380	148 / 440	¥420	79 / 69
		¥340	41 / 399
Case 4¥440	57 / 642	¥480	111 / 46
		¥400	51 / 591

Table 3: Parameter estimation of function representing acceptance rate (P) for presented price

Estimated WTP	Variable	Coefficient	t-value	p-value
¥279 (Median)	Constant	23.162	29.575	0.00**
¥292 (Mean)	ln(bit)	-4.082	-29.983	0.00**

Note 1: n = 2160; Log-likelihood: -2,554.31; **: significance level of 1%, WTP denotes 'willingness to pay'

Note 2: Mean value was cut off at the maximum presented price

Table 4: Variables used to estimate influential factors and correlation with willingness to pay

Variable	Meaning	Coefficient	t-value	p-value
Constant		21.809	31.600	0.00**
ln(bit)		-4.115	-34.789	0.00**
X1	Generation (~39 years:1, 40-49 years:2, 50-59 years:3, 60-69 years:4, 70 years ~:5)	0.350	11.126	0.00**
X2	Gender (Male: 1, Female: 0)	-0.769	-6.514	0.00**
X3	Experience of natural environment conservation activities (Has experience: 1, Does not have experience: 0)	0.288	2.990	0.00**
X4	Interest in participating in natural environment conservation activities (Has interest: 1, Does not have interest: 0)	0.648	8.997	0.00**
X5	Type of sense of public benefit (TSPB)	0.141	1.959	0.05
X6	Subjective awareness of differences between benefits from urban convenience and ecosystem services from the natural environment (Cannot distinguish: 1, Cannot form an opinion: 2, Can distinguish: 3)	0.236	3.225	0.00**
X7	Selling place premium (At farmers' market: 1, At daily supermarket similar to competing goods: 0)	0.053	1.161	0.25
X8	Quality premium of product (Additive free: 1, With additives: 0)	-0.093	-1.291	0.20

Note 1 : n = 3232; Log-likelihood: -3,569.66; **: significance level of 1%.

Note 2 : "Ordinal" denotes ordinal variable; "Dummy" denotes dummy variable.

Note 3 : Regarding TSPB, as shown in Table 1, since the proportion of free riders was extremely small, options 2 and 3 were merged and replaced with dummy variables showing whether they correspond to a certain TSPB.

3 Analysis and discussion

The results of the analysis are presented, as follows: The median of the WTP was ¥279, the average value with a cut-off at the maximum presented price was ¥292, and a price premium of ~40% was evaluated compared with that of the comparative product, which was assumed to be ¥200 (Table 3). The results showed that the strategy of the K-project is likely to be successful because a price premium can be expected from consumers.

The factors contributing to the acceptance of the proposed amounts were identified using the responses to Q1 to Q7 in Table 1 and the product attributes of the planned items as explanatory variables (Table 4). The aim was to determine whether the TSPB calculated from Q6 affected the acceptance probability. If some explanatory variables are significant, the TSPB can be used to encourage citizens to contribute to the conservation of the natural environment by strengthening actions that do not require substantial amounts of additional investment, such as environmental education. However, if not, the conservation of the natural environment and the awareness of the related public benefits are unrelated. In this case, the results of the statistical analysis did not indicate the effect of stimulating public value recognition for ecosystem services to promote participation in voluntary environmental conservation activities. That is, our results cannot support the hypothesis of this research and suggest that a certain degree of public funding is essential for the conservation of natural resources and communities in rural areas.

The evaluation of determinants derived from the full model analysis is shown in Table 4. The contribution of individual factors is interpreted, as follows: The acceptance probability of the proposed price increases as the age range (generation; X1) increases, and if the gender (X2) is female. By comparing these coefficients, we found that gender has a significant effect on the responses. Furthermore, the probability of acceptance of the proposed price is high when consumers have participated in conservation activities related to the natural environment (X3) and if they have a strong interest in the natural environment (X4). Similarly, by comparing these coefficients, we found that the presence or absence of such interest has a large influence on the responses. However, the influence of establishing a farmer's market that reused idle facilities as a place to sell products and the sale of additive-free JPVs was not significant. In addition, the results suggest that the target audience should include elderly women with an interest in environmental conservation activities.

The influence of TSPB (X5) on the probability of acceptance was also analyzed, but it was not significantly affecting the probability of acceptance. However, people who can identify the difference between welfare due to the convenience of urban functions and welfare due to ecosystem services (X7), report a higher probability of acceptance. In other words, an understanding of this difference can encourage consumption as an indirect action leading to the conservation of ecosystem services. Therefore, the argument that it is possible to encourage voluntary conservation behavior via environmental education that informs people about the public benefit of ecosystem services is case-specific.

4 Conclusion

The natural environment and the traditional culture in rural areas, are recognized to offer certain benefits for citizens residing near urban areas. However, the relationship between a citizen's awareness of ecosystem services as a public benefit and their participation in conservation activities is not supported by the results of this study.

The finding that the majority of citizens consider ecosystem services to offer a public benefit is helpful for the sustainable preservation of ecosystem services. However, the analysis of consumer behavior suggests that niche marketing is less effective for fostering public awareness and more effective for increasing product appeal regarding preservation of ecosystem services.

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Beyond *teikei*? Japanese Organic Farmers and the Construction of Producer-consumer Relationships

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Abstract

This paper focuses on producer-consumer relationships in Japanese Alternative Food Networks (AFNs) from the perspective of small-scale organic farmers. The research was conducted through in-depth qualitative interviews with organic farmers in Hiroshima Prefecture, Japan, and participant observation during on-farm events and farmers' markets. The study examines the way in which farmers describe their interactions with customers and the strategies they employ for promoting a closer connection and new modes of co-production in the face of declining citizen participation in organic-based AFNs. Moreover, the study investigates farmers' perception of consumer values and motivations in choosing organic produce, thus illuminating consumers' value system from the perspective of organic farmers.

Keywords

Alternative Food Networks (AFNs), Japan, organic farmers, producer-consumer relationships, farmers' markets, sustainable food consumption; proximity

1 Introduction

Alternative Food Networks (AFNs)' potential to engender a transition towards more sustainable food systems is being increasingly recognized, chiefly because they represent spaces where innovative socio-economic patterns and relationships can emerge and be experimented with (Brunori et al. 2011). In the past, however, the emphasis on the production side in food system-related research has tended to overlook the role of consumers and their importance as active participants and co-creators of food provisioning modes (Holloway et al., 2007). As a consequence, an emerging focus of AFN research is the nexus between producers and consumers, conceptualized as a relational set of

practices (Chiffoleau, Millet-Amrani, Rossi, Rivera-Ferre, & Merino, 2019; Holloway et al., 2007). Despite the fact that some recent studies have focused on the co-creation of new food provisioning systems and of new ways of understanding and assigning common values and meanings to food (Chiffoleau et al., 2019), research in this sense is still scarce, especially regarding farmers' perspective on consumer attitudes and beliefs and on consumers' role in this co-creation process.

1.1 AFNs and organic farming in Japan

In Japan, a close relationship between producers and consumers has historically been at the very heart of the organic agriculture movement. The *sansho-teikei* system (literally 'producer-consumer cooperation'; hereafter *teikei*), established in the mid-1960s to provide pesticide-free food to a group of women concerned about environmental pollution and food contamination issues, is the first example of a Community Supported Agriculture (CSA) initiative (Kondoh, 2014; McGreevy & Akitsu, 2016). The engagement of farmers and consumers in this kind of system, however, has been progressively declining as a consequence of changing societal dynamics, consumer preferences and the competition of new marketing channels (see e.g. McGreevy & Akitsu, 2016). One aspect that appears to have strongly contributed to the decline of *teikei* is the growing consumer unwillingness to participate in the volunteer activities that characterized this system (for example by helping with farm work or with the distribution of produce among members). The decline of *teikei* and the changes in how organic producers and consumers interact, however, has not been fully explored from the perspective of farmers themselves. Therefore, this study aims at investigating organic farmers' perception of consumer participation and values in Japanese AFNs, and to examine the ways in which farmers have been adapting to the changes that have led to the weakening of the *teikei* system.

2 Methods

Data for this study was collected through in-depth interviews with 19 organic farmers, chosen purposively on the basis of their participation in AFNs and their socio-demographic characteristics. The farmers in the sample are engaging in a variety of direct-to-consumer market channels, including vegetable box delivery schemes that evolved from the original *teikei* system (Akitsu & Aminaka, 2010). Interview data were supplemented with participant observation conducted while working as a volunteer in three of the farms, as well as while attending on-farm events and local farmers' markets.

3 Results and Discussion

3.1 Farmers' characteristics

The farmers interviewed were almost exclusively newcomers, often urban-to-rural migrants (89%) having started agriculture from a non-farming background. Except for one case, all participants had started farming within 10 years from the time of the interview, and their age at the time of the interview ranged from 31 to 64 years old (44 years old on average). 17 out of 19 interviewees were

male, but the majority (53%) was farming as a family unit with their spouse. 74% were doing farming full time, while the others had side jobs in addition to farming. As shown in Table 1,

Table 1: marketing channels of the interviewed farmers (multiple choice)

Markets	n.	%
Farmers' markets (marché)	14	74
Regular vegetable box delivery to households (by mail delivery or in person) – including teikei	12	63
Online sales directly or through e-commerce platforms (excluding regular deliveries)	10	53
Restaurants	10	53
Direct sales market (chokubaijo)	7	37
Small shops (greengrocer's, natural food shops)	6	32
Sold in own physical shop or processed for own restaurant	3	16
Supermarkets/Wholesale channels	1	5
Percentage sold within one's Prefecture (average)	-	73

interviewees tended to simultaneously participate in multiple typologies of market relations; direct-to-individual-consumer channels prevailed (marché, vegetable box delivery and online sales), but they also diversified their sales through channels such as restaurants, small shops and local direct sale markets (chokubaijo). On average, the farmers sold 73% of their produce within Hiroshima prefecture, and therefore to a relatively local customer base, even though such customers are mainly located in the larger urban centers of the prefecture, rather than in the farmers' immediate locality. It was also a common practice for organic farmers to ship produce (including regular vegetable box deliveries) to major cities outside the prefecture, chiefly Tokyo and Osaka. This is apparently at odds with farmers' emphasis on the importance of establishing a 'face-to-face' relationship of trust with customers, which, together with the kind of active participation implicit in the teikei system, ideally calls for a relatively localized customer base. Most farmers, however, do not identify their kind of vegetable box system with the word 'teikei', and only one older organic farming household, which started operations in the 1970s, was practicing the original version of teikei and embraces the term, as a confirmation of the fact that teikei tends to be a prerogative of pioneer organic farmers, while the new generation has moved away from this system.

3.2 Connection with consumers

Newly established organic farmers, despite admiring – and in some cases yearning for – a return to the original teikei system, preferred to sell their produce by mailing weekly or bi-weekly vegetable boxes directly to households. While this is superficially similar to teikei, it does not require customers' involvement in terms of volunteer labor and farmers do not ask for a membership fee to be paid in advance to support the farm during the planting season. As remarked upon by some of the farmers, while in the past organic farming used to be a social movement (shakai undo) in Japan, it is not so anymore, and the dynamics that once were common (groups of citizens getting together to support and get produce from organic farms) are being replaced by more individualistic dynamics

in which individual consumers simply purchase produce from farmers.

Even in the case of the pioneer organic household, there is a clear recognition of the change that has occurred in the characteristics of their customers, who now have less time and inclination to commit to a teikei-like relationship, and also live further away than the original teikei members. About half of the customer base is now served through mail-delivery boxes, while the remaining half is composed of local customers with whom the farm household maintains a closer relationship by delivering produce boxes directly.

The nature of the exchanges between the farm household and their members/customers, however, has changed:

“We [used to] ask our customers [for help]. Because we delivered our products to local people, only 10, 20 minutes away from here, some customers could help, for example when planting rice, or harvesting onions or potatoes. [...] Now, no one comes here to help. Because ‘customers’ meant housewives. 20 years ago, there were some housewives who didn’t work, they had free time, so we could ask them. But now, most [women] work. [...] The teikei system is when we deliver our products directly to housewives (sic), we know each other well, there is a good communication. So we can ask them, “if you have time, please come to help”. But now that has changed, we only deliver our product, there is no such close relationship. Teikei has changed. In the past it was a very close [relationship], but now it’s only about getting products.”

This quote is interesting not just because it clearly outlines the shift in the relationship, but also because it highlights the role played by women – and specifically housewives – in supporting the teikei system. In this sense, the teikei system largely depended on traditional gender roles for its functioning, and the increase of women in the workforce is described here as the reason for its decline. Other farmers also identified the role of women as key in supporting organic farmers and sustainable food consumption, but always described in their roles of ‘mothers’ and ‘housewives’. This implies the waning of that co-production system that is at the heart of systems such as teikei and CSAs, and the need to reconfigure producer-consumer relationships to adapt to this change. For example, despite the fact that asking regular customers to volunteer at farms is becoming less common, at least among the interviewees, a way to maintain and cultivate a closer relationship is through on-farm events, usually centered around rice or vegetable planting and/or harvest. These events serve the multiple purposes of nurturing the connection with customers, renewing mutual trust by openly showing and discussing organic cultivation techniques, and at the same time educating consumers about organic farming. As most of the participants live in urban areas, the events also serve the purpose to reconnect urban consumers with rurality and the dynamics of food production. This includes experiencing practices such as the manual planting or harvesting of rice that, once a central part of Japanese farming culture, have virtually disappeared. One possible sign of a shift in the characteristics of people involved in AFNs is the fact that the participants to these events

are almost exclusively couples with young children, rather than mainly women. At the same time, these events have shifted from being a way for farmers to obtain help to more convivial and educational experiences. Informal interviews with participants during several events showed that many had been attending for several years in a row. One participant to a rice planting event commented that “it’s hard to find places where you can do this, nowadays. And since this farm uses no pesticides, it’s safe for children”.

There is an educational component for adults as well, particularly in the form of the rediscovery of Japanese traditional food culture. Miso-making workshops for customers, for example, were held by several of the interviewed farmers. In the past few years, the Hiroshima Prefecture Organic Farming Association started holding a series of events called ‘Farm to table’, hosted by a different farmer each year. The events follow miso making from the planting of soybeans through their harvesting and processing.

Although the organization of events is time consuming and usually not profit-oriented, farmers highly value them, as they represent a rare opportunity to convey the farmer’s values and in turn to receive feedback from participants, who are usually regular customers. Many of the farmers saw them as part of their own form of teikei:

“I guess it is a bit similar to teikei. For today’s rice planting I just advertised the event a little, and all these people came. Since I have a direct connection with customers, it’s more of a give and take relationship.”

In a sense these exchanges can be seen as a partial replacement of the previous, more formalized, system of meetings that was common in the early teikei. There is however no discussion or negotiation over which crops should be planted, or about produce prices, and in this sense this element of co-production and sharing of risks has been disappearing. Other farmers, on the other hand, have had to (re-)structure their operation in order to make it more streamlined and thus economically viable, which included removing opportunities for engagement with consumers despite farmers’ best intentions. One farmer commented:

“When I started, I thought it would be interesting to have something like a tourist farm, in which customers could come, pay some money, and then go around the farm with a basket and pick vegetables by themselves. But doing this in practice was difficult, so I gave up.”

The same farmer is now switching to selling more of his produce to wholesale markets, which also implies a partial reorganization of his farm towards a more productivist-oriented pathway:

“I feel that direct to the consumer is the best. [...] But it is easier to make a lot of the same crop at one time, while if you want to sell to individual customers... selling only a bunch of spinach at a time is bothersome. Now I’m planning to start selling to supermarkets with

the organic JAS certification [...], so I got the organic certification and I installed a greenhouse.”

The creation of virtual connections through social networks is becoming increasingly important, and having an active online presence is recognized as a key factor for the acquisition of a supportive customer base despite the lack of formal commitments such as a teikei membership. Farmers often remarked upon the importance of investing time in cultivating this kind of relationship as a way of bridging the physical distance with consumers and the lack of a real face-to-face relationship:

“I try to show the way I grow vegetables through my website. My customers look at my website and think, ‘oh, that’s good!’, and order. But that effort is necessary. Young organic farmers need [to provide] more and more information to their customers. I got most of my customers through the website.”

Information about the characteristics of the weekly vegetable set and updates about the farm are also communicated through pamphlets included in the box delivery. Through this virtual connection, customers may be more invested in continuing their support to the farm despite the lack of a formal commitment such as a teikei membership and of a personal connection to the farmer. Virtual connections, even with distant consumers, do sometimes lead to face to face interaction, however:

“When I started doing rice planting experiences [...] there were people from Tokyo who came to help me with rice planting, [...] who came here on purpose from Tokyo, [...] even though there are rice fields closer than this.”

Finally, one venue that has been growing in importance among farmers is the marché (farmer’s market) which has only recently become popular in Japan. As Table 1 shows, almost 75% of respondents participated in farmers’ markets. Although sales at farmers markets are usually not a major source of income, marchés offer a new form of reconnection between producer and consumers in Japan. Marchés are especially important because they represent one of the very few ways in which organic farmers can reach out to local consumers, including those who might not have a specific interest in organic produce. This also connects with the need to actively reach out to people in order to explain one’s values:

“if you’re doing this kind of organic or natural farming, something that’s different, [...] if you’re not talking about why or how it is different, then you’re just the same as everybody else. That’s the value in going and participating in markets. It’s maybe your only chance to interact with the customers. Or one of the few, anyways, to really interact.”

3.3 Farmers' perception of consumer values

When farmers were asked to elaborate upon the reasons why they thought customers had chosen to buy produce from their farm, the most common theme was that of consumers seeking 'safe and secure' (anzen anshin) food. This term, although ambiguous, is central to descriptions of Japanese consumers, and it is even more central to the relationship of organic farmers with their customers. For example, when talking about the people attending his rice planting events, one farmer remarked:

“What I feel is that they are interested in safe food. Especially families with small children. [...] and then people who want to make their own food, like miso. Those two things. I think that normal people are not really interested in farming methods and techniques. Only if you use pesticides or not, [otherwise] they are not really interested.”

In many cases, farmers also felt that this sense of safety and security in consumers arose more from the personal connection with the farmer, rather than from a direct knowledge of the farmer's organic production methods, especially in the case of geographically distant customers. In connection to this, many references were made about direct relationships, a theme that was articulated in two ways: consumers sharing the farmer's values in relation to farming and/or lifestyle choices, or consumers being attracted by a farmer's personality and individuality. The former can however have downsides, as farmers felt they needed to be skilled and personable communicators in order to 'stand out':

“I think that successful organic farmers have a connection with customers to whom they can sell at high prices. I can't do it. The reason is that this kind of successful farmer tends to have a very unique personality. From that point of view I am very ordinary, so for me it is relatively difficult to [...] connect with customers directly”

This resonates with the previously discussed statements about the need to actively advertise one's farm and what makes it 'different'.

A second common theme was that of consumers seeing organic food as a status symbol charged with hedonistic values, exemplified by the desire for eating 'rare' vegetables, or vegetables with a superior taste compared to conventional produce. Statements belonging to this group were most commonly associated to descriptions of urban consumers, especially Tokyo-based ones.

In contrast, almost absent from farmers' description of consumer motivations were environmental, ethical and sustainability related concerns. The need for a change in consumers' mentality and increase in awareness was therefore frequently mentioned, especially in connection with the widespread perception that the average Japanese consumer's attention is focused on the outward aspect of produce rather than on nutritional or environmental characteristics:

“With organic farming, producing things takes time and effort, and in addition to that, you also have to make it look good. It’s hard. I think organic farming hasn’t expanded that much because consumer values lean more towards the outside than the content.”

Farmers appeared divided on the topic of whether there has been an increase in consumer awareness in relation to organic farming, but the majority espoused a pessimistic view, maintaining that public consciousness in this sense has not significantly increased, or that has increased only in major urban centers such as Tokyo, again emphasizing the center-periphery divide in consumer values and behaviors:

“I do not think that it’s really increasing. Especially in Hiroshima Prefecture, the level of awareness of organic farming is still very low. When it comes to large urban areas, little by little you can hear many voices who want [organic products], but if you come in an area like this, [...] that’s something you hear very rarely.”

To counter this, also in relation to the lack of concrete public policy measures in support of organic farming, farmers have been putting in place the strategies described in the previous sections, that often have the double purpose of advertising the farm and of creating new forms of connection and interaction between farmers and citizens. These in turn may contribute to spread awareness, even though many farmers do not perceive a significant increase in participation. In relation to the idea of organic farming as a social movement discussed previously, for example, one farmer commented:

“Through this connection [between producers and consumers], people can also think about environmental and agricultural issues, see these problems with their own eyes. Now consumers [...] think these are problems that belong to faraway places, not to their own reality. I want this to become a society when people really do care about [those things]. [...] Participation is decreasing. I want a ‘participating nation.’”

4 Conclusion

In many countries, forms of co-production between citizens and consumers in AFNs based on principles of food democracy are attracting a growing interest, especially in their role of empowering citizen-consumers and involving them in developing solutions food-related issues (Chiffolleau et al., 2019; Hassanein, 2003). In Japan, however, previously established systems rooted in food democracy appear to be on the decline. At the same time, however, organic farmers are reconfiguring their relationship with citizens in different ways, from more virtual forms of connection to face-to-face events that still retain some of the characteristics of teikei, to reconnections through farmers’ markets. The organization of not-for-profit farm events, in particular, plays an important role in farmers’

efforts towards educating citizens about agriculture and food, and shows some elements of co-creation and mutual help between farmers and citizens. In addition, the growing tendency of organic farmers to participate in farmers' markets may become an important avenue reaching out to more 'casual' consumers and to introduce them to organic produce (Zollet & Maharjan, 2020).

As evidenced by farmers' perception of consumer motivations, however, environmental or ethical considerations do not seem to be at the forefront of consumer interests in acquiring produce from small scale organic farmers, which raises a question mark about the perspectives for individual and collective action towards sustainability in food consumption in Japan. In light of these considerations, a more concerted public effort is likely necessary to re-orient food consumption towards a more sustainable direction. At the same time, a stronger coordination between organic farmer and consumer groups will also be necessary, rather than entrusting this task to the efforts of individual farmers and citizens.

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Changes in the “Public Interest” Regarding Exceptions to Plant Variety Protection: As a Case of the Consideration Process in Japan

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Abstract

There are various arguments over intellectual property rights in the field of plants, that is, breeder's rights. Since ratifying the UPOV Convention in 1998, Japan has recognized self-propagation as an exception to breeder's rights, with the exception of certain crops. However, due to changes in public interest perceptions and circumstances, the bill submitted to the National Assembly eliminated the exception. Through the analysis of the discussion process under the consultative committee established by the Ministry of Agriculture, Forestry and Fisheries, not only the context of hindering the economic growth of seed companies, but also the policy development by the public sector, which is the sub-national governments that actively promotes development of new plant variety, created a new aspect. The results showed that there were new aspects in the interpretation of the UPOV Convention.

Keywords

UPOV Convention, Public Interest, Plant Variety, Self-Propagation

1 Introduction

The production of plant varieties is an essential input in the upstream of sustainable food systems. While the development of a variety requires specialized knowledge, technology, and experience, and often requires a long period of time, a great deal of labor, and funds, it is relatively easy for a third party to reproduce a new variety once it has been bred due to the nature of the plant (Takahashi 2008). Therefore, the current Plant Variety Protection and Seed Act (“PVP Act”) was established in 1998 to grant exclusive rights (breeder's right) to breeders of varieties that satisfy certain criteria developed. The PVP Act enacted in 1998 is a measure to implement the UPOV 1991 Convention, which Japan concluded in the same year (Kobayashi 2005). The Convention established standards for international plant variety protection, including the requirements for granting breeder's rights. It also established a Council under the Convention to make the decisions necessary for the effective implementation of the functions of the UPOV Convention. Therefore, it is considered necessary for

the application of the PVP Act to take into account the decisions adopted by the Council of Convention in the context of the domestic implementation of the Convention.

By the way, when the UPOV Convention is compared with other International Conventions for the Protection of Intellectual Property Rights pertaining to the Protection of New Varieties (For example, WTO TRIPs Agreement), one feature can be found in the exception for exclusive rights. The TRIPs Agreement leaves discretion to WTO members with regard to exceptions to exclusive rights (patent right) (Article 30 of the TRIPs Agreement). Therefore, what kind of exceptions should be made is determined by each country. On the other hand, the UPOV Convention stipulates, as obligatory exceptions to the exclusive rights (breeder's right) granted by satisfying certain standards, 1) acts conducted privately and for non-commercial purposes, 2) acts conducted for research purposes, and 3) acts conducted for the purpose of breeding other varieties (Article 15 (1) of the Convention) and use for the purpose of self-propagation (Article 15 (2) of the Convention) as optional (left to the discretion of each country) exceptions. Exceptions to the exclusive rights, including breeder's rights, dealt with in this paper are made to ensure the public interest (Kojima 2009). Therefore, the fact that the UPOV Convention specifies the criteria for mandatory exceptions, voluntary exceptions, and two exceptions suggests that the concept of "public interest" (mandatory exception), which can be shared globally, and the concept of "public interest" (for example, WTO TRIPs Agreement), which should be dealt with depending on the situation of each country, are different from each country in terms of patent right. Japan incorporated voluntary exceptions to breeder's rights into Article 21 (2) of the PVP Act, which secures the UPOV Convention. However, in the PVP Act revision bill submitted to the ordinary session of the National Assembly in 2020, after discussions at the Consultative Committee on the Protection of New Plant Varieties, which was established in 2019 under the Ministry of Agriculture, Forestry and Fisheries, which has jurisdiction over the PVP Act, it was proposed to delete the provisions concerning the optional exception, that is, to make it no longer an exception to the breeder's right (The House of Representatives 2020).

2 Introduction Research Purpose and method

As described above, part of the Japanese food system is about to change in connection with the discussion on the revision of the PVP Act. However, the exceptions mentioned above are also stipulated in the United States and the EU, and this is the first case of such a change even in a country that has concluded the UPOV Convention. The purpose of this study is to examine the legal impact of the proposed amendment to the PVP Act on the recognition of the self-propagation by farmers, who are regarded as "public interest", by referring to the discussion on the proposed amendment to the PVP Act and the discussion on the treaty in Japan. First, consider the resolution on voluntary exceptions discussed and adopted by the Council of UPOV Convention. Second, we will examine how the public interest is changing by referring to discussions at the Consultative Committee established under the Ministry of Agriculture, Forestry and Fisheries.

3 UPOV Convention and its Council Resolution

Article 15 of the UPOV Convention provides for the restriction of breeder's rights against self-reproduction by farmers within reasonable limits and subject to the protection of the legitimate interests of breeders. In 2009, the Council under the Convention adopted the Explanatory Notes on Exceptions to the Breeder's Right under the 1991 Act of the UPOV Convention (UPOV Council 2009). For the purpose of determining the inclusion of the optional exception, it is indicated that it may be considered to introduce the optional exception for agricultural or horticultural sectors, such as fruit, originals and vegetables, where it has not been a common practice for the harvested material to be used as propagating material. However, the term "To the extent reasonable and to protect the legitimate interests of the breeder" as a condition means that even if a voluntary exception is introduced, it should not undermine the incentives provided by the UPOV Convention to encourage breeders to develop new varieties. Therefore, in order to ensure the balance between the act of self-propagation by farmers and the incentive for breeders to develop new varieties, the types of crops, the area of crops, and the amount of harvested crops are confirmed as standards. However, these standards also confirm that over time, the evolution of agricultural practices, methods of growth or multiplication, and economic development will require modifications to the mechanisms of introduced voluntary exceptions. In other words, it does not be denied that breeder's rights may extend to farmers' self-reproduction if the incentives for technological development and the development of new varieties by breeders are severely reduced.

4 The discussion under the consultative committee of the plant variety protection and seed act

In 2019, the Ministry of Agriculture, Forestry and Fisheries established a committee called "consultative committee of the plant variety protection and seed act" and requested the committee to hold discussions on the implementation of the PVP Act that would eventually lead to a bill to revise the PVP Act. Table 1 summarizes the views made by each member of the Committee regarding self-propagation (MAFF 2019). Not only seed companies but also members of sub-national governments have expressed a negative view on self-propagating food production which considered as public interest.

In Japan, as shown in Table 2, not only seed companies such as Takii Seeds Company but also sub-national governments are also promoting breeding activities including the development of new plant variety. As Figure 1 shows that the number of applications for variety registration in each prefecture, each sub-national government has a different attitude toward the development of new plant variety. Although the positions of not all sub-national governments can be confirmed, it has been reported at the committee that some municipalities, such as Nagano Prefecture and Yamagata Prefecture, which have a relatively large number of new varieties, and others, which do not, have an intention to restrict self-propagation. And at the first meeting of the committee, a member of the Nagano Prefectural Government raised the issue that self-propagation benefits only farmers and pointed out the necessity of allowing residents including the farmers in the district to receive benefits through licensing fees. However, some sub-national governments may support the view due to

the promoting the plant breeding, but the others may not be supported. In the future, if PVP Act will be amended and permission from the holder of the breeder's right will be required for self-propagation, and it is not possible to support the view of providing benefits not only to farmers but also to residents living in the area, it will be considered necessary for the sub-national government to make a decision through discussion with farmers and related corporations. However, the cost and period of license for the permission can be decided by the holder of the breeder's right.

Table 1: Table Caption and Table follow the caption

Speaker	Content (Initial translation)
Daiju Yuki, Vice-President of Japan Seed Trade Association	As for the vegetables that have been cultivated over a long period of time in Japan, I have no objection to the fact that producers will continue to use them for their own self-propagation or for the next generation's production. However, I would like to urge to protect the new varieties that I have developed by making full use of the technology as well as the patents. (at First meeting)
Hikomitsu Komatsu, Nagano Fruit Tree Experiment Station	We believe that one of the challenges for breeding in sub-national governments is that there is a misunderstanding that free propagation may be an impetus for promoting production.
Jun Satoh, Yamagata Prefecture Plant Protection Office	When considering the future production of domestic agricultural products and their competitive export to foreign countries, it is necessary to establish a plant variety protection and seed act for strict management of intellectual property by considering quality assurance and management of seed and seedling in an integrated manner. The plant variety protection and seed act should enable breeders to make full use of their own ideas, such as how much self-propagation should be allowed within their discretion. (at First meeting)
Kazuo Hatsuta, Takii Seed Company	In principle, self-propagation is not allowed in Yamagata Prefecture. We request them to buy almost all the seeds and use them as much as possible, and if there are self-propagating people, we request to stop using them. (at Second meeting)
Atsushi Suginaka, Ministry of Agriculture, Forestry and Fisheries	In the future, I want all crops to be subject to the breeder's right without exception. Even if seeds are bred by seed companies over a long period, it is still possible for farmers to reproduce them on their own as long as they pay only once. Also, even if non-farmers reproduce illegally, it cannot be grasped or traced. (at Third meeting)

Table 2 The number of applications by each sector (1977-2020)

	Individual	Seed Company	Food Company	Agricultural Cooperative	University	Sub-national Government	National Government
Flowers and ornamental trees	6,097	12,936	678	221	52	855	84
Food crop	99	53	115	20	28	718	393
Vegetables	252	647	238	41	21	469	145
Fruit	570	201	40	53	36	339	162
Other	56	365	243	15	15	236	251
Total	7,074	14,202	1,314	350	152	2,617	1,035

Source: Ministry of Agriculture, Forestry and Fisheries (2020)

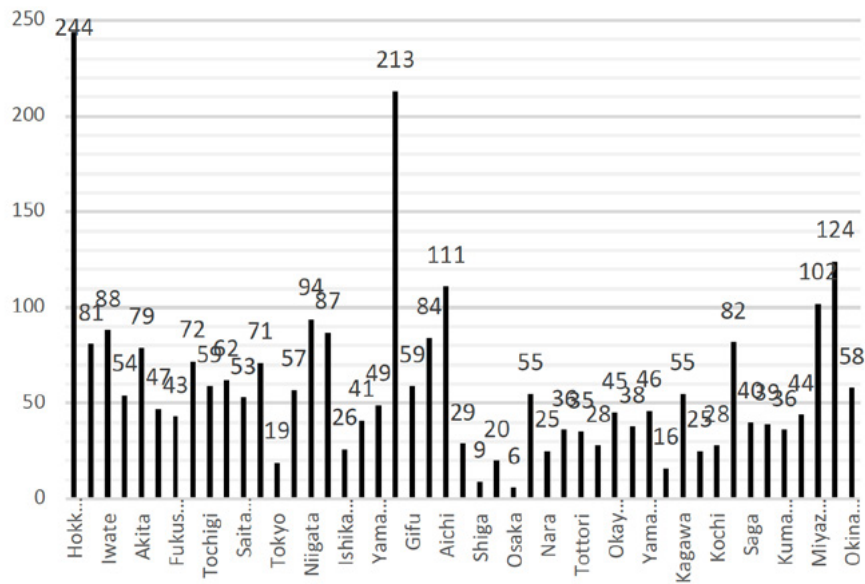


Figure 1: The number of plant variety applications by each sub-national government from 1977 (As of April 20th, 2020)

5 Discussion

Through discussions in the committee for the revision of the PVP Act, it has become difficult to regard self-reproduction, which has been an exception to the rights of breeders, as a public interest because it has reduced incentives for breeders. In this section, we examine the legal implications of this discussion in Japan, including the relationship with the UPOV Convention and possible changes.

Discussions in Japan may provide new insights into the explanatory note adopted by the Council. The UPOV Convention indicates that one of the reasons for introducing self-propagation as an exception to breeder's rights is that the practice of self-propagation continues. Although the practice of self-propagation varies from crop to crop, there are a certain number of farmers who continue to self-propagation. Therefore, in this context, the UPOV Convention does not affect the discussion in Japan. However, the Council noted the possibility that the act of self-propagation would become no longer an exception with agricultural practices, methods of multiplication, and economic growth. Behind the latest revision of the law is the obstruction of economic development caused by illegal purchases and exports. However, through the discussion process, we can see that not only aspects of economic growth but also changes in public sector thinking are related. Although economic growth cannot be considered in the public sector, the view of contributing to local well-being through licensing fees can be considered as a new aspect.

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Edible Green Infrastructure or Edible Landscapes?: A Case for Co-stewardship in Multispecies Commons

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Abstract

Making cities sustainable will require fundamental changes, including to how we conceptualize and interact with urban infrastructures and landscapes. The concept of edible green infrastructure has emerged from the larger discourse around green infrastructure and nature-based solutions, which reframes ecosystems and natural processes as functional elements of the structures supporting urban life. Yet despite the widespread appeal of re-conceptualizing nature as infrastructure, this approach suffers from two critical flaws that threaten to undermine its long-term viability: 1) it reduces more-than-human life to the status of resource or tool for human exploitation, failing to account for interdependency in ecological systems, and is thus inherently unsustainable; 2) infrastructure is typically not convivial (in the sense of Ivan Illich), rendering a long-term transition to autonomous, participatory management by residents technically and socially unfeasible. Based on this critique, this paper argues for rethinking infrastructure as landscape that can be cared for through stewardship by its inhabitants. Edible landscapes are shown to lend themselves particularly well, as existing practices such as beekeeping already contain elements of stewardship that can easily be re-conceptualized as a collaborative, more-than-human practice: co-stewardship of urban multispecies commons.

Keywords

Sustainability, urban planning, commoning, food system, stewardship, beekeeping

1 Introduction

Cities are facing unprecedented challenges in the pursuit of becoming truly sustainable. This includes a radical transformation of consumption and production systems, including how we grow and eat food (Schröder et al. 2019). Questions of ethical consumption and quality food thus necessarily include urban food production. Recent years have seen a strong increase in scholarship on urban agriculture, ranging from theoretical work rooted in Marxism that demonstrates its potential to fight ecological destruction and alienation resulting from the metabolic rift (McClintock 2010) to applied research examining land use trajectories in shrinking cities for assessing the potential of using urban agriculture in sustainability transformations (Oda et al. 2018). However, urban popula-

tion density has traditionally forced cities to rely on food production outside of urban areas to feed residents. In the context of sustainability and climate adaptation research, urban food production systems have thus usually occupied a niche as a subset of scholarship interested in urban greening. Moreover, while researchers have argued that urban residents' support of environmental policies is influenced by what nature contact they have access to (Dunn et al. 2006), access to community gardens and thus opportunities for urban residents to re-connect with food production remain far more elusive than access to public green spaces. This may well be about to change: following the lockdown policies enacted by cities around the world in the course of the 2020 COVID pandemic, urban food gardens are attracting renewed interest from scholars, with some arguing that enabling broad access in the form of edible infrastructure could reduce the future risk for new pandemics while improving local food security (Sardeshpande et al., forthcoming).

2 Edible infrastructure and its roots in green infrastructure

Edible infrastructure has emerged as a subset of a larger discourse since the 1990s around urban green space, green infrastructure and so-called nature-based solutions that has reframed ecosystems and natural processes as vital and highly functional elements of the structures supporting urban life (Russo et al. 2017). Following fundamental ecological research in the 1970s and 1980s that saw the idea of the city as a space separate from and outside of nature be overturned in favor of cities as possessing unique ecologies and habitats, researchers gathered broad evidence that nature in the city is indeed crucial in supporting human wellbeing (Matsuoka and Kaplan 2008). This included the wide range of so-called ecosystem services, from the production of oxygen to air and water filtration, temperature regulation and the generation of comfortable microclimates. Efforts to translate this evidence into urban policies and increased urban greening, particularly against the background of the emerging climate crisis, led to the term of green infrastructure — an attempt to demonstrate that parks and other green spaces were indeed as vital as roads, sewers and electricity and thus deserving of similar amounts of investment. The concept of edible infrastructure proposed to make green infrastructure even more appealing by providing fresh food as one of the necessities for human life and wellbeing. Indeed, extending the benefits of private and community gardens to the neighborhood or public in retrospect appears an obvious next step. Nevertheless, the idea has yet to be widely implemented. Reasons for this likely include increased maintenance costs and issues around management and ownership that resemble classic issues around commons: who gets to harvest fruit trees, who is supposed to take care of rotting fallen fruit?

3 Pitfalls of “infrastructure”

The issues around edible infrastructure are not unique, but can be traced to conceptualizing the natural processes involved in these human-nature relationships as simply supporting urban life from below, as the word infrastructure implies. Specifically, infrastructure suffers from two critical flaws that undermine long term viability: 1) it reduces more-than-human life to the status of resource or tool for human exploitation, failing to account for interdependency in ecological systems, and is

thus inherently unsustainable; 2) infrastructure is typically not (Illich 1973), rendering a long-term transition to autonomous, participatory management by residents technically and socially unfeasible.

The first flaw is most easily demonstrated through a look at the history of vegetation management in cities and its inherent contradictions. Plants even more so than animals are seldom understood as possessing agency, despite their well-documented abilities to shape their immediate surroundings. This leads to trees being planted and then cut down when they fail to grow because plans did not account for their needs in regard to water, uncompacted soil or root space, or when they grow too well and threaten power lines or pavement substrate. Indeed, many street trees cannot provide the ecosystem services they are expected to provide, because overzealous pruning leaves them stunted and unable to produce large quantities of oxygen or shade and thus thermal comfort. Beyond the failure to account for agency and autonomy of living beings, recent advances in the field of microbiome and public health (Flies et al. 2018) as well as multispecies sustainability (Rupprecht et al. 2020) suggest that an infrastructure approach lacks the systemic perspective required to properly account for the interdependency in ecological systems. Put simply, human wellbeing depends on more-than-human wellbeing, a dimension the reductionism inherent in an infrastructure perspective is ill-equipped to address.

The second flaw becomes most visible when examining the case of infrastructure in shrinking cities with declining budgets. Research on Japanese examples of such cities reveals that their infrastructure requires massive financial resources to pay for ongoing maintenance (Rupprecht 2017). Due to demographic trends and shrinking population, however, public budgets are in decline, leaving cities to choose between managing mounting deficits, abandoning infrastructure and forgoing its benefits, and finding alternative approaches to maintenance. Against this background, participative management and maintenance, in particular of public green spaces, has in recent years attracted considerable attention. Yet work examining residents' preferences for participatory management identifies that residents fundamentally understand infrastructure as something they are neither responsible for nor equipped to maintain, both financially and technically (Rupprecht 2017). Infrastructure is thus not convivial in the sense of Ivan Illich (1973): it is commissioned by the state, built by experts using complex machinery and specialized technical knowledge, and requires large investment. Even disregarding the many issues around participatory decision-making in public infrastructure construction and the reliance of local administrations on commercial contractors, infrastructure is thus the very opposite of a convivial tool that fosters residents' autonomy. Moreover, attempts to shift the burden of providing public services to residents in the context of ongoing neoliberal privatization and austerity measures have left residents weary of calls for participatory initiatives. This represents only one more factor making the long-term, widespread shift to participatory management of infrastructure highly unlikely to succeed.

4 Rethinking infrastructure as stewardship and commoning

Alternatives that address these flaws exist. Traditional ecological knowledge relying on stewardship of surrounding systems is today informing practitioners and scholars seeking to develop new (or bring back old) forms of commoning. A look at the design principles for successful commons by Elinor Ostrom, reformulated from the perspective of a commoner, highlights points of contrast between the way residents view infrastructure and the way commoners view commons:

1. As a commoner I clearly understand which resources I need to care for and with whom I share this responsibility. Commons resources are those that we create together, that we maintain as gifts of nature or whose use has been guaranteed to everyone.
2. We use the commons resources that we create, care for and maintain. We use the means (time, space, technology, and quantity of a resource) that are available in a given context. As commoner, I am satisfied that there is a fair relationship between my contributions and the benefits I receive.
3. We enter into or modify our own rules and commitments, and every commoner can participate in this process. Our commitments serve to create, maintain, and preserve the commons to satisfy our needs. (Bollier and Helfrich 2015:84)

As a result, commoning represents a way to gain autonomy from state and markets, but on self-devised terms rather than as a result of austerity-driven abandonment. However, commoning is a lived, drawn-out process that entails ongoing learning and cultivation of an identity of stewardship and commoning (Bollier and Helfrich 2015). Transitioning from infrastructure to commons thus requires time. As much praise as initiatives for green and edible infrastructure receive, there is a real danger that with every project, infrastructure-oriented mindsets that may complicate and hinder transitions to stewardship and commoning are being reinforced. Resources that should go to communities and capacity building are instead siphoned off by corporations, cementing long-term dependence on external skills and input. In the context of food, this means edible infrastructure may be unable to deliver on the promise of re-integrating food production into residents' daily lives.

5 Co-stewarding multispecies commons

While commoning and stewardship are highly promising ways to address the technical and social alienation of residents created by infrastructure, recent scholarship has questioned traditional role distributions in commons (Metzger 2015): if animals and plants are at the center of these ecological systems, why are they conceptualized as resources instead of collaborators in the process of commoning?

Recent scholarship is arguing for multispecies and more-than-human perspectives that acknowledge the agency of animals, plants, microbes and other life (Kirksey and Helmreich 2010; Locke and Muenster 2015). Taking on board these conceptual advances decenters the role of humans, suggesting instead to understand ourselves as co-stewards in multispecies commons. Given recent microbiome-related advances in our understanding of how deeply humans are entangled with their food systems (Lorimer 2016), edible landscapes offer countless opportunities for becoming co-stewards beyond the boundaries of human bodies. The landscape perspective draws attention to the fact that

living beings inhabit shared, overlapping lifeworlds, rejecting the way infrastructure demotes more-than-human being to support layers undergirding human societies. Even if one is to eventually eat them, following Marder (2013), engaging with living beings in the food system by acknowledging their agency and collaborating to care for a landscape in which more-than-human needs are met appears to be a more ethical way of encounter than simply devouring them. One example useful to illustrate this is the way some Japanese honeybee keepers see bees not as livestock to be brought under complete human control and maximize production. As the Japanese honeybee seeks out nesting opportunities and quickly abandons unsuitable locations, beekeepers seeking to attract bees not only place hives featuring diverse designs but also plant nectar and pollen providing flowers, many insisting that the bees can teach valuable lessons about the ecosystem.

How engage in multispecies co-stewardship remains an open question, but some promising strategies exist. First, as Woelfle-Erskine (2019) points out, this is not a question for Indigenous theories and practices, which already incorporate more-than-human sensitivities and dynamics. Learning from Indigenous science is thus always a good place to start, not only when on unceded territories. A central element includes exploring ways of representing more-than-human voices and interests through the inclusion of multispecies stakeholders, whether in the form of role-playing in negotiations or more formal ways (Thomas 2015). Second, it requires a re-thinking of roles and responsibilities traditionally implied in the concept of stewardship. Co-stewardship will likely have to rely on relinquishing the notion of controlling natural processes and more-than-human agencies. Similar to the principles of multispecies sustainability (Rupprecht et al. 2020), ideas borrowed from cybernetics about engaging with complexity and respecting the operational autonomy of more-than-human co-stewards appear crucial. To return to the example of Japanese honeybees, co-stewardship might entail forgoing the act of domestication expressed in the full human control of bee reproduction cycles, or gently modifying the landscape by planting diverse flowers as sources of nectar and pollen. Unlike placing hives in the midst of industrial monocultures, bees thereby retain their choice of where and how to feed, opening up the possibility for a drawn-out process of learning and observation, trial and error. Finally, and drawing again upon multispecies sustainability and cybernetics, stewardship always includes a notion of anticipatory thinking (Rupprecht et al. 2020). Co-stewardship might thus seek to combine the diverging anticipatory abilities of involved species for the benefit of all.

6 Conclusion

The multiple ongoing crises have rightfully resulted in calls to address the many challenges through systematic and fundamental changes in the way urban landscapes are organized. Infrastructure interventions are appealing because they promise widespread and systemic impact. However, as argued in this paper, infrastructures risks to embrace the idea of reducing more-than-human beings to resources and tools — logic that lies at the heart of capitalism and anthropocentrism fueling the very crises to be addressed. Moreover, infrastructure is not convivial and thus relies on continued state and expert maintenance, threatening its long-term viability. Co-stewardship of multispecies

commons provides an alternative that suggests edible landscapes, rather than edible infrastructure, as spaces attentive to the ways human lives and well-being are entangled and interdependent with more-than-human lives and well-being through food production and consumption.

These thoughts raise several ethical questions to be considered by future research. The first is directly derived from existing stakeholder representation: who gets to sit at the table, and whose voices are heard? Does the tree get to stand (Starik 1995) for its microbial, insect and avian inhabitants, themselves entangled in complex relations of interdependence? Who can speak for more-than-humans as a human representative? Are notions of citizenship and other concepts with historic and cultural specificity helpful in identifying and solving dilemmas? How much ecological understanding is sufficient to justify action, or inaction? In what ways might the fluid gradient of socio-ecological concerns be weighed without falling prey to category errors? And finally, what translations might connect multispecies worlds with human constructs such as markets and states, and if such translations exist, when should they be rejected?

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Media Discourse About Using Fish at a Local Festival in Korea

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Abstract

Growing public awareness of animal welfare has extended ethical concerns on how to treat fish at cultural events. To investigate the media discourse on using fish for entertainment, we analyzed news articles on the social issues surrounding the Sancheono (cherry salmon) Ice Festival, the largest local fish festival in Korea, with text mining analysis. The articles from the 11 Korean national newspapers with the keyword “Sancheoneo Ice Festival” (2013 to 2020) were analyzed. The main topics on the festival changed from the economic perspectives of this festival to animal welfare and ecological concerns. This shift demands a more profound animal welfare evaluation during the festivals to enhance their sustainability and value.

Keywords

animal welfare, festival, media analysis, text mining, fish

Introduction

Using animals in cultural events, such as animal fighting, animal acting, and petting mammals has been strongly criticized for its inhumaneness. Some of these cultural events were discontinued due to public pressure. With growing public awareness of animal welfare, ethical concerns extend to traditional fishing and leisure fishing, especially how fish move and die during the events.

The Sancheoneo (cherry salmon) Ice Festival, held in Hwacheon-gun, Gangwon-do since 2003, is the largest local festival using fish in Korea. It attracts more than 1 million visitors each year. In 2019 the festival organizers released eight hundred million cultivated Sancheoneo (*Oncorhynchus masou*) into the rivers for ice fishing and bare hand catching (Ji, 2019). However, long-distance transfer and inhumane treatment of the fish are criticized by animal advocates and academics.

In this study, we analyzed the discourse and implications of the social issues in media surrounding the Sancheoneo Ice Festival. Because news articles report not only the contents of the issues but also the interests of various stakeholders in the issues and public opinions from various perspectives, big data analysis of the news is an effective method for comprehensively identifying major topics that reflect social phenomena (Kim, 2018; Yu, 2017). Analyzing media discourse about the festival revealed a change in public perspectives on fish as live animals, and the way fish are used for human amusements.

Methodology

1. Collecting data (Unit of Analysis)

We collected the articles with the keyword “Sancheoneo Ice Festival” from all 11 Korean national newspapers (January 1st, 2003 to July 13th, 2020) using BigKinds (www.bigkinds.or.kr), a big data system for news. The data system offered semantic morphemes from each article. Among the collected 1,180 articles we used 1,102 of them for the analysis after removing duplicate articles.

The collected data was divided into three stages and analyzed in consideration of the number of articles and important events of the festival to compare trends. Phase 1 was from 2003 to 2011 with 324 articles involving the early stage of the festival. Phase 2 was from 2012 to 2017 with 389 articles in the period of the festival’s success. The last phase was the crisis of the festival from 2018 to 2020 with 389 articles.

2. Data analysis

Text mining is utilized in diverse fields for discovering meaningful patterns and rules in vast amounts of data. It can be applied to eliciting core topics, presenting changing topics, and analyzing trends (Park, 2019a). Among the text mining techniques, we used word cloud and text network analysis to analyze not only the semantic structure revealed but the structure embedded in the context by making up a network on what relationships the words form (Paranyushkin, 2011) with NetMiner 4.0 program.

First, we rearranged the extracted words by removing stop-words, refining similar words, excluding non-relevant words, and defining meaningful phrases (Park, 2018). We analyzed our unstructured data in Korean and translated the final result into English (Park, 2017; Park, 2018). To remove the words commonly found in documents, such as “festival” or “Sancheoneo,” we extracted only words with a 0.2 TF-IDF (Term Frequency-Inverse Document Frequency) value, indicating how much weight a particular word takes up within a document; therefore, it is more accurate than simple frequencies (Choi, 2019).

To illustrate the most frequently used keywords of each phase, we conducted word cloud analysis by frequency (top 100). The network analysis with visualization was conducted based on the co-occurrence matrices of the keywords and degree centrality. In the sociogram, the larger nodes (red circles) imply higher centrality, and the bolder links (lines) mean a higher connectivity strength between the two keywords, as a higher frequency of co-emergence (Park, 2019b).

Results

The main issues surrounding the Sancheoneo Ice Festival have changed in each phase. The word clouds showed different words with high frequency (top 100); “fishing,” “experience,” “contest,” and “smelt” in phase 1 (2003-2011), “ice,” “fishing,” “trout,” “international,” and “culture” in phase 2 (2012-2017), and “animal,” “trout,” “management,” “preparation,” and “fishing spot” in phase 3 (2018-2020) (Figures 1-3).



Figure 1: Phase 1 Word cloud (with frequency for top 100)



Figure 2: Phase 2 Word cloud (with frequency for top 100)



Figure 3: Phase 3 Word cloud (with frequency for top 100)

In the first phase, the main keywords were related with building an identity as a local-based winter festival for families that included fishing or sledding. Additionally, cancellation due to the nationwide FMD (foot and mouth disease) crisis was one of the main issues in this period. The sociograms showed a strong link between the words “fishing,” “smelt,” and “experience,” which indicates the festival’s main focus of catching winter river fish (Figure 4).

The main topics in phase 2 described factors for the huge success of the festival, such as “international,” “local government,” “management,” “culture,” and “representative.” The emerging words “management” and “preparation” in the sociogram linked with the main topics indicate that the festival was not a simple traditional winter festival with a local specialty anymore, but an artificial event with massive cultivated fish under the control of the regional government (Figure 5).

In the third phase, the newly emerged main topics showed criticisms about animal welfare status. The schedule delay due to the warm weather was another issue. In addition, the conflict over the festival between the Environment Minister’s concerns about animal welfare and the Hwacheon county governor advocating for the local economy was also importantly debated.

The word “animal” in the sociogram was linked to the word “group” and “experience” (Figure 6). The former showed active criticism of animal advocate groups, and the latter included what pain the animals in the festival could experience.

Table 1: The Top 20 Keywords by Centrality Index

Rank	Phase 1	Phase 2	Phase 3
1	fishing	ice	animal
2	smelt	fishing	preparation
3	experience	preparation	schedule
4	contest	management	management
5	village	open	fishing spot
6	sledge	culture	international
7	family	Korea	Pyongchang
8	tourism	experience	experience
9	join	local government	event
10	international	international	group
11	progress	host	governor
12	product	smelt	foreigner
13	Pyongchang	Pyongchang	Choi Munsun
14	nationwide	trout	delay
15	local government	representative	plan
16	use	progress	minister
17	culture	product	trout
18	fishing spot	contest	weather
19	FMD	tourism	culture
20	host	street	representative

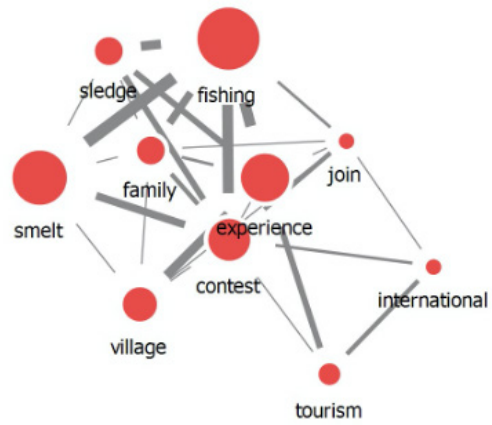


Figure 4: Sociogram with the Top 10 Keywords of phase 1

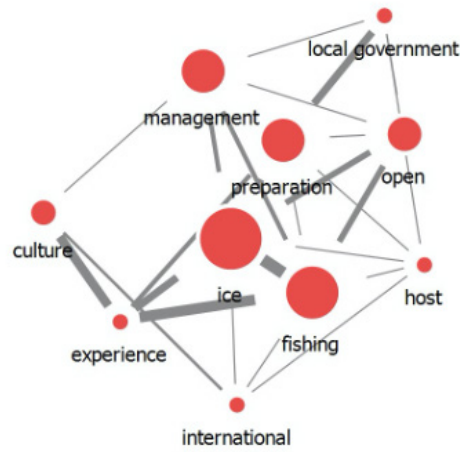


Figure 5: Sociogram with the Top 10 Keywords of phase 2

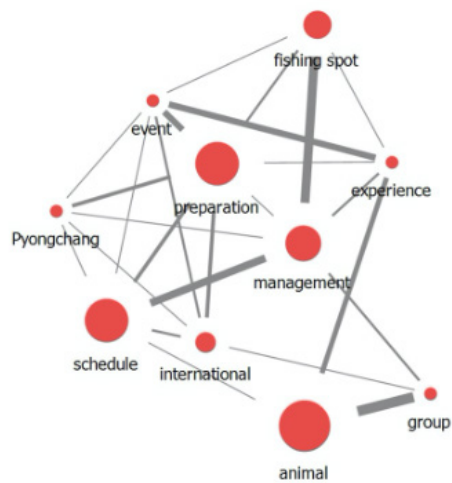


Figure 6: Sociogram with the Top 10 Keywords of phase 3

Conclusion

The findings of the analysis showed that debates on ecological effects, animal welfare, and human-animal interaction among stakeholders, authorities, and the public recently became more intensive than ever before. The media reflected the change of public perception of the Sancheoneo into living animals that could experience pain. The public awareness toward animal welfare has been strengthened not only for pets and farm animals but also for fish. This shift demands a more profound animal welfare evaluation during the animal using festivals to enhance their sustainability and value.

From a food ethical standpoint, the animals, used in the festival, had been the “absent reference.” (Adams, 2003) The Sancheoneo used for the festival were mostly considered only an object (tool) consumed for entertainment or food. Little was known where they come from and how they are raised. A Sancheoneo is a fish that lives only in a clean environment. They are considered as native species in the Hwacheon area where the festival is held. However, this species cannot inhabit in that area naturally. The cultivated Sancheoneo from all over the country were transferred to artificial iced streams in the festival area. The 90 percent of the whole domestic cultivated Sancheoneo were used for the festival. (Lee, 2017). During the adapting process to the cold water, which is not suitable for them, many of Sancheoneo died. They are suffering from a lack of food and the fear of contact with humans. With the growing recognition of fish as sentient animals, the welfare status of the fish became an animal issue. In addition, the current government’s animal-friendly policies and strengthened animal laws are strengthening public awareness of animal welfare. The Sancheoneo case may be an evidence of the public belief on ethical value of responsibility in using animals for humans.

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Being Cared by Vegetables: Understanding Japanese Farmers' Seed Saving Practices From Care Ethics Point of View

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Abstract

Transitioning current food systems to a more sustainable one requires a rethinking of human and nonhuman relationships. Care ethics has become a critical concept in exploring better human-non-human relationships. This paper uses Tronto's (1993) care ethics to understand Japanese farmers' seed saving practices. Tronto's four elements of care ethics were useful to unpack Japanese seed savers' practices and their values. However, there were a few elements that went beyond Tronto's account, including the mutuality of care and farmers' sense of intrusion of subject and object. More-than-human scholars have also examined similar aspects of care. While more-than-human ethics of care try to create connections even with distanced / invisible others, Japanese farmers' care was bound to direct physical relationships.

Keywords

Sustainability, Care, Seed saving, Human-nonhuman relationships

1 Introduction

Human-plant relationships have drastically changed since the industrialization of agriculture. Traditionally, food production, consumption, crop improvement, seed multiplication, and the conservation of diversity were integrated into farmers' daily lives. Farmers worked closely with their crops and intentionally managed it to meet their various demands and concerns, including environmental, cultural, and social demands (Bellon, 1996; Brush, 1995; Smale et al., 2001). Agricultural industrialization brought spatial and structural separation and specialization of food production, consumption, seed production, variety development, and conservation of diversity (Cleveland and Soleri, 2007). This resulted in the distancing not only between farmers and consumers but also between farmers and crops. Farmers in industrial nations nowadays purchase seeds from seed companies rather than collect seeds by themselves and breed their varieties.

In the face of unprecedented challenges for industrial food systems, including climate change, degradation of natural resources, and loss of biodiversity, current food system needs to be changed (FAO

2014, FAO et al. 2020). This, in other words, is a call for rethinking relationships between humans and their surrounding environment.

Care ethics has become a critical concept in exploring better human-nonhuman relationships in the face of the global sustainability crisis. Care ethics is a powerful concept that navigates our attention to context specificity, relationships, and interdependency between human and nonhuman relations (Puig de la Bellacasa, 2017). This paper examines how Japanese seed-saving farmers (both full-time farmers and lifestyle farmers) perceive their relationships with their crops using Tronto's (1993) concept of care.

Understanding food producers' ethics that arise from local contextuality and bodily engagement is one important avenue to deepen the discussion of food ethics (Akitsu, 2018).

I chose Tronto's (1993) concept of care for analysis for two reasons. First, I assume that care ethics require a non-dualistic view of subject and object. I applied Tronto's theory to test my assumption because she takes a dualistic view of care; "care implies a reaching out to something other than the self; it is neither self-referring nor self-absorbing" (Tronto, 1993, p. 102). Second, Tronto identifies four moral aspects that constitute care, so it provides a theoretical framework to analyze farmers' seed saving practices. Tronto (1993) suggests that care is comprised of four phases and each phase is associated with the following ethical elements; (1) "attentiveness" of a care-provider to recognize a need for care, (2) "responsibility" felt by a care-provider in response to the identified need, (3) "competence" of care-giver for successful care, (4) "responsiveness" of care-receiver to care and a care-provider using it as a means to adjust their perception of needed care.

I used data that I collected as part of my PhD thesis that examined the diversity of values and practices of seed saving in contemporary Japan. Interviews and participant observations of six full-time organic farmers and four lifestyle farmers in six prefectures provided data for this paper (see appendix for interviewee details).

2 Entangled elements of care ethics

Tronto's three elements of care ethics – attentiveness, competence, and responsiveness – were tightly related to each other among seed-saving farmers. Farmers' attentiveness was reflected in precise observation of individual plants, which was a skill that both organic and lifestyle farmers developed overtime. Since seed saving was a continuous process, farmers learned, developed their skills, and reflected their practices by observing how plants change over time. One of the lifestyle farmers noted that "I am always made more aware of the world that I did not know before". Similarly, an organic farmer suggested that he has developed his observation skills overtime, which allowed him to "start to see the world that was invisible before". When I told an organic farmer that I could not distinguish between crops that do not possess pure-to-type traits during an on-farm workshop, he said; "Sure. If you can see [the difference], that means that you start to understand that vegetable". Years of observation and interacting with plants brought him a change that he started to see subtle differences between individual plants. Farmers' "attentiveness" was presented as an embodied skill that they acquired by learning how crops "respond" to farmers' practices.

A stronger sense of responsibility was observed among organic farmers and less so among lifestyle farmers. Organic farmers that I interviewed shared the idea that it was their mission to conserve varieties that were disappearing. Some of the organic farmers also used the metaphor of plants as their children or other family members (including pets) and felt responsible for taking care of those plants. Responsibility arose based on intimate relationships built between a farmer and their plants. Lifestyle farmers, on the other hand, presented a different view. While one of them referred to his plants as being his family and saved seeds to “protect my family”, he referred to his plants as a family who feeds him (thus him being a receiver of care). He felt responsible for maintaining seed saving practices, but he also needed the relationship to continue.

While both organic and lifestyle farmers felt responsible for their plants, there was a distinct difference in how they shared seeds with others. Organic farmers were reluctant to widely share seeds based on the concern for the well-being of seeds after them being given to others. On the other hand, Lifestyle farmers were not concerned about how seeds were treated after giving and actively shared with others. This was partly because they harvested more than enough seeds that they could use and preferred to share it with others rather than disposing; “considering that every single seed is a lifeform (seimeitai) ...I cannot waste them”. Lifestyle farmers actively shared seeds based on compassion and respect to seeds.

Tronto’s four elements of care ethics provide a useful lens to understand Japanese farmers’ seed saving practices. The following section further examines insights from Japanese seed savers that do not adequately fit under these four elements of care ethics.

3 Beyond Tronto’s care ethics

Three factors arise from Japanese farmers’ seed saving practices that are not fully explainable by Tronto’s care ethics. They are; responsiveness of care-provider, care-provider receiving care, and the intrusion of object and subject.

Organic and lifestyle farmers in my study were symbiotic in their relationships with their crops. For example, when I asked a lifestyle farmer whether his crops had changed over time to meet his needs, he answered, “yes. But that sounds to be unidirectional (ippōteki). It’s not only crops that have changed. I also changed my lifestyle”. While care-provider in Tronto’s theory is described statically, farmers experienced changes among themselves based on their relationships with their plants.

Lifestyle farmers expressed a sense of them as being a receiver of care provided by their crops. One of the lifestyle farmers noted that she feels sorry to eat vegetables as plants produce fruit for their own reproduction. “In return to receiving (itadaku) [food from vegetables], I’ll continue the lives of plants (using humble language which shows her respect to vegetables)”. This lifestyle farmer saved seeds to return a favor that she received from vegetables, although she felt it was not fully returnable. Similarly, another lifestyle farmer noted that he is “being fed (tabesasete moratteiru) (with an implication that those who is fed relies on the generosity of those who feeds)” by his vegetables. He perceives himself as a receiver and being cared by his vegetables.

Organic and lifestyle farmers expressed a sense of feeling that the boundary between themselves and crops or surrounding environments blurred or intruded with each other. An organic farmer mentioned that once he establishes a deep relationship with his vegetable, then he starts to feel like those crops are his “double (bunshin)” and that he was “inseparable” to his plants. This inseparable connection allowed him to understand what the carrot wanted him to do. Lifestyle farmers also shared their experience of feeling that they are part of the big circulation of life (inochi no junkan) and losing a sense of them as being a separate individual entity. For example, Yumi shared her experience that when she was crying and farming after her father passed away, there was a moment that she was totally absorbed in her work. At that time, “I felt as if I became the same with bugs. I was not scared of death, and I felt as if I was part of shizen (nature)”. Lifestyle farmers shared their experience of feeling as part of the circle of life and ikasareteiru (being enabled to live) by the natural world.

Discussion and conclusion

This study showed that Japanese farmers’ relationships with their crops were not fully accountable with a dualistic view of care proposed by Tronto (1993). Farmers shifted between the moments of dualistic and intruded self and others. Some of them, especially lifestyle farmers, also had a strong sense of being cared by plants or being in part of a broader circle of life, in which seed saving was also perceived as part of that broader circle of life. This holistic notion of care with an unclear boundary of care-receiver and provider was an important element that motivated farmers to continue seed saving practices.

While intensive interviews were limited to ten farmers in six prefectures, I have an impression that findings in this study are not so much related to regionality within Japan, but more associated with traditional Japanese worldviews. Shibata (1991) explained that the ancient Japanese considered the source of human lives (“ancestral spirit [mioyano mitama]” from which ancestors originated) and the source of crop lives (“grain spirit [ukano mitama]” from which grains originated) are the same, since grain has supported human lives. This idea is mutually supportive with interviewed organic and lifestyle farmers’ expression of losing the boundary between themselves and plants, and lifestyle farmers suggesting the sameness of human and nonhuman lives.

Such a worldview could be further explained by Teranishi (2018)(2018), who proposes “coexistence with nature” as one of the traditional Japanese ethics. This ethic is based on the indigenous faith that regards humans as part of shizen (translated as nature, although there used to be no Japanese term that corresponds with the Western term nature). Here there is no distinction between human and kami (god) and that considers nonhuman beings as kami. The ethics of coexistence with nature further developed among the Japanese with the introduction of the Buddhist idea that every living being possesses the potential nature to become a Buddha (Teranishi, 2018). Teranishi explains that this ethic has nurtured peoples’ sense of intimacy to nonhuman living beings and provided a base to consider human and nature (shizen) as not being separated but being connected. Exploring human-nonhuman relationships in countries with Buddhist influences would provide an interesting

comparison to make.

Findings in this study suggest an avenue to consider the socio-cultural context when communicating food ethics to consumers. Extension of moral concerns to nonhumans has been one of the approaches developed in environmental ethics. The underlying idea is to consider humans as moral agents who are obliged to be responsible for moral receivers, nonhumans (Sharma, 2020). The moral argument, however, may not always be effective in places where the idea of responsibility and obligations are perceived differently. In Western societies, it is assumed that people have freedom and autonomy to make decisions so that they are supposed to be responsible for the consequences. On the other hand, for example in Japan, the term responsibility (*sekinin*) refers to a moral obligation to keep the harmony of society (Coulmas, 1993). While promoting moral argument in Japan may not be as successful as in Western societies, stories of care may be a better way forward. Japanese people tend to value “care” put in the work, so seed saving farmers’ stories about care and the connection that they developed with their plants may attract consumers from a health and food quality perspective.

The concept of care ethics is explored by more-than-human scholars to describe interdependency and relationality between humans and nonhumans in an attempt to overcome dichotomous thinking of subject / object and human /nature (e.g. Puig de la Bellacasa, 2017). Puig de la Bellacasa provides a story of soil-human relations, which is similar to that of Japanese farmers in my interviews. However, there seems to be a difference between care ethics expressed by Japanese farmers and care ethics explored in more-than-human literature. Japanese farmers’ care was based on direct interactions between farmers and plants – the physical connection was crucial. On the other hand, while more-than human studies often contain stories of a physical encounter with nonhumans, it does not necessarily require a direct physical connection to nonhumans. More-than-human care ethics rather require an imagination of being in the world together with nonhumans, supported by the idea of extended morality for distanced invisible others (e.g. Beacham, 2018). A question here for Japanese food ethics is if such imagination is achievable without having a direct physical connection to nonhumans or with the absence of Western ideas of moral and responsibility.

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Appendix. Description of interviewed farmers

	Name	Description
Organic farmers	A	A male farmer in his 60s with more than 30 years of experience of seed saving, operating in Kyusyu region. Sells products mainly for individual consumers taking a box-scheme. Converted from high-input agriculture to organic agriculture.
	B	A male farmer in his 30s operating in Kyusyu region with less than 10 years’ experience in seed saving. Came from a non-farming household and became an organic farmer after working in Tokyo. Takes a box-scheme. Informally learns from Masaki. I carried out in-depth interviews with Katsu by applying the Trajectory Equifinality Approach.
	C	A male organic farmer in his 20s, living in Kyushu region. Under training of organic farming when I interviewed. Planning to become independent. Informally learns from Masaki.
	D	A male organic farmer in his 30s operating in Tohoku region with less than 10 years’ experience in seed saving. Transferred to organic farming after working in Tokyo. Sells products to restaurant chefs.
	E	A male organic farmer in his 30s who operates farmer’s restaurants in Kanto region. Worked at an agricultural corporation before turning into an organic farmer.
	F	A male organic farmer in his 20s living in Kanto region. Inherited grandparents’ farm. Learnt farming and seed saving from Tatsuya.
Lifestyle farmers	G	A male lifestyle farmer in his 60s from Kyusyu region. Engaged in natural farming for nearly 30 years.
	H	A male lifestyle farmer in his 50s living in Kansai region. Practicing natural farming for nearly 15 years. Works full-time. I carried out in-depth interviews with Katsu by applying the Trajectory Equifinality Approach.
	I	A female lifestyle farmer in her 50s living in Kyushu region. Ten years of farming, started natural farming three years ago. Works full-time.
	J	A female lifestyle farmer, probably in her 30s or 40s, living in Kyushu region. Practicing natural farming for four years. Works full-time



Civic Food Network and Food Security Amid Pandemic

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Abstract

In the wake of the novel, coronavirus pandemic social arrangements that ensured food production and food distribution are most affected, especially in developing countries. Access to food is affected by the nationwide lockdowns and hurdles in transportation. This creates a problem for consumers who depend on transported food from rural areas to urban areas. Similarly, India's case where urban consumers depend on purchased food indicates the importance of food supply chains for urban regions. Thus, understanding the role of food networks in the urban food supply chain and food security issues during pandemic becomes essential in this context. The paper introduces a civic food network of consumer-farmer compact (ConFarm) in Telangana, India. It attempts to understand how this civic food network functions as a food supply chain during the pandemic in the context of food security. The paper uses secondary sources to reflect on the food production and food distribution arrangements of ConFarm through the civic food network's analytical concept. ConFarm reduces the food miles and reflects changing social relations between consumers and producers. In addition to this, it helps small and marginal farmers meet their production needs during challenging times. The paper concludes that civic food networks like ConFarm can be a plausible solution for achieving food security, especially in urban areas in India during a pandemic or similar unprecedented situations.

Keywords

Civic food network, pandemic, food security, social relation, rural-urban areas

1. Background

In India, consumers purchase ninety-two percent of the consumed food, and the urban population consumes sixty percent of it (Reardon et al., 2020). Thus, the food supply chain plays an essential role in ensuring food security among the urban areas in the Indian context. However, during the coronavirus pandemic, the supply chain got affected in different parts of India. At the beginning of the lockdown, strict rules affected the long supply chains (Maggo, 2020). And the implementation of strict regulations affected the transportation of produced food from different parts of India (Pasricha, 2020). These breaks in the supply chain not only can affect the consumers but also the

producers of food. Thus, in this context, we analyze a civic food network consumer-farmer compact (ConFarm) in Telangana, India, and discuss its role in addressing food security in the urban areas and producers' plights.

2. Consumer-producer co-operation and Civic Food Network in India

In the past few years, new types of consumer-producer co-operation in food networks gained importance across the world, and scholars became interested in studying these food networks' dynamics. Some scholars studied the dynamic using alternative food networks where environmental awareness issues, renouncing conventional agriculture, promoting social justice, and inclusion dominated their discourse (Watts et al., 2005; Hassanein, 2003; Goodman, 2003; Goodman, 2004; Slocum, 2006). Other scholars focused on food networks as social movements (Lamine et al., 2012; Seyfang, 2006). However, based on these studies in the European and the U.S. context, we find the consumer-producer co-operation reflects the new type of partnership in the food system where consumers are increasingly becoming interested in their food system. Similar interest is seen recently in the Indian context in a consumer-producer compact (ConFarm) in Telangana. Here consumers have developed an interest in knowing their food system and do not stay as mere consumers and gain knowledge about the production process.

In this paper, using the civic food network as an analytical concept, I will analyze ConFarm. This concept is "not necessarily to substitute for existing analytical terms fully, but rather to act as a complementary category to concepts such as 'short food supply chains' and 'local(ized) food systems'" in the Indian context (Renting et al., 2012: 292). This paper uses the civic food network as a type of producer-consumer co-operation. Here consumers in collaboration with the producers "actively reshape their relations with different stages of the food system and start revaluing the (social, cultural, environmental) meanings of food beyond mere commodity and object of economic transaction" (Renting et al., 2012: 290). Using civic food network, the paper reflects how ConFarm functions as a food supply chain during the pandemic, creating different social relations between consumers and producers.

In India we have had organizations located in different parts that have used alternative approaches to manage the food system. For example, Indian Organic Farmers Producer Company Limited (IOFPCL) in Aluva, Kerala, is managed and owned by farmers and caters to consumers in foreign countries. In this case, farmers are determined to save their biodiversity and, given their high educational background, have a higher chance of empowering themselves through these networks (Touri, 2016). Even the Slow Food International Convivium in different parts of India like Mumbai, Udaipur, Delhi, Jharkhand, Gujarat, etc. represent alternative approaches to food networks where farmers attempt to save their biodiversity and also connect to consumers directly. However, in these cases, consumers' role is limited as they do not get to connect with the producers. Whereas, according to Sebastian (2018), the organizers behind ConFarm claim that this initiative "could be one of the very few initiatives in India where consumers come together to partner with peasant women farmers to support their ecological agricultural practices". As a case, this initiative provides a differ-

ent understanding of the consumer-producer relation within the food system.

ConFarm as an initiative started in 2018 by the Deccan Development Society (DDS) and Disha Consumers Alliance, both of which are community-level organizations (Sebastian, 2018) and aim at promoting millet consumption in the urban areas. The project was implemented in six villages and two hundred six acres of farmland during the initial days (Sebastian, 2018). Each consumer associated with ConFarm supports a farmer group and receives organic products worth his/her investment. Here, consumers become members of the initiative and invest from 12,500 to 25,000 rupees per year to support millet production. Around a hundred consumers are currently supporting a hundred farmers in Zaheerabad and Sangareddy district (Dundoo, 2020). Despite these consumers supporting the initiative Tejaswi Dantuluri, co-founder and managing director of Disha Collective, claimed in an interview with Dundoo (2020) that they have around 500 farmers more who want to be supported by the consumers, but they are not finding that support. Getting more consumers to support the initiative could be a challenge that the initiative face.

The initiative also aims to bring consumers closer to their producers by engaging them in various agricultural activities and co-creating social relations through co-production. For example, ConFarm, from the very beginning, involved its consumers in the production process where the consumers witnessed the first sowing done by the farmers. Going to the field, interacting with the farmers, and witnessing the production process breaks the earlier relation consumers-producers had in market relations. Consumers here are also encouraged to participate in festivals and during harvesting (Dundoo, 2020). These efforts by ConFarm is “[M]ore than a conscious action aimed at changing the overall food system” and “appear to be opportunities for deskilled citizens to regain knowledge about food growing” (Renting et al., 2012: 301). Sebastian (2018) mentioned that Jhansi Laxmi, a Telugu T.V. anchor, an environmental activist, and part of the consumer group, was concerned about farmers’ problems. She said, “we must be equally concerned about adequate rainfall as much as a farmer” (Sebastian, 2018). This statement represents different social relations established among the producers and consumers than the market relations. In this case, consumers know factors that could affect food production and are concerned about the production process and its impact on the farmers/producers. This knowledge reflects certain reshaping of the relationship between consumers and producers and between consumers and the food. Sebastian (2018) pointed out how Sneha, a Microsoft employee, was bothered by the ignorance regarding the source of the food she consumed before joining ConFarm. Now she is engaged with ConFarm and plays an active role in mobilizing consumers to join ConFarm (Sebastian, 2018). ConFarm, by involving its consumer in the food production process, re-builds the relation between farmers and urban consumers where consumers and farmers together co-create the meaning of food.

All farmers associated with ConFarm are small and marginal women farmers. DDS supports women farmers and those involved with the initiative. These farmers are engaged in millet-based biodiverse farming for generations (Dundoo, 2020). This association could be the reason for developing a social bond among the initiative members and for developing positive group dynamics. Further, Tejaswi Dantuluri, claimed in an interview with Dundoo (2020) that around “98 farmers from Arjun

Naik Thanda of Zaheerabad no longer depend on loans with interest. They also don't depend on outside markets to sell their produce". Even during the pandemic, when food supply chains faced problems, "farmers from state's Pasthapur village sent their produce to more than 35 out of 120 partner consumers in Hyderabad on April 8 with permission from government authorities" (Dantuluri and Sebastian, 2020). Thus, the food supply chain could function effectively during the pandemic and maintain the producers' self-sufficiency.

According to Dantuluri and Sebastian (2020), consumer Swati emphasized her association with ConFarm and food security. She claims that she knows what she eats and gives to her family during these trying times. Similar security in terms of food was emphasized by Sukanya Ramesh, who states, "[W]hen all of us are confined to our homes with restricted access to essentials, our farmer friends offer solace. They ensure access to good food even during the crisis" (Dantuluri and Sebastian, 2020). During difficult times consumers get an uninterrupted supply of healthy grains even during lockdown (Dundoo, 2020). Thus, consumers find a sense of food security through ConFarm during the pandemic.

3. Conclusion

ConFarm in the Indian context provides an example of a food supply chain where producers (rural) - consumers (urban) share social relations beyond market relations. The initiative by reducing food miles played an essential role in ensuring food security in the urban areas amidst pandemic. Though the initiative is new, it creates avenues for food to be co-generated and the food's meaning to be co-created. However, being relatively new, the initiative has not led to alternative forms of food provisioning, bringing a nexus between civil society, the market, and the state. It provides an example of innovation in short supply food chain, which could be beneficial during challenging times like pandemic, ensuring food security in urban areas. In addition to this, civic food networks can help small and marginal farmers meet their production needs during challenging times. The study was based on secondary sources and could be enriched further by other studies through primary data, adding to the existing literature and other dimensions in the area with an Indian perspective.

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Cultivation Practices of Highland Rice Landraces "Kali Marshi" in Jumla, Nepal

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Abstract

Kali Marshi is one of the high valuable highland rice landraces natively found in Jumla. The aim of this study is to know the cultivation practices and associated traditional knowledge. The study was conducted in Chhumchoure Ward no3of Patarashi Municipality located at 2850 masl, Jumla district, Nepal. A household survey was conducted using stratified random sampling techniques. A set of questionnaires, visual observations including focus group discussion, and key informant interviews were applied for data collection. The household size of the study area was 5.61 ± 1.63 and the paddy landholding size was 5.72 ± 4.54 Ropani (1 Ropani=508.5 m²). Only 31% of households in the study area have food sufficiency. Cultivation practices of the rice Kali Marshi start from seed soaking on the day 25th March. The practice has been found associated with date and timing of rice phenology which is not yet affected by the climate change events. The practices have now become an important culture. Work division based on gender, priority to the household owner, and community leadership to the leader (Mukhiya) are fund as the significant traditions. The productivity of rice is 18.5 t/ h, which is lower than that of national productivity. This documentation would facilitate in the promotion as well as help to promote Kali Marshi as Geographical Indicator.

Keywords

Jumli Marshi, Cultivation practices, Traditional knowledge, Harvesting, Geographical indicator.

1. Introduction

Rice is the most important food crop in the world that feeds the majority of the world's population. In the Asian continents, Nepal is one of the centers of origin and diversity of Asian rice (CDD 2015; Chang 1976; Joshi 2005). The rice in Nepal is not only the main source of food and nutrition but also it has been associated with social and economic status of the people. It has contributed more than 50 and 30 percent of food grain and calorie requirements, respectively in Nepal (Dhungel, 2017).

There are over 2500 varieties of rice landraces including 50 aromatic landraces and 4 wild species in Nepal (CDD 2015; Mallick, 1981). Among them, CDD (2015) has listed 157 rice landraces that are under cultivation in Nepal. Rice in Nepal grows under diverse environmental conditions ranging from Terai (60 m) to foothills and the mountain at the elevation up to 3050 masl (Devkota 2017). Jumla is one of the mountain districts of Karnali Province, Nepal ranks first in terms of area and production of rice (ADO 2013). The district is very well-known for the cultivation of highland rice, namely "Kali Marshi or Jumli Marshi", a Japonica type of cold tolerant landraces. Having been its good taste and aroma with high nutritional value, its demand is mounting day by day among the urban dwellers. Chhumchaur and Gidikhola areas of Jumla are the major areas of cultivation of Kali Marshi.

The Government of Nepal and its line agencies are always seeking to introduce the high yielding rice varieties including high agriculture inputs but the importance of the landraces like Kali Marshi, traditional local knowledge associated with its cultivation, and socio-economic dimension are always overlooked. This led to jeopardize the high valued local rice landraces and traditional ecological knowledge of cultivation. Declining of the local landraces is associated with the loss of agriculture biodiversity (Newton et al. 2011) thereby threatening the local food security.

Moreover, a Geographical Indication (GI) is a collectively-owned, intellectual property rights (Ojha et al. 2020; Joshi and Gauchan 2020) that can ensure the farmers rights on traditional local knowledge of Kali Marshi and its cultivation practices is the best tool of rural development but yet to be practiced in Nepal. Considering the diverse value of rice Kali Marshi and the risk associated with its conservation, this study aims to document the traditional local/ecological knowledge and respective management practices influenced by various socio-cultural aspects of the Kali Marshi in Jumla.

2. Material and Methods

2.1 Study Site:

Jumla is one of the remote and underdeveloped mountain districts of Nepal located in the Karnali Province. Sinja Valley of Jumla is the place where the Nepali language was originated. The district lies between 28.580° N to 29.3070° N and between 82.180° E to 88.120° E, and covers the area of 2,531 sq. km between an altitude range from 2000 m and 6424 masl at the summit of Patarasi Himal (the highest peak of the district) (Palikhey et al. 2016). The human development index is 0.409, per capita income index 0.385, adult literacy index 0.444, and life expectancy is 63.14 (GoN and UNDP 2014) of the district.

This study was conducted in the Chhumchaur village (2850 masl) of Patarashi Municipality, Ward no 3, Jumla, located at 29.335524° and 82.325314° E. (Fig 1). The village is located at the North East side of the district and about 15 Km away from the district headquarter Khalanga.

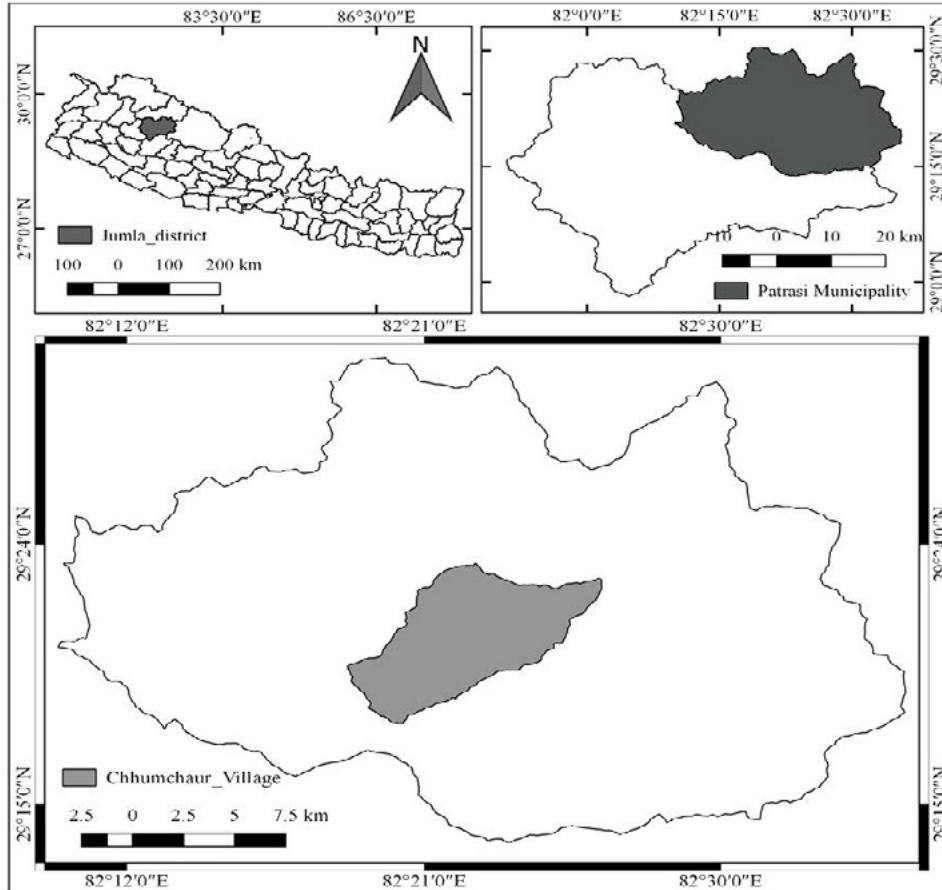


Fig. 1 Map of the study site

2.2 Research design and data collection

Both primary and secondary information were used for the study. Primary information was collected from household survey and field observation; and secondary information from local and national publications. A set of semi-structured questionnaires was prepared for the household survey. A stratified random sampling method was applied for the household survey (34 households). A focus group discussion was conducted and key informant interviews were also performed from representatives of socially acknowledged groups. Data compilation and entry was done using Microsoft Excel and analyzed. The survey was carried out in 2017 and 2020.

3 Results and Discussion

3.1 Socio-economic profile

Of the 34 respondents, 70% were male and 30% were the female. Major caste of the study site was Chhetri (90.44%) followed by Tamange (7.72%), Bhote (0.02%) and rest were Untouchable/ Dalit

and Bhramins. Average household size of Chhumchaur was 6.33 people (CBS 2014) and 5.61 ± 1.63 was observed during the field study in 2020. The average size of landholding of the village was 12.67 ± 6.22 whereas the average size of rice landholding was 5.72 ± 4.54 Ropani (1 Ropani=508.5 m²). Only 31% of households of the study area have food sufficiency (Table 1).

Table 1. Family size, land holding size, rice productivity and food sufficiency of the study area

Number of interviewed Farmers (M//F)	Family size	Total land holding size (Ropani)	Rice land holding size (Ropani)	Rice Productivity (t/h)	Food sufficiency (%)
34(24/10)	"6.33 (CBS 2014) 5.61±1.63 (Field survey, 2017 and 2020)"	"12.67± 6.22 (1 Ropani= 508.5 m ²)"	5.72 ± 4.54	1.8	"Less than six months 13.79 Sufficient for six months 55.17 Sufficiency for one year 24.14 Food Surplus 6.89% "

3.2 Practices on Kali Marshi cultivation

3.2.1. Seed selection and seedling development

According to the respondents, the rice seeds are soaked in water on the special day the March 25 (Chaitra 12 or 12/12 as per Nepalese calendar). The household head who is away from the home is mandatory to return his home by the date (March 25), otherwise, he is considered to be dead or he is in immense difficulty. This special date has not been changed by the local people for centuries. It signifies how the date and timing of the phenology of Kali Marshi have become a part of cultural practice. There are numerous studies related to climate change in Nepal and there are fluctuations of climatic events in the country (Aryal et al. 2020) but the special timing of Kali Marshi seed soaking is being changed.

The seedling development process is completed in two steps: germination at the house and seedling development in the field. The selected seeds are put either in any vessels or in jute bag for soaking in water for about one week. While soaking the seeds they change the fresh water regularly or directly the jute bag with seeds is left in nearby running stream. After soaking, the seeds are washed (some farmers use the salt for washing) by fresh water for 3-4 times and dry under the sun light for about one hour. Afterward, seeds are incubated / spread over the mat of jute or straw by covering it with Bhoj patra (*Betula utilis*), pine needle (*Pinus* spp.) or a woolen clothes; place nearby the cooking hearth (Photo 1).

After 3-4 days the seeds start to germinate and reaches about 1.5 cm (Photo - 2). These seedlings are then transferred to previously prepared puddle seedbed by April 4 (Chaitra 22). The Kasro (mix powder of two years old dung and burnt residue of firewood) is added to the nursery. The seedling can be ready for transplantation within 40-45 days after soaking. The practice of covering the spread seeds on Jute mat by *B. utilis* or pine needle or woolen cloth is for protection of temperature and moisture.



Photo 1. Use of Pine needle to cover the soaked seeds



Photo 2. Germinated seeds

3.2.2. Transplantation and harvesting

After harvesting of winter crops the land is ploughed twice with the help of bullocks by using a wooden plough. The puddle field for rice transplantation is prepared just few days earlier than rice plantation.

Mainly the males are involved in land preparation activities such as digging, plowing, puddling, and seedling transportation while females are involved in rice plantation and weeding. It indicates

the practice of labour division during cultivation between males and females. Conducting the hard works are the responsibility of males.

According to the informants, the irrigation is executed based on the local rules and regulations. The rules and regulations are set by community people which is basically for the turn of irrigation while there is limitation of irrigation water.

Generally, two manual weeding practices were prevalent. The use of chemical fertilizer and pesticides were not noticed during the study. Therefore, it can be expected that the fertility of the lands for Kali Marshi cultivation is not affected by chemical fertilizer and pesticides.

In the study area, rice harvesting activity is completed by the third week of October (Photo 3). The day to harvest is determined by the Mukhiya, a socially recognized elderly person of the village. This practice is also one of the remnants of ancient culture in the villages of Nepal. Harvesting is done manually by using sickle leaving 5-10 cm stubble. The harvested rice with panicles tied in bundles and brought to cleaned threshing floor or over the surface of clothes called Phara (made from wool). Again, men are involved in threshing whereas the women get involved in harvesting (cutting). The productivity of the rice was estimated 1.85 t./hectar which is below the national productivity. The national productivity of rice is 3.7 t/h (MoALD, 2020).

The harvested rice-grains are cleaned by winnowing and hauled to home and dried appropriately. Once the grains are dried, they are stored in a special pot made from wood or bamboo, or the clay pot or tranches. Rice straws are also transported and stored nearby house yard as a heap and offered to livestock as feed. The size of rice straw heap is an indicator of the social status. Rice harvested field is open for livestock grazing until sowing of next winter crops. This practice is also useful as the livestock defecate in the crop field which may reduce the amount of fertilization.



Photo 3. Crop ready for harvesting

All the farmers of study area were strongly shaped by subsistence and smallholders rice production in remote and fragile environments. Rice is traditionally grown (techniques and tools) once a year as the valuable crop and provides a major contribution to local food consumption and their livestock feed. There is an evidence of feminization in Agriculture.

Table 2. Crop Calendar of Kali Marshi in the study site

Activities	Time Period	Responsible person
Land Preparation	Nursery: March first /Second week Paddy land: Puddling by the second week of May	Male Male
Seed Processing Seed Soaking and Germination	Starts from March 17 to 25 Seed soaking for about 1 week; left for germination 3 to 4 days	Female Female/ Male Male/female
Sowing seeds in the seed bed	By March 26- April 4	Male and Female
Seedling Transplantation	Started from second week of May and completed by the end of May	Female
Weeding	June second week and July Second week (Twice)	Female
Flowering	Named as “Kesar Khelne” in the beginning of September	
Ripening	Second week of October	
Harvesting	Completed by the third week of October	Cutting: female; Threshing and carrying the grains: Male

Table 3: Characteristics of rice cultivation and use pattern of Kali Marshi

Location	Rice crop/ year; Land type	Cultivation practices and rice processing	Production type	Propose of rice	Major role of women in rice cultivation
Rural- mountain Chumchaure, Jumla, Nepal;	One; Traditional rice landscape; high social and economic status	Completely traditional tools; no mechanization; oxen for plowing; all manual work from plantation to rice milling; exchange of oxen and agricultural tools; Sufficient human resources within the family; in case of need traditional labor exchange- Perma; Special care for seed germination and nursery.	Subsistence; no use of fertilizer, pesticide and herbicide; Special manure- Karso for nursery, Farm Yard Manure for rice field; after rice land is used for cereals but most of the land is fellow; fellow use for livestock grazing .	Self- consumption; cultural and religious proposes; not sufficient; Sometime exchange with some domestic goods; Selling only in the time of financial need (for health or education); rice straw is the best livestock feed.	Seed selection, processing and storage; Seed prepare for soaking; transplantation of seedlings; weeding; harvesting of rice and processing (drying) and storage of rice

The detail characteristics of rice cultivation and use pattern is presented in Table 3. The farmers from the study area were poorly equipped with modern technology along with excluded from access to technical support, information, credit, marketing and other services, which leads to poor productivity. The resource-poor farmers in the developing world like Nepal are at the risk-prone and marginal environments remain untouched by modern agriculture technology (Alteri, 2002). The farmers in the study area were confronted with labor-intensive and low productive of rice and lack of off-farm employment. Seasonal migration for employment and lucrative income from collecting and selling of medicinal and aromatic plants had an influence on rice cultivation.

4. Conclusions

Methods of seedling preparation, seedling transplantation and harvesting of Kali Marshi are the unique practices among the community people of the study site. The practice has been found associated with date and timing of rice phenology which is not yet affected by the climate change events. The practices have now become important cultural practices. During the cultivation practice work division based on gender was also found significant. This documentation of traditional knowledge on cultivation practices would facilitate in the promotion as well as help to promote Kali Marshi as Geographical Indicator.

Acknowledgement

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Japan's Fishery Forest Movement as a Sustainability Transition

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Abstract

This paper discusses the emergence and development of the Fishery Forest Movement in Japan as a case study of a sustainability transition. In this movement, coastal fisherfolks initiated and carried out tree-planting activities in the upland areas of the watersheds that connect to their coastal fishing grounds in order to safeguard the productivity of their fisheries. They started as spontaneous grassroots initiatives, but gained momentum as the fisherfolks linked up with upland communities, local governments and schools, and city-based consumer organizations. From separate beginnings in Hokkaido and Miyagi in the late 1980s, the movement expanded across the country and was reflected in a number of key national policy initiatives. The dynamic networking across sectors and regions was one reason for the movement's success. Another factor in the success was the skillful mobilization of a range of narrative motifs and their integration into a persuasive meta-story of the connectedness of forests and coasts. While the movement has been relatively marginal in terms of its actual tree-planting activities, its strong narrative and charismatic outreach have enabled it to exert considerable influence over the public debate on the issue. In terms of contemporary sustainability theory, the movement may be regarded as a successful example of niche innovation. The fact that it has been more successful in influencing public discourse than in changing the practice of watershed management in Japan suggests the insight for transition theory that “alternative” practices may be long-lived and influential, without leading to direct regime change.

Keywords

apan Fishery Forest Movement, sustainability transition, alternative initiative, watershed management, ecosystem connectedness

1 Introduction

The Japanese Fishery Forest Movement (hereafter FFM) is a civic movement in which coastal fishers plant trees in the watersheds and upstream areas of rivers. It began about twenty years ago as two independent movements in two regions in Japan, and has since spread across the country. With the catchphrase “The sea is longing for the forest,” the movement is now widely known to the general public.

This movement, which connects coastal areas and upstream mountain areas through afforestation activities, is distinctive in two respects: 1) it seeks to restore the continuity and connectedness of forest, river and ocean, and 2) the fishers themselves have taken the initiative in starting the movement. This study analyzes the development process of this movement and discusses the values it created and the factors of its success.

2 Early Days of the Movement

The FFM began in the late 1980s as independent campaigns in two regions, Hokkaido and Miyagi Prefecture. In Hokkaido, the campaign was initiated in 1988 by a women’s group which was part of the regional Fisheries Cooperative Association. Fisheries cooperatives are important organizations in Japan’s coastal fishing communities, providing a number of services, including the joint sale of fish catches and the joint purchase of materials, as well as the provision of finance and insurance, and sale of daily living supplies. The women’s group was mainly composed of the families of fishers and had been actively involved in women’s empowerment and community service activities. Prior to the tree-planting campaign, the group conducted campaigns such as banishing synthetic detergents and promoting savings. The tree planting was a campaign to commemorate the 30th anniversary of the women’s group. The choice of tree planting as a theme was due to the presence of Takehiko Yaginuma of the Hokkaido Fisheries Cooperative Association. As an official of the central organization leading the regional cooperative, Yaginuma was exposed to scientific discourse on a regular basis, and came to know the arguments that the poor catch of herring was due to overexploitation of forests, and the conservation of upstream forests was important for the conservation of coastal fisheries resources. He was motivated to promote the tree planting campaign. From the outset, he intended to make a long-lasting initiative with the goal of “Taking 100 years to restore the beach as it was 100 years ago”. Therefore, he promoted awareness-raising activities, such as holding study seminars in each region prior to the launch of the campaign, in which 135 districts across the province participated. Yaginuma also emphasized the importance of bottom-up implementation, leaving the specific details of the campaign to women’s groups in each region (Yaginuma 1999) .

Meanwhile, the activity in Miyagi Prefecture began with the initiative of one fisher. Shigeatsu Hatakeyama, an oyster farmer, felt that the deterioration of the coastal environment had compromised the quality of the oysters he farmed, putting his business in jeopardy. While reviewing the environment of his own oyster farm, he became aware of the deteriorating water quality of the rivers flowing into the bay, problems with agricultural water and domestic wastewater flowing into the rivers, and the degradation of the forests in the upstream area. As a fisher, he appealed for watershed

conservation to protect fishery resources, but at the time, both the government and scientists were treating rivers and fisheries separately, which did not match Hatakeyama's awareness of the issues. A number of like-minded fishers formed a group and have been planting trees in the forests upstream since 1989. The movement was given the slogan "The sea is longing for the forest", which has now become synonymous with the FFM. Hatakeyama sums up his activities as "planting trees in people's hearts" (Hatakeyama 2010).

3 Outcomes and Characteristics of the Movement

The movements in Hokkaido and Miyagi have a different pattern, with the former being a campaign of nested organizations and the latter a community effort led by a charismatic leader. However, the fact that they began at the same time, and that they shared the same motivation to improve the forests for the sake of safeguarding the oceans, resulted in a synergistic effect and ultimately gained widespread public attention. Organizations initiating similar activities have sprung up all over the country, and as of November 2019, practices have been reported in 128 locations over 31 prefectures (IISC 2019). In addition, the essay "Mori wa Umi no Koibito" (litt. "The Forest is the Lover of the Sea") by Hatakeyama, the leader of the Miyagi movement, was featured in a public school textbook, making the catchphrase widely known, and recently, in 2016, the Ministry of the Environment launched a project on the theme of "Connecting and Supporting Forests, Countryside, Rivers, and Sea" (Ministry of Environment 2020). These can be interpreted as indications of a widespread societal recognition that the unity of the watershed is necessary for environmental conservation and that it should be restored. We argue that the FFM was a primary driver of such recognition.

One of the characteristics of the FFM is the diversity of actors involved. In addition to fishers and fisheries cooperatives, local governments and forestry organizations were involved. In Hokkaido, consumer organizations interested in "tree-planting fishers" wanted to support them through the purchase of their seafood (Mitsumata et al 2008, Tamura 2014). Alternatively, links to environmental education and rural return migration through tree planting festivals have been reported in Miyagi (Hatakeyama 1999). The transboundary nature of the original structure of the fisher's involvement in tree planting, and their ability to expand relationships beyond the watershed through the fishery products they produced, may have made it possible for a variety of actors to participate.

Another feature of the project is the various motifs of narratives. Fishers were aware of the long-standing degradation of the coastal environment which is the foundation of their fisheries activities. They were also concerned about the land development of the areas along the inflowing rivers and in upstream forests. It was there that scientists proposed the hypothesis that it was forest degradation that was resulting in the degradation of the coastal environment, which provided the impetus for the movement¹.

1 From the perspective of fisheries, Tetsuo Inukai of Hokkaido University argued that the decline in oyster catches in Atsukeshi Bay was due to the deterioration of upstream forests in the 1970s. Katsuhiko Matsunaga, also of Hokkaido University, proposed the hypothesis that forests form leaf litter and it provides nutrients through river water in the 1990s. Masayuki Miura, who was involved in forest administration at the Hokkaido prefectural government, criticized large-scale forest development in inland areas of Hokkaido, arguing that the poor performance of Hokkaido's coastal fisheries was due

Interestingly, the scientific debate on the link between forest management and the coastal environment is still ongoing and no definite conclusions have yet been reached. So far, it has been suggested that there is no simple solution, as a variety of factors, including land use patterns, as well as the amount and type of forest, affect the relationship between forest management and coastal environments. However, tree planting continues as a movement, even while scientific exploration of the issue is still continuing.

Historical motifs have also influenced it. In Japan, protected forests for fisheries have been institutionalized since the 10th century. Historical fishery forests were meant to provide shade for fish to congregate, which is somewhat different from modern fishery forests that improve the coastal environment through watershed management. However, the historical motif of protecting forests for fisheries resonates with FFM². The various narrative motifs combined to give the movement momentum.

4 Conclusion

Agriculture, forestry and fisheries are a form of livelihood that exists at the boundary between nature and human beings. However, the modernization of technology and the establishment of globalized markets have made it possible to some extent to separate agriculture, forestry, and fisheries from nature. If we take the modern view of capitalism, the core of the forestry industry is the production of timber, while its multi-functions, such as water source nourishment and flow control, are ignored. Similarly, modern fisheries, which are solely oriented toward economic value, do not care about overfishing and exploitation of the marine environment. Agriculture, forestry and fisheries are implicated in global environmental crises such as climate change and biodiversity loss. This attitude of fragmenting the natural continuum, concentrating on efficient uses for humans and ignoring economic externalities is a major obstacle to sustainable natural resource use.

From this perspective, the FFM paved the way for the rediscovery of the continuity and connectedness of watersheds and disseminated their value to society. Therefore, it can be said that the FFM is one example of a sustainability transition in the making. In his socio-technical transition theory, Geels argues that a successful niche development may cause a regime shift and create a new mainstream (Geels 2002). In the light of this, the FFM continues to remain in a niche for forestry and fisheries landscapes and has not yet reached the renewal of the dominant regime. But while its concrete tree-planting practices are marginal in terms of overall afforestation in Japan, it is exerting a much broader influence that cannot be ignored, shaping new values and having a significant impact on social narratives. In terms of transition theory, the FFM experience suggests the insight for transition theory that “alternative” practices may need to be reevaluated, since they can be long-lived and influential, without leading to direct regime change.

to the degradation of inland forests in the 1970s. Yaginuma was inspired by Inukai and Miura, and Hatakeyama stated that he was encouraged by Matsunaga (Wakana 2001).

2 For example, Yaginuma titled his book "All Forests are Fish-attracting Forests" in an attempt to carry on the historical image and expand their meaning.

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Mapping Complexity Behind Minnanoshoku (Everyday Food): Uncovering Japan's Informal, Wild, Alternative, and Local Food Practices Within Urban/Rural Foodscapes

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Abstract

Outside of the conventional grocery model, Japan hosts a wide variety of food practices and access points for food that feature local, alternative, informal, and wild characteristics. Examples include unattended farm stands, wild plant foraging, beekeeping, foodbanks, community gardens, and local vegetable shops. We present evidence from a mapping project conducted in 2019-2020 to provide a visualization and spatial understanding of where food practices exist and operate. Our analysis explores the multiple dimensions that exist within food practices and explore how these practices relate to one another. These diverse activities operate in decentralized manners and thus can offer flexibility and redundancy in order to create a more resilient base for local food systems. We conclude that Japan's diversity of food practices speaks to Japan's culture of not stepping outside of social norms or pointing attention towards large disruptions to existing systems and instead points to how these acts emerge from a sense of individual responsibility and values.

Keywords

Alternative food network, informal food, wild food, local food, resilience, sustainable transitions

1 Introduction

Japan's rural areas face de-agrarianization, propelling rural flight and impacting domestic caloric self-sufficiency to fall below 40% where its food system becomes heavily dependent on imported goods (Hisano et al. 2018). In response to the increasing dominance of agro-industrial food systems, many movements have emerged focusing on food practices that draw connections to theoretical concepts such as Alternative Food Networks (AFNs)/Civic Food Networks (CFNs), Food Democ-

racy, Geographic Indication/terroir, Slow Food, Sustainable Diets, and Food Sovereignty. However, many of these concepts often carry a heavy focus on the market economy and such narrow focus can overlook the rich and diverse landscape of food practices that exist among families, friends, neighbors, colleagues, and activists.

Japan carries a rich and diverse landscape in relation to food practices as it holds a strong history of regional autonomy where each region carries idiosyncrasies in their food practices and food culture. This landscape is often overlooked for its potential in creating strong safety nets, promoting community resilience, and holding potential for sustainable transition. The many food practices that exist outside of the mainstream food system not only operate on the individual but also on a grass-roots scale where momentum in building alternative food systems is seen in their “quiet” action and the co-construction of intimate social ties amongst consumers, producers, distributors, and other related actors (Holt-Gimenez 2019; Vivero-Pol 2017).

Unlike many AFNs highlighted in other countries that often hold public opinions regarding the mainstream food system, the co-construction of intimate social ties among consumers, producers, distributors, and other related actors serves at the core of these hidden food practices. The scope of our paper aims to answer the following questions: How does the diverse array of informal, wild, alternative, and local food practices manifest themselves and how do these activities create the potential for a sustainable and resilient food system?

2. Methods and Results

In this paper, we chose Kyoto as an area of study because of its strong branding surrounding its food culture and its acclaimed frontrunner position in sustainability transition within Japan as it placed first in Japan’s National City SDG ranking in 2019. Based on a digital search, in-person mapping, and information sharing and gathering with various food networks, we developed a map with 1000+ locations depicting food practices that exist outside of the conventional supermarket model (see figure 1). The following food practices are featured in this mapping project: unattended farm stands, direct sales markets, community children canteens (Kodomo Shokudo), community gardens, beekeeping sites and seed sharing locations.

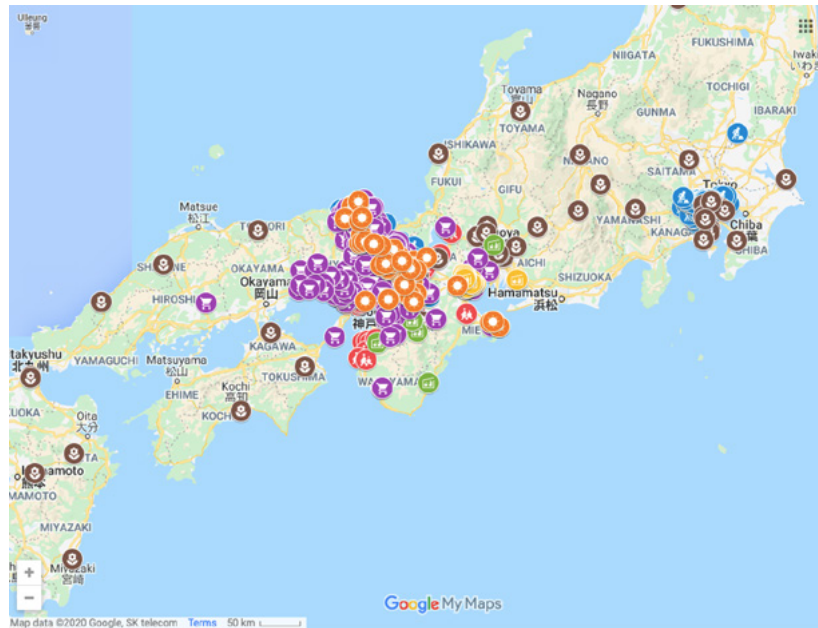


Figure 1. Map of 1000+ locations of food practices outside of the agro-industrial food system in Kyoto Region.

In order to analyze how these food practices, relate to one another, we defined the following categories: local, alternative, informal, and wild¹. We define local as food reflected in short food supply chains rooted in place-based activities. In Japan, local food is embodied through various mediums including the government led initiative of the chisan-chisho (local production/local consumption) movement. Under the chisan-chisho initiative, many rural regions organized their own direct market shops (chokubaijyo) where residents and farmers could sell their harvests. Here, the focus on place-based is often apolitical and instead emphasizes the embeddedness of producers, consumers, and other actors and their relationship to a particular place (Nishiyama et al. 2005; McGreevy and Akit-su 2016). While local does not connote political motives or dimensions, the category of alternative best describes food practices that are rooted in a set of agreed upon values. These values often carry social, environmental, and sometimes political orientations (Jarosz 2008). Informal food refers to food practices where individuals or participants can construct their own relationships where the main objective focuses on social aspects of connecting with people through self-produced, wild foraged, and convivially prepared local food (Jelička/Danek 2017). Lastly, Japan carries a long and unique history in relation to food that is associated with the wild. For instance, entomophagy, the practice of eating insects, holds historical significance as it served a critical nutritional role for inland rural areas where at least 117 species of edible insects have been consumed (Payne 2014; Mitsuhashi 2008). A further example is the tradition of mushroom hunting which gained international fame via its marketing and the socio-cultural values associated with Matsutake (Tsing 2015).

¹ For the purposes of this paper, we begin our investigation into what food practices exist within Kyoto, rather than starting from theoretical concepts such as AFNs, Food Democracy and Quiet Sustainability because the associated literature and empirical evidence often centers western contexts. However, these frameworks help to inform our thinking and influence our structure in choosing the following categories: local, alternative, informal, and wild.

In order to assess how these food practices relate to one another, we evaluated each practice in accordance to how local, wild, alternative, or informal each practice is. This was based on a literature review and several informal interviews conducted with people engaged in related activities. For instance, interviews were conducted with farmers who sell to direct markets, unattended farm stalls, and online platforms in addition to distributors and retailers who engage with activities such as supporting community gardens and or seed sharing. Based on defined characteristics each practice is situated on a spectrum showing the potential and ultimately how resilient a specific geographic location's food access and distribution can be without depending on conventional food chains. The 3 figures below visualize the complexities that exist in order to show where practices can embrace a number of different categories and exist outside of the dichotomies such as alternative vs. mainstream, local vs global, informal vs. formal, and wild vs. cultivated (see figure 2,3, and 4). Often these food practices hold variations within their practice based on ownership and how the food practice is carried out. For instance, there are direct market shops that are operated by producers or an informal collective of farmers and others that are operated by well-organized agricultural cooperatives and therefore their transactions can be much more formal versus informal (i.e. bartering, sharing, etc.). Such discrepancies therefore blur the distinctions and create entanglements.

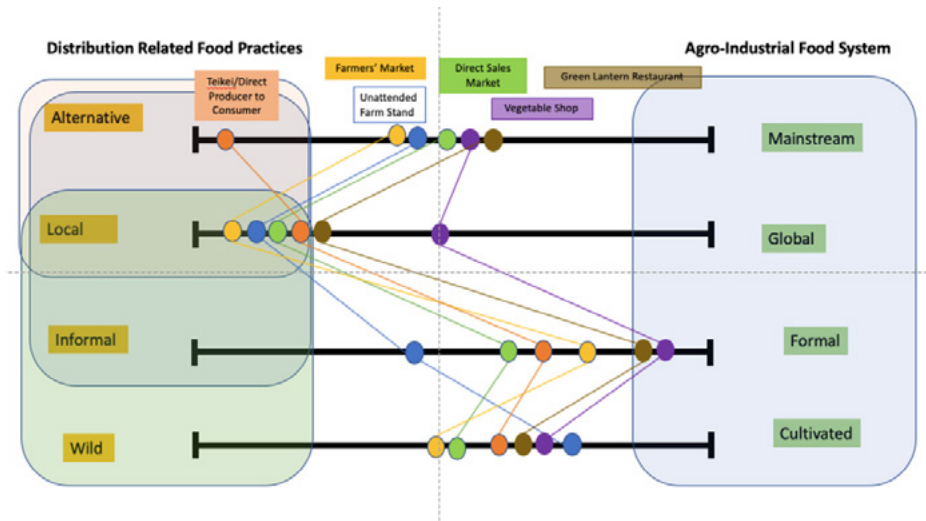


Figure 2. Food Practices related to Distribution

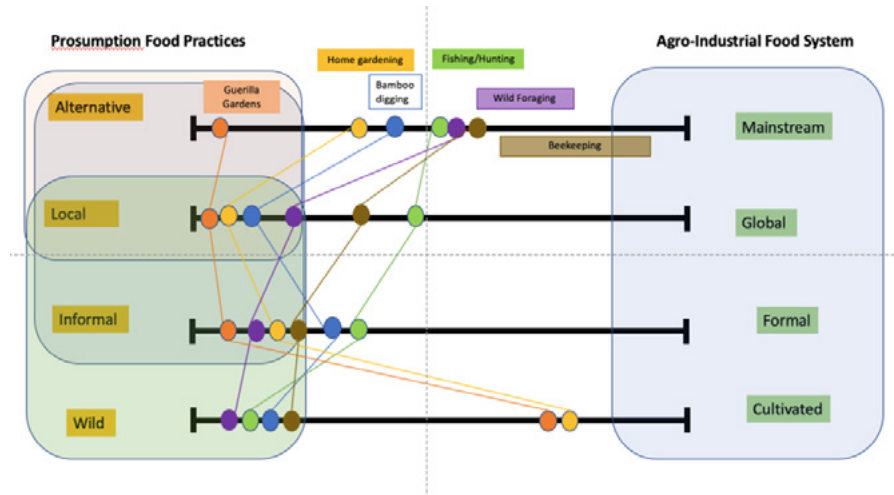


Figure 3. Food Practices related to prosumption

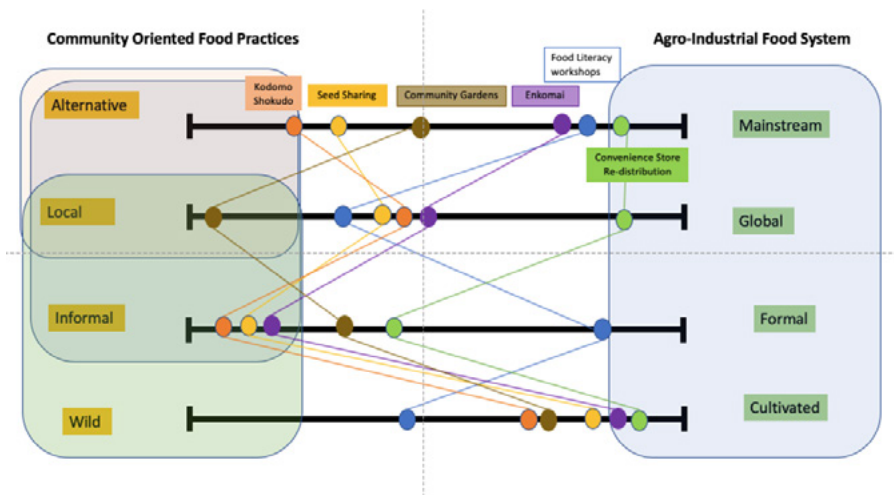


Figure 4. Food Practices with a strong Community Orientation

3. Discussion

We map these complexities in order to better understand what benefits and disadvantages can emerge from such entanglements. While the mainstream food system is focused on streamlining and prioritizes efficiencies to promote growth, this heightens the risk for system failures particularly when a disaster occurs and stability cannot be maintained. However, these hidden food practices provide evidence as to how decentralized, diverse, and small-scale practices are serving as important informal food hubs that can offer flexibility, communal connections, and redundancy. Although these practices are not coordinated in relation to one another, their redundancy and the interconnections of local, alternative, informal, and wild activities illustrate the foundations for designing improved safety nets for food access. These practices also raise important theoretical questions as to what extent concepts such as ‘*alternative food networks*’, ‘*food democracy*’, or ‘*quiet sustainability*’ can fully conceptualize the unconventional foodscape of Japan. Given that much of these concepts

display examples from Europe, North America, and Australia, we find that food practices observed in Japan do not explicitly carry a strong focus on democratic decision making and social justice focuses in their organizing efforts. The notions of vivid and active participation in public spaces is not readily witnessed in Japan as described by Booth/Coveney (2015) and Hassanein (2003). While AFNs can stress the importance of intentional and political purpose in defining an alternative practice, their measurement of success is often defined by the formal economy. Smith and Jehlička (2013) coined the concept of quiet sustainability in order to highlight food practices that were not directly related to market transactions and were not explicitly related to environmental or sustainability goals. Their novel concept brings to light the important role that social connections in food self-provisioning and sharing has in relation to sustainability without explicitly saying so (Jehlička et al. 2020; Jehlička et al. 2013; Smith/Jehlička 2013). While, quiet sustainability aligns with some of our findings, the wide diversity of both food practices and diversity within a given food practice documented indicates that there are varying degrees of motives and awareness according to why such food practices exist. As Japan's rural areas continue to face decline both in terms of its aging population and reduced capacity to maintain its infrastructure (schools, hospitals, local businesses, etc.), many rural communities are faced with difficult dilemmas such as the increase rise of wild animals harming farm production and the closures of regional wholesale markets and local businesses to provide farmers a stable supply within their communities.

Given the struggles that occur in one's daily existence, many of these food practices documented are quietly addressing the issues practitioners experience. For example, Kodomo Shokudo are self-organized with the intent to give children a space to eat a nourishing meal or the activity of hunting serves to not only protect farmland but also preserve and maintain traditions and celebrate food culture related to eating wild boar or deer. We make use of the term "quiet" as Japanese culture, particularly in rural areas tends to strongly uphold tenets of collectivism where minority voices or activities are not made to attract any unwanted attention that may disrupt the status quo or impact those who hold vested interest. In addition, some food practices occur seasonally such as practices like bamboo digging and Enkomai where practitioners and participants engage once a year or a few times a year. In our collection of food practices that exist outside of consumers purchasing food from the conventional food system/traditional grocery store model, we found that existing literature did not adequately describe the food practices we documented. Instead we argue that these minority activities and the complexity in their relationship to local, alternative, wild, and informal should be acknowledged as they collectively serve the purpose of creating a food safety net. We therefore introduce Minnanoshoku (Everyone's Food) to recognize the range and variation of depth for which these food practices exist alongside the conventional food system (see figure 5).

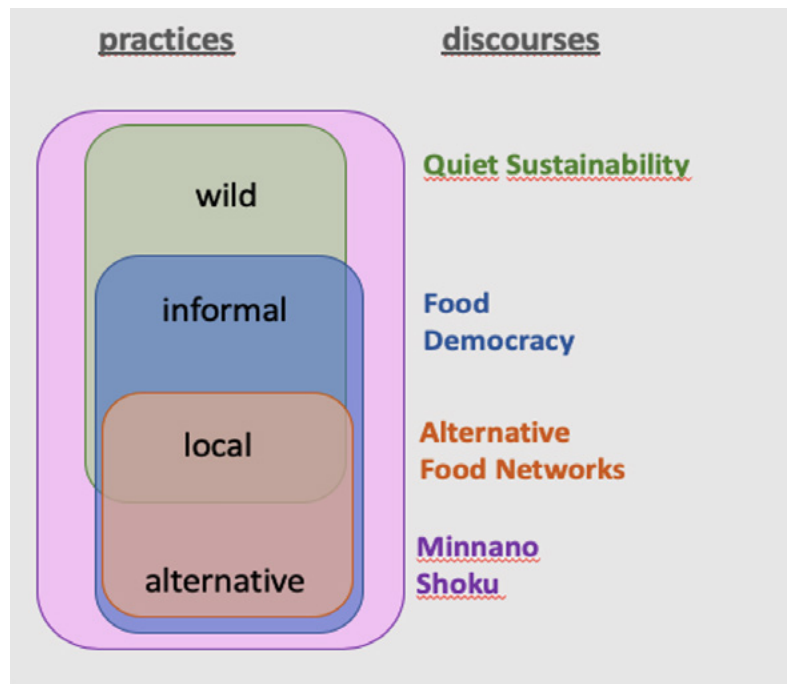


Figure 5. Minnanoshoku relation to other food practice theoretical concepts

While some may directly challenge aspects of the conventional system or actively participate in sustainability related measures, such food practices make up the messiness that is associated with Minnanoshoku.

4. Conclusion

This paper investigated the current foodscape of the Kyoto region of Japan in order to assess how diverse array of food practices exist outside of the mainstream grocery model. Based on our findings, we argue that these lesser known food practices go beyond the binary notion of the commodified formal food system where consumers are on the one side and producers on the other. Based on the existing scholarship concerning food systems analysis outside of the agro-industrialized food system, we find that the current literature fails to explain and incorporate the many other hidden food practices that exist within the same landscape. Instead, we introduce Japan’s diverse array of alternative, informal, local, and wild food practices and schemes under the term Minnanoshoku (Everyone’s Food). By comparing the existing definitions regarding alternative, local, informal, and wild, we provide a more inclusive framework to reflect the different activities that exist in various forms within a specified region. By making lesser known food practices more visible, a more holistic understanding of Japan’s local food system can better create further opportunities for engagement in building resilience and sustainability within a food system. We show that these food practices can exist without political or sustainability-oriented motives and operate in decentralized manners due to the ways in which such food practices foster community building and connection.

Acknowledgement

This research was supported by the FEAST Project (14200116).

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Exploring the Coexistence of Diversification, Mainstreaming and Commodification of Meat Production and Consumption in Bhutan

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Abstract

With its geopolitical placement between the two giants of India and China, the Kingdom of Bhutan has maintained its strong presence guided by Buddhist philosophy, shaping progressive and multi-faceted development policies and institutions that champion notions of sufficiency and well-being, most notably exemplified by the concept of Gross National Happiness (GNH), coined as a critique of GDP to consciously synthesize lessons and avoid mistakes committed elsewhere in the world. As a largely agrarian economy, with more than half of its population engaged in some form of agriculture, such efforts have been reflected in their natural resource sector, namely in the agricultural and livestock management initiatives and practices that tried to reflect their countries and leader's development paradigms. While extensive research has been done on the concept of GNH, limited studies have been conducted on how such state-level interventions intersect and are negotiated among competing and emerging ideas and practices around food production, and how they emerge at the household or community levels.

Keywords

Gross National Happiness, Buddhist philosophy, sustainable development, meat consumption

Introduction

With its geopolitical placement between the two giants of India and China, the Kingdom of Bhutan has maintained its strong presence guided by Buddhist philosophy, shaping progressive and multi-faceted development policies and institutions that champion notions of sufficiency and well-being, most notably exemplified by the concept of Gross National Happiness (GNH), coined as a critique of GDP to consciously synthesize lessons and avoid mistakes committed elsewhere in the world. GNH, With posing an important case study for degrowth or post-growth research (Gerber, 2020). As a largely agrarian economy, with more than half of its population (745,153 in 2014) engaged in some form of agriculture (NSB, 2014), such efforts have been reflected in their natural resource sector, starting with forest, agricultural and livestock management institutions and initiatives that tries to reflect their development paradigm. While extensive research has been done on the concept

of GNH, limited studies have been conducted on how such interventions intersect and are negotiated among competing and emerging ideas and practices. This paper tries to see how state-level interventions in Bhutan intersected and negotiate with competing and emerging ideas and practices specifically around the transitions in the production and consumption of meat at the household or community levels.

The emergence of Gross National Happiness

The exposition of GNH as a national goal of development began to emerge only towards the end of the 20th century. It is said to have been initiated by the fourth king, after assuming his throne in 1972, during a press conference, when responding to a journalist who asked about Bhutan's GDP in 1979. The very first Prime Minister of Bhutan, Jigme Y. Thinley (office held between 2008 to 2013), and the establishment of the Center for Bhutan Studies as a government thinktank facilitated the structuring, promotion and the implementation of the concept. While the notion of GDP was foreign to the majority of the population, the notion of seeking happiness as the ultimate goal, however, was nothing revolutionary in a predominantly Buddhist nation. What was unique, however, was its effort to diffuse the it fully into a national policy. In 1998, former Prime Minister, Thinley, was the one who launched the framework of GNH based on four pillars, which operationally structure the implementation of GNH.

The four pillars are sustainable socio-economic development, which assumes that economic growth is important but not an end in itself; conservation and sustainable utilization and management of the environment, which recognizes that humans are intimately interconnected with the natural environment and all sentient beings; the preservation and promotion of culture, which maintains that culture is dynamic and particularly important to sustain identity and promote unity; and lastly, the promotion of good governance, which is what is necessary to peruse the other three pillars. While such initiatives have received much praise, it has also been widely criticized both internationally and domestically, within Bhutan. Phuntsho (2013) reviewed existing critiques describing how many argue how the notion of happiness is essentially a non-quantifiable and immeasurable condition, while domestically, GNH is often criticized as being “a catchy branding for the intellectual elites,” that is deviating toward being merely an “ideological distraction from the real issues and problems,” diverting the government away from improving the basic conditions necessary for happiness.

Bhutan and modernization

Bhutan's emergence out of its self-imposed state of isolation, with the completion of the first motorable road connecting the capital city of Thimphu directly from the boarder to India, and the implementation of its first Five Year Development Plan (FYP) in 1961 is often described as the opening up of Bhutan and the beginning of its modern economic development. Albeit very cautiously, Bhutan is considered one of the last countries in the world transitioning to capitalism (Gerber, 2020). Younger generations seeking employment has contributed to the rising rates of urban migration, and consequent depopulation of rural villages. Although a small pocket of people have emerged as

a capitalist class, rising rates of unemployment has been a growing concern, with a majority still dependent on relatives and parents sustaining a family farm. These dramatic alternations of social dynamics between the emerging state and its people, as well as the relationship between people have necessarily led to the drafting and establishment of numerous legislations and rules to regulate these changes taking place. Such interventions have also come in the form of religious teachings. Bhutan prides itself for being a Buddhist country, and the secular and state have always co-existed side by side. Buddhist principles of interconnectedness, balance, harmony, compassion, sustainability, and the sanctity of all life, were values that subsisted as a way of life in one form or another. While it is understood that religious values and beliefs are characteristically taught, interpreted, and adapted within local socio-cultural contexts, they can play a very large role in influencing the relationship between state and society, particularly in how ‘development’ is perceived and negotiated externally within society and internalized personally (Bradley et al., 2007).

With modernization came new practices of information sharing. Through the development of its extensive road and telecommunication networks came expanded access to both physical and virtual sources of information and new practices of meaning making. These played a significant role in enabling the expanded dissemination and influence of religious dogmas, amongst a wider number of people, giving religious leaders a reinvigorated prominence. In a urbanizing yet predominantly agrarian society, where a vast gap exists between the literacy rate of young adults and the elder population (above 65), which according to UNESCO (2016) is 92.9 % versus 9.4% in 2017, these practices have taking diverse forms, such as religious chat groups or facebook pages, according to one’s social network, but have nonetheless become noticeable factors influencing the public’s relationships to religious teachings. In a Buddhist context, such teachings directly translates to heightened awareness about systems of morality, or code of ethics. Most fundamental being the five precepts which include a commitment to abstain from killing living beings, stealing, sexual misconduct, lying and abusing intoxicants. Such heightened exposure has, intern, shifted how and what animals people raise, and how and what people eat, particularly meat.

One legislation that was implemented reflecting such transitions was the Livestock Act, in 2001, which designated two months in the year, as well as three days every month where people are not allowed to sell or purchase meat in shops. In addition to legislation that legally coordinated activities, there were religious leaders who found themselves able to wield more influence through being able to have better access to welcoming recipients of their teachings either directly or through television programs throughout the country. One cause that has been particularly influential is their efforts to popularize vegetarianism in the late 1990s, when a Buddhist association conducting prayers for world peace decided to practice vegetarianism (Choden, 2008). Around the same time, Jay Khenpo, the most prominent religious leader in Bhutan, announced that monks should not be served meat during rituals, such as funeral ceremonies.

There are very few texts describing the everyday practices of ordinary Bhutanese people in the past, but through a few existing texts, including *Chilli and Cheese* by Choden (2008), we can perceive how the current patterns relate to the past. Choden describes how there were “basically no taboos

around food, about what should and should not be eaten.” Meat would have been considered a festive food, which was limited to new years and annual rituals. Essentially, meat was “not only a mark of status, but generally loved by all” (Choden, 2008).

In comparison, a mixed methods study, which included semi-structured interviews, participatory observation, and a structured questionnaire survey conducted in 2018 in six different districts in Bhutan (n=450), revealed contrasting realities in transition. When asked about the changing patterns of meat consumption, only a third (31.2%) perceived a general increase in meat consumption. Reasons for change included historical shifts in commodity trading, of having depended on meat as a commodity to trade for salt with Tibet in the past, and raising one’s own livestock for food security, but choosing to be vegetarian citing religious reasons, such as “now, we know that it was sinful,” or they have been “prohibited by a Lama (Buddhist teacher)”. Survey results corroborate such claims, as the majority of the respondents (89.5%) agreed (of which 62.8% strongly agreed) that we should consume less meat for religious reasons. Furthermore, survey results showed that few (19.5%) said they would like to eat more meat if they could, and only 6.9 % said they preferred meat that they raised themselves, with more than half (56.3%) agreeing that they preferred to buy their meat from the market. When asked to elaborate, respondents mentioned an increase in consumption of meat due to improved access, but also a decrease due to improved access to religious knowledge through television, as well as the promotion of vegetarianism in schools, leading to meat consumption decreasing among younger generations. However, government statistics and studies by Dawa (2014) show that there is a general increase in total meat imports and consumption, however varied in net production depending on the type of meat. For example, there was a 38% decrease in beef production between 2000 and 2016, while there was almost fourfold increase in domestic pork production and about a three-fold increase in chicken production. As a reflection of people’s relation to meat in urban areas, consumers adapt to the regular sales restrictions during the designated holy months, by rushing to the meat market to stock up. In rural areas, farmers have increasingly distanced themselves from having to commit acts of killing as it is “against GNH,” according to Schroeder (2018). As it is considered increasingly sinful under the larger public eye, farmers are having to juggle ethical tradeoffs and competing values by often reporting having never slaughtered livestock, but only eating what died of natural causes. With fewer rural residents interested in raising animals for self-consumption, there is an increase in the already high import reliance on India. Interestingly, minimizing the slaughtering of livestock in Bhutan and expanding meat imports from India was legitimized as minimizing sin. This, however, is nothing more than the externalization or the outsourcing of sin, enabling the deepening of market dependence and lowering food security.

With this I would like to conclude with some comments and further questions to consider. Bhutan, while celebrated as a nation promoting alternatives to capitalistic developmental paradigms, is also juggling with ethical dilemmas that have taken root as a result of expanded presence of the state and religious powers due to improved infrastructural development and new evolving spheres of practice. The expanding market and the resultant commodification of food are enabling these competing values to co-exist. The increased commodification of and import dependence of meat is serving the

purpose of outsourcing sin, to the benefit of the domestic meat consumers, however, limiting food security and challenging food sovereignty. Further exploration in to these dilemmas are needed to understand how inherited ideas and practices around food production and consumption change when inflected by the new shared objective of a political projects, such as the promotion and implementation of GNH? How is the discourse around GNH and other approaches to sustainable development mobilized as a part of perhaps competing political projects and strategies involving religious and other interest groups?

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Saquerinha (Saké Cocktail) and Temaki Sushi: Propagation of Japanese Food and Saké in Brazil

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Abstract

Brazil has the largest population of Japanese descendants outside of Japan. There, the culinary culture embeds that of Japanese. In Brazil, Japanese food including saké has been adopted and propagated. This study describes the propagation of Japanese food and saké according to the perceptual transitions. As they shifted from inedible to edible, exotic to familiar, the Japanese culinary culture went out from the Japanese immigrants' community to be embedded in the Brazillian culinary culture. Saké cocktails and localized temaki sushi are good examples in terms of its serving style and ingredients. Later, another shift revealed the realm of authenticity. It has a qualitative difference with the first two transitions.

Keywords

Japanese saké, globalization of culinary culture, Brazil, sushi, temaki, saké cocktai

Introduction

Introduction: rice and sake in the Japanese culinary culture

Rice is an essential ingredient of Japanese culinary culture. Saké brewed with it also plays an important role in the food culture of Japan. Saké was born as a drink to be offered to deities. It has been served and took in rituals to express gratitude for the harvest. Even after saké was democratized in the latter half of the eighteenth century when izakaya emerged (Yoshida 2019) and people started consuming it outside the context of rituals, saké has played an essential role in Japan's food culture.

Handa (1970) describes that early immigrants endured their hard labor because they could obtain rice, which was already introduced by Portuguese. Japanese immigrants had a strong attachment to the cultivation of rice, which is "the original way of living as farmers." About a century later, Japanese culinary culture represented by sushi and saké became totally embedded in Brazil.

Assuming that the Japanese culinary scenes in Brazil follow that of in Japan, that is, the importance of rice and saké, this study describes how the Japanese culinary culture and saké have been accepted in Brazil regarding the transitions of acceptance of the Japanese ethnic group, contextualization, and decontextualization of ethnic groups and their foods, and connection of saké with Japanese foods.

Japanese migration to Brazil

Brazil has the largest Japanese population outside of Japan. The ministry of Foreign Affairs of Japan (2020) estimates that Brazil has around two million descendants. The culinary culture of Brazil consists of a variety of ethnic groups such as Italians, Arabs, Portugueses, Natives, and Japanese. At present, Japanese food is available in every supermarket of major cities, and people without connections to the Japanese ethnic group enjoy Japanese dishes in restaurants and their homes. As of June 2012, about 700 Japanese restaurants in Brazil are listed (JETRO 2012). Japan’s national alcoholic beverage saké plays an essential role in Japanese food culture. It is also remarkable that Brazil is one of the earliest places where saké brewing began (and still in operation) outside of Japan.

Long’s model of perceptions in culinary experiences

Lucy M. Long proposes a model of three realms of culinary experiences regarding cultural otherness. They are; exotic, edible, and palatable. The exotic-familiar realm is a continuum of “the similarity of things to our known socially constructed universe”, the edible-inedible realm indicates what we can or cannot eat, and the palatable-unpalatable realm is about “what is considered pleasing within a culinary system” (Long 2004).

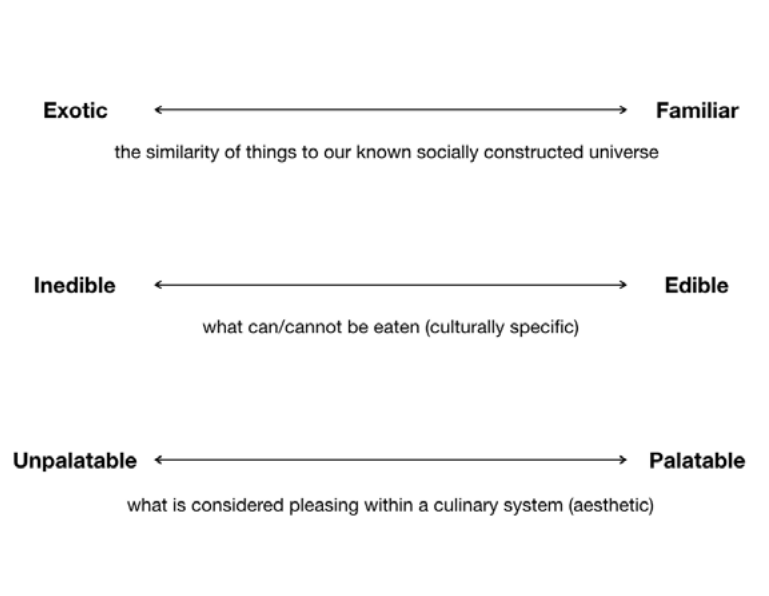


Figure 1: Long’s realms of culinary experiences

Food and culinary culture shift their position go and fro within these realms. Long mentions the importance of transitions in the realms: “Food items can shift in their location within these realms because individuals’ and society’s perceptions of edibility and exoticness can shift (Long 2004).” For *edible* (cognitive) and *palatable* (aesthetic) realms are similar with respect to possibly to eat, this study discusses with the *edible* realm and without the *palatable* realm. According to the two realms, *exotic* and *edible*, this study starts discussing how the perception of Japanese food and saké in Brazil has changed and been propagated.

Transitions of perceptions of Japanese culinary culture in Brazil

Applying Long’s model, the perceptions of Japanese culinary culture shifted three times since the first immigration to the present. This can divide the one century of its history into four stages, which are labeled, in this study, as *introverted*, *independent*, *embedded*, and *global*.

Stages	Periods	Realms	Phenomena	Precursors/Causes
Introverted	1908-1960s	Exotic Inedible	Japanese food within the Japanese community	Culinary interexchanges among ethnic groups Colônia to city
Independent	1970s-1980s	Exotic Edible	Japanese cuisine as healthy food	Acceptance of raw fish
Embedded	1990s-2000s	Familiar Edible	Tropical sushi Saké cocktail	Shortage of Nikkei chefs
Global	2010s-	Exotic Edible	Rise of izakayas	Japanese culinary culture through dekasseguis Global gastronomy

Figure 2: Transitions of the perception of Japanese culinary culture (timeline)

The first shift from introverted to independent was the process of taking the Japanese culinary culture out of the Japanese immigrants’ community. It was a transition in the *edible-inedible* realm from *inedible* to *edible*. The second shift from independent to embedded was in the *exotic-familiar* realm. Then Japanese food represented by sushi became a part of Brazilian culinary culture. The third shift from embedded to global was in the *exotic-familiar* realm. Japanese food transitioned back into exotic again, however, there are qualitative differences with the independent stage. This is discussed later by expanding the realms of perceptions.

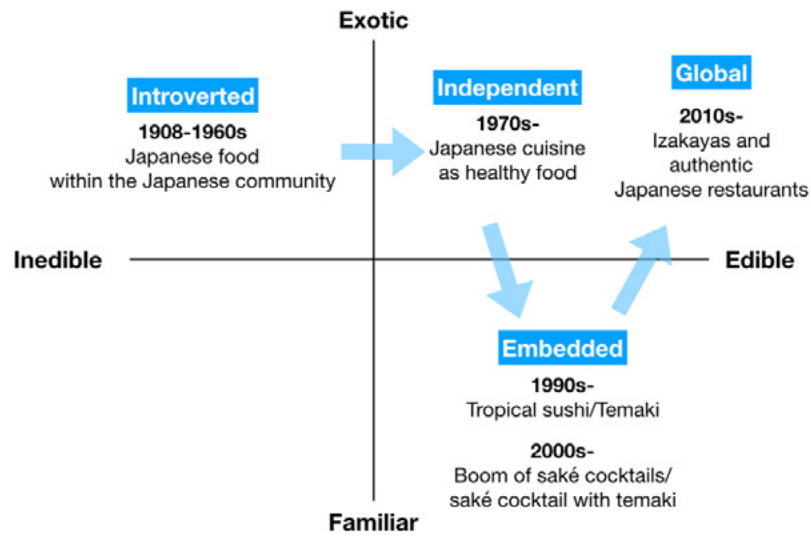


Figure 3: Transitions of the perception of Japanese culinary culture (realms diagram)

Introverted: Japanese culinary culture in inedible-exotic realm

Since the first immigration of Japanese to Brazil in 1908, the perception of saké and Japanese food has continuously transitioned, reflecting the social position of them and their descendants. The core of the Japanese culinary culture is fermented food such as *miso*, soy sauce, and saké. Some immigrants brought soybean and *kōji* mold with them and soon began to brew *miso* (Mori 2010). Eitarō Kanda started brewing soy sauce in around 1913 (Handa 1970). Although some importers dealt in saké, the distribution was minimal. The Nikkeis celebrated New Year’s Day as in Japan; however, *tosu*, or new year’s beverage was port wine or diluted pinga, a distilled beverage made with sugar cane juice (Mori 2010).

In 1934, Indústria Agrícola Campineira (Campinas Agricultural Industry) in Fazenda Monte d’Este (Tozan Farm) started brewing saké (Sakano 1980). The motivation for the saké brewing was to maintain the healthy lives of people in the Japanese community who suffered from harmful effects of pinga with higher alcohol content (Akagi 2014). *Ryōtei*, or luxurious traditional Japanese-style restaurants in São Paulo, served its saké. At the same time, saké supported the culture of *ryotei* (Mori 2010).

In this way, Japanese food and saké were consumed in the Japanese immigrants’ community which was relatively closed in comparison with the other ethnic groups. The perception of the Japanese culinary culture along with the Japanese community is described as exotic in this period.

There are groundworks and precursors to the next shift. Koichi Mori describes the exchange of culinary culture between Japanese, Okinawan, and Italian immigrants in the coffee farms of São Paulo outskirts in the 1920s. Okinawan immigrants taught the Japanese how to process and cook pork. Italian immigrants that were also the largest population outside Italy had a significant influence on food culture. The Nikkeis adopted tomato to *kinpira*, a traditional Japanese home cooking, and an

Italian cuisine macarronada (spaghetti with tomato-based sauce) was a standard Sunday afternoon home dish (Mori 2010).

Independent: Japanese culinary culture turns into edible-exotic realm

Until the 1970s, Japanese ingredients, food, and dishes were consumed within the Nikkei community. In the 1970s, non-Nikkeis, mainly middle-class and health-conscious Brazilian people began to approach Japanese cuisine (Mori 2000). Mori describes the efforts of a sushi restaurant, such as the removal of fishy flavors, which contributed to the acceptance of raw fish (Mori 2010). This signifies the shift of perception of Brazilians to the Japanese food: *inedible* to *edible*. However, in the realm of exotic-familiar, still in exotic position, as Mori describes that the sushi restaurants were well-liked as a place, one can express the familiarity to the ethnic cultures (Mori 2010).

There are also groundworks for the transition. A descendant of a Japanese immigrant, Lesly Watanabe, narrated her culinary exchange experiences with non-Nikkeis in the 1980s. In the interview by the author in August 2020, she described the adoption of her non-Nikkei friends when she entertained them with *maki sushi* or sushi roll. They showed their perceptions that it was strange to them, but soon accepted and enjoyed it. One of them appreciated it, describing it as *pneuzinho* (tiny little tire), for the sliced maki sushi with black nori, or dried laver, looked like a tire. She also told that her grandfather entertained his non-Nikkei friends, mostly Italian descendants, with saké. At his home parties, people enjoyed pinga and beer besides saké.

Embedded: Saquerinha and Temaki, Japanese culinary culture goes familiar

In the 1990s, chefs and business owners without any link to the Japanese culture entered the Japanese food industry. It happened coincidentally with the absence of Nikkei chefs who went *dekassegui* as migrant workers to Japan. They invented “tropical sushi” with local ingredients, such as mango, strawberry, pineapple, melon, and kiwi (Mori 2010). These variants of sushi were consumed as appetizers in *churrascarias*, or steak houses, and fast-food restaurants in shopping centers.

Saké cocktail called *saquerinha* (and its synonyms such as *saquerita* and *saquepirinha*) is a variant of *caipirinha*, a national cocktail of Brazil, which was born in 1918 in the state of São Paulo (Almeida 2018). It is a mixture of pinga; a spirit distilled from sugar cane juice, sugar, and lemon. Since pinga has a higher alcohol content (50-60% and higher), health-conscious consumers began to adopt a variation with saké (15% alcohol contents), to make the cocktail softer and healthier.

On the 19th of February, 1995, *Folha de São Paulo*, the largest newspaper of São Paulo, introduced saké and saké cocktails in a review of a bar. This article is the first case found in newspapers that Non-Japanese restaurants or bars served saké. This can be regarded that saké had been decontextualized out of the Japanese context in the form of a cocktail.

Preceding it, on the 6th of August, 1960, *Journal Paulista*, a newspaper for the Japanese community, reported that a saké brewery Azuma Kirin handed out saké cocktail recipes to their customers in an exhibition in a department store. This firm also advertised in *Folha de São Paulo* recommending the saké cocktail multiple times in 1975.



Figure 4: saquerita (saquerinha) in Temakeria & Cia. (São Paulo, November 2018)

With these prior occurrences, finally, in the 2000s, the boom of saquerinha arrived. This resulted in higher demand for saké. Japanese newspaper Asahi Shimbun (27th of August, 2006) reported that Azuma Kirin doubled its capacity in 2005. According to Hideyuki Ozaki, the president of Azuma Kirin, in an interview held in November 2018 by the author, this firm contributed to the saquerinha boom by distributing recipes and special glasses to restaurants and bars. Currently, saké cocktails are not widely accepted in Japan. Nobuhiko Mukai points out that the reasons are that cocktails are regarded to be made with distilled drinks, and saké was not used historically (Mukai 2005).

The raise of saké cocktail is an innovation that happened because saké in Brazil is free from Japan's context. On the other hand, Azuma Kirin brews saké with Japanese traditional method with yeast and kōji mold imported from Japan, and Japanese Akita Komachi rice cultivated in Uruguay. The company gives its personnel training in Nihon Jozō Kyōkai (Brewing Society of Japan) in Hiroshima, just as brewers in Japan do.

Temaki, a Brazilian popular fast food, is a derivative of temaki sushi or roll sushi. The dish served in restaurants first appeared in Folha Guia, a guidebook section of the Friday edition of Folha de São Paulo, on the 18th of April, 1997. Temaki in Brazil became ready-made in restaurants with local ingredients. Customers, most of them are younger generation, drop in at the temaki restaurant before going out. Temaki restaurants are already a Brazilian restaurant and not a place to experience exotic foods.



Figure 5: Temaki in Temakeria & Cia. (São Paulo, November 2018)

The photo of saquerita (fig.4) and temaki (fig. 5), shows how sushi is localized. Temakis here are larger than the Japanese ones. The large size on the menu weighs 150g and even smaller size, 80g (one in figure 1 is small size). Besides salmon and tuna, the temakis in these restaurants have a variety of localized ingredients such as cream cheese, almond, onion, avocado, and other fruits. The drink (fig. 4) is saquerita of standard flavor, lemon and sugar. Besides, strawberry, pineapple, and kiwi are popular flavors. The food here is prepared in accordance with the Japanese style, however, the ingredients are entirely localized. The fact that temaki and saquerinha are widely accepted shows that they are edible and palatable, and the occasion people enjoy temaki indicates that this already has a familiar perception.

Global: Going back to exotic

In the 2010s, Brazil received the izakaya boom and is being totally established in the 2020s. Izakaya Issa serves the standard izakaya menu, such as yakitori (a Japanese type skewered chicken) and tamagoyaki (Japanese omelet), along with home dishes cooked by the owner Margarida Haraguchi. According to Haraguchi, in the interview in November 2018 and March 2020 by the author, nineteen percent of customers are non-Nikkei since its opening in 2010. They are enthusiasts of Japanese culinary culture, and some of them visit Japan and enjoy authentic restaurants such as world-famous sushi restaurant Sukiyabashi Jiro.

The popularization of izayakas indicates that customers are already familiar with Japanese dishes. They have to select Japanese dishes from the menu, which means they have to know what they are. This shows a contrast to the all-in-one-dish Japanese food combinado in the 1980s. Many izakaya owners and chefs introduce Japanese menus of which they experienced in Japan in the 1990s.

Fernando Yoshinobu Kuroda of Bueno, an izakaya in São Paulo, was active as a sumo wrestler in Japan and introduced to Brazilian customers chanko, Japanese nabe stew commonly eaten by sumo wrestlers as part of a weight-gain diet. (Takahashi 2014).

Unlike *temaqueiras* (temaki houses) and fast food sushi restaurants in shopping centers, such *izakayas* are run by people with the background of the Japanese community and its culinary culture. The dishes served in such *izakayas* are based on the history of Japanese immigrants' culinary culture, and at the same time, is an updated version with the *dekassegui* movement.

In the Michelin Guide of 2019, 6 out of 12 starred restaurants in São Paulo were Japanese. According to the chef (at that time), Satoshi Kaneko of Michelin starred Japanese restaurant Kinoshita (November 2018); they serve genuine Japanese ingredients. They are; oysters from Hiroshima cultured in the southern part of Brazil, wagyu Japanese beef, and Koshihikari Japanese sticky rice variety cultivated in the Southern part of Brazil. There was no difference in the cooking style and ingredients from the restaurants in Japan. There, the majority of the customers are non-Nikkeis. Kinoshita serves a variety of imported saké from standard to premium in Riedel wine glasses, which are usually used in high-end occidental restaurants to serve wines. The customers are of wealthy class and order saké bottles, which costs five to ten times compared to Japanese retail prices. "They even buy extra bottles to take home," Kaneko observes.

The import of saké from Japan is increasing since 2011. In 2019 it was reported the highest on a trade value basis (JETRO 2020).

Extended realm: authenticity (localized-authentic)

The rise of *izakayas* and high-end Japanese restaurants in Brazil can be recognized as a re-shift from edible-familiar to edible-exotic. However, there exists a qualitative difference between independent and global, which both are in the same position as the two realms, i.e. edible-exotic. The customers seek Japanese culinary culture in the context of global gastronomy, and there is less connection to the Japanese community in Brazil. *Izakayas*, along with ramen houses and sushi restaurants, are now in major cities of the world. Sukiya-bashi Jiro became world-famous by the American documentary film "Jiro Dreams of Sushi." It has a difference in quality because Brazilians visited Japanese restaurants inside the Japanese community in the 1970s for exotic culinary experiences.

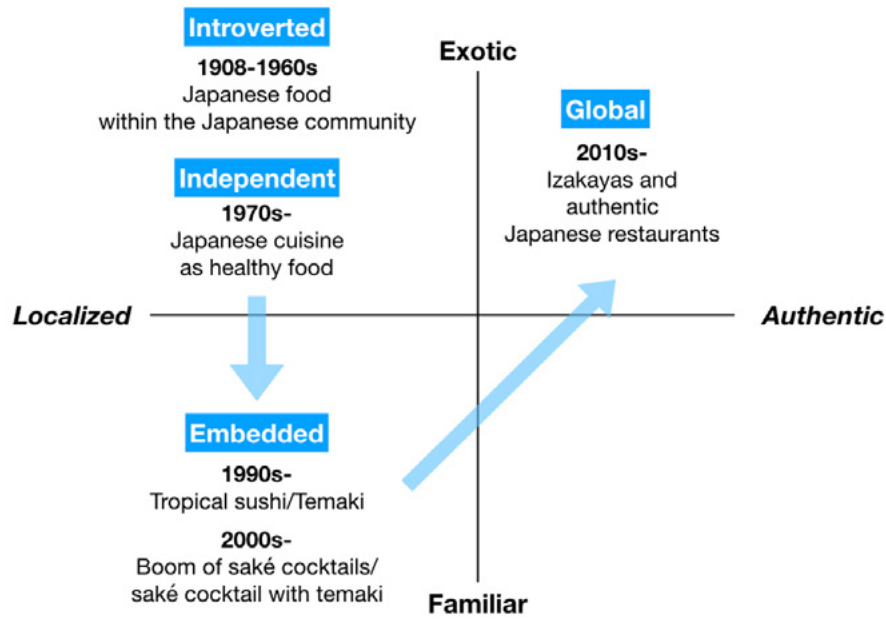


Figure 6: Transitions of the perception of Japanese culinary culture with an extended realm

The perception went back to exotic but at the same time, the customers are seeking more authenticity than localization. Thus, it is appropriate for applying an extended realm of authenticity. Izakayas of the 2010s had chefs of nikkeis who received training and adopted the trends in Japan. High-end Japanese restaurants serve high-quality Japanese food with the same ingredients used in Japan. Japanese food culture in Brazil was, from the beginning, a localized one. The immigrants had to adopt the local ingredients to realize their Japanese foodway. Early immigrants fermented miso with local feijão beans instead of soybeans (Mori 2010). In the embedded stage, the chefs used not only substituted ingredients but introduced completely new ingredients to the Japanese context. The perception shifted from local to authentic in the stage of global. The latest Japanese culinary culture was re-introduced by the dekassegui experiences that supported the quality of izakayas, and the global supply chain sustains the high-end Japanese restaurants. The shift back to exotic occurred along with the transition from local to authentic.

Stages	Periods	Realms	Phenomena	Precursors/Causes
Introverted	1908-1960s	Exotic Inedible Localized	Japanese food within the Japanese community	Culinary interexchanges among ethnic groups Colônia to city
Independent	1970s-1980s	Exotic Edible Localized	Japanese cuisine as healthy food	Acceptance of raw fish
Embedded	1990s-2000s	Familiar Edible Localized	Tropical sushi Saké cocktail	Shortage of Nikkei chefs
Global	2010s-	Exotic Edible Authentic	Rise of izakayas	Japanese culinary culture through dekasseguis Global gastronomy

Figure 7: Transitions of the perception of Japanese culinary culture with an extended realm (timeline)

What is remarkable is that the embedded and global stages exist concurrently but separately. Although it requires further sociological surveys to argue, these two foodways seem to represent a social divide. The price range is significantly different and some informants of this survey, especially professionals to the culinary field, tend to regard the Japanese food of the embedded stage in a negative perception as non-authentic. The first two shifts can be evaluated as democratization, inclusion, and a symbol of multicultural symbiosis, and the third, divide.

Conclusion

Saquerinha, a saké version of Brazil’s national cocktail, and temaki, localized sushi with its local ingredients and the consuming style are good examples of propagation and adoption of Japanese culinary culture in Brazil. Cultural exchange of the Nikkei community and other ethnic groups of Brazil helped the adoption of the Japanese cuisine and culinary culture. In Brazil, Japanese culture is a foreign culture but, at the same time, included within the culture of Brazil. In such a situation, Brazilian people adopted saké as cocktails, which is apart from the Japanese context of serving saké. Temaki was popularized when sushi restaurants were run by non-Nikkeis and enjoyed rather as weekend leisure experiences than coming across the Japanese food culture. The Japanese culinary culture was adopted and embedded in Brazilian culture while getting out of the Japanese context. However, demands for more authentic Japanese cuisine are emerging in high-end restaurants and saké imports. This shift of perception back to exotic is qualitatively different. The edible-famil-

iar perception remains, and the new shift back to edible-exotic cannot exist without the edible-familiar perception. The newest shift to global is qualitatively different from other shifts. It requires an extended realm of authenticity and it seems to represent the social divide whereas the first two multicultural symbioses.

Further research is required to analyze the current shift to Japanese cuisine seen in izakayas and authentic restaurants. A comparative study of Brazil and Taiwan is a possible study. They both have around one hundred years of history of Japanese culinary culture. In Taiwan, where the first saké brewery was established in 1914, and currently, national saké is available in every convenience store, there are two different consuming styles of saké: one is traditional enjoying domestic saké, and the other is appreciating imported sake, usually premium, in izakayas.

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Research Ethics for Food Ethics

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Abstract

Food ethics researches are often transdisciplinary and have the dual nature of research/practice. This type of research requires additional research-ethical considerations. In this talk, I will examine the three issues: stakeholders' purpose and value, STS methods, and commitment. Although these are ethical issues that researchers are often faced with, they have not been fully considered from research ethics.

Although these are not an exhaustive list of the issues worth considering, several contributions to food ethics will be expected through the examination of these three issues. First, food ethics researchers will have a better understanding of what food ethics research should be. Second, stakeholders will understand food ethics research. Thirdly, food ethics research can contribute to providing essential insights into research ethics.

The need for the research-ethics perspective on food ethics will increase as food ethics practices become more active in the Asia-Pacific region. APSAFE2020 will provide the opportunity for discussion.

Keywords

research ethics, transdisciplinary research/practice, STS methods, stakeholders/participants

1 Introduction

Food ethics research includes transdisciplinary practice involving the participation of various stakeholders other than researchers (Sato 2016 p.177). The dual nature of research and practice requires the research ethics for this type of research with some additional ethical considerations that are not needed in other types of research. The purpose of this presentation is to analyze the ethical considerations specific to such research (Local Science Network for Environment and Sustainability 2011). By conducting such an analysis, several results are expected as follows. First, our researchers will gain a better understanding of what food ethics research should be. Second, it will enable stakeholders other than researchers to understand better and better utilize Food ethics research. Thirdly, food ethics research can contribute to providing essential insights into research ethics. In this presentation, I will examine the three issues of stakeholders' purpose and value, STS meth-

ods, and commitment. Although these are ethical issues that researchers who participate in transdisciplinary research are often faced, they have not been fully considered from an ethical perspective. Therefore, consideration of these issues may contribute to the development of research ethics for the future research/practice of food ethics.

2 Purpose and value of stakeholders

First, Researchers should understand that stakeholders involved in the practice, whether existing or initiated by the researcher, are not the subjects or informants for the study. For stakeholders are involved in their practice for their purposes and values. In co-design practice, researchers are also just one stakeholder. As a result, scientists' objectives, scientific research, are at best equal to or less important than the objectives of other stakeholders and are not in a superior position. Improperly giving research objectives an unfair priority is one of the ethical injustices a researcher may commit.

Moreover, the purpose and value of stakeholders are not the same. Stakeholders have diverse purposes and values that often conflict with each other. Here researchers have to face one ethical dilemma. On the one hand, researchers must respect the purpose and value of each stakeholder. In transdisciplinary and co-design practices, researchers are not in a position to determine which purpose and value are most important. In addition, we must respect the diversity of values and opinions as research norms.

On the other hand, researchers follow the purpose and value specific to their discipline when conducting research. In the case of Food ethics, food sustainability and food sovereignty are examples of such goals and values. Can Researchers treat stakeholders who share their goals and values and stakeholders who do not share them? Researchers should avoid trying to revise the values of stakeholders or moving away from such stakeholders.

However, whether or not researchers should respect stakeholders' purpose and value equally can be a significant research ethical question. In connection with this question, practices such as food ethics may pose the following problems. Researchers may try to reach out to stakeholders in an attitude that "the purpose we are gathering here is not to find the right answer, but to exchange ideas with each other." As a result of such attitudes, they could end up with nothing for their stakeholders. Stakeholders who have such experience may lose interest or distrust of food ethics research. Researchers should avoid such distrust.

There is probably no definitive solution to these problems. Therefore, what researchers can do is accept an ethical norm of research that they must always be reflective of their attitudes and relationships with their stakeholders. Also, it may be useful for researchers to have the opportunity to discuss the experiences of this type of research with each other.

3 STS methods

Next, let us consider the problem when researchers set up a forum where various stakeholders can exchange ideas and experiences and work together to tackle some tasks. In these settings, research-

ers often specify how participants do them. Researchers conducting transdisciplinary studies have prepared such STS methods. For example, there are ways to use Post-It to draw out ideas and organize them, or various ideas to give participants a fair opportunity to speak.

The problem is that sessions using these techniques often do not result in satisfying participants. Repeating the session without reflecting on this point would lead participants to criticize researchers.

First, sessions sometimes do not have enough time. It takes some time for participants to get to know each other and start exchanging valuable ideas, but the timetables set by researchers are often too short. One possible reason for this is that researchers may have experienced and become accustomed to sessions using these techniques many times, but participants do not necessarily. Moreover, if the lack of time makes it impossible to summarize and evaluate the session outcomes, participants will be dissatisfied. Researchers should always be cautious if conducting the session becomes the purpose of the session. This purpose may seem valuable to researchers, but not to participants.

Next, there are cases where participants cannot understand why such methods and devices are necessary. If participants feel no need for the methods, some will refuse to participate in the session. Possible reasons for denial of participation are lack of explanation by researchers or inappropriateness. Alternatively, maybe it is simply because the method is boring. Therefore, the researcher must give a proper explanation to the participants and verify that the method is worth doing.

4 Commitment

The goals of stakeholders in food ethics practice often include sustainability. As a result, long-term commitment becomes an ethical obligation for researchers when they participate in such practices. If a researcher leaves a practice for a short time, for example, as soon as he or she gets resources for a paper, he commits ethical dishonesty that treats other stakeholders as mere tools for his or her interest.

However, it should be noted that such criticism would sometimes be an excessive ethical requirement. Researchers who do not have a tenured position may have to unintentionally leave the field of practice because they do not have a stable research fund or post. In such cases, researchers do not deserve ethical criticism.

There is another issue to consider. When a researcher participates in the field of practice in the stance that the actors are stakeholders only and the researcher is only in a position to support their practice, how long should the researcher continue to participate in the field? By successfully supporting other stakeholders, researchers may eventually remove the need for their existence in their practice. One answer to this situation would be that researchers can continue to participate for other purposes, even after achieving the goal of supporting other stakeholders. An example of such a purpose is the enjoyment of participating in such practices and interacting with various people. Getting fun from being involved in food ethics practice does not mean the exploitation of other stakeholders, and researchers do not have to worry about receiving ethical criticism.

5 Conclusion

In this presentation, three research ethics issues for food ethics are considered: the purpose and value of stakeholders, STS methods, and commitment. Although there are many reports on practice related to food ethics regarding practice and methods used in practice, analysis of such practice from an ethical research perspective is sufficient. However, the need for such ethical research will increase as food ethics practices become more active in the Asia-Pacific region. These three are not exhaustive of the issues worth considering. Further development of the analysis presented here is also necessary. APSAFE2020 will be the right opportunity for such development.

Acknowledgement

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Promoting Agrobiodiversity Maintenance via Social Media in Japan

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Abstract

This research examines the potential of social media, specifically the platforms Twitter and Instagram, to bring attention to issues related to agrobiodiversity in Japan. Agrobiodiversity, the variety of landraces or species relied upon for food and agriculture in a given place, is an essential component of sustainability and is addressed in the United Nations' Sustainable Development Goals (goals two and fifteen). While social media platforms may be associated with the more negative aspects of consumption trends, their popularity and reach make them tools with the potential to stimulate sustainable and ethical consumption. Twitter and Instagram, with feed formats for tweets and images, public posts, and features that allow users to “follow” topics and tag their own posts to make them appear in others' searches, serve as examples of platforms that can be used for outreach to new audiences. In Japan these platforms are currently utilized more by farmers, corporations, and consumers than by organizations promoting agrobiodiversity. While social media have their drawbacks, they are tools with great potential for promoting sustainability, especially via marketing, advocacy, and educational oriented content.

Keywords

Agrobiodiversity, social media, outreach, Japan, crops, heirloom vegetables.

1 Introduction: Agrobiodiversity and Social Media

Agrobiodiversity, the variety of landraces or species relied upon for food and agriculture in a given place, bolsters food security; contributes to the livelihood of small-scale farmers; helps to alleviate the impacts of climate change; and is beneficial to a community's nutrition and health (Kahane et al. 2013). As such, it is essential to many aspects of sustainability. The United Nations Sustainable Development Goals bring agrobiodiversity into explicit focus under goal number two, target five (and again in different terms under goal number fifteen):

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and di-

versified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed (FAO 2019: 2)

Why is sustaining agrobiodiversity deemed so urgent? The Food and Agricultural Organization has determined that over the past century we have experienced a significant loss of genetic diversity for food and agriculture. Human societies have historically cultivated over six thousand species of plants for food. Only 200 of these are deemed to make major contributions to global food production and in 2014 researchers estimated that a mere 9 species made up two-thirds of all of the crops that were cultivated across the world (FAO 2019: 114). Concomitantly, many crop varieties are no longer being grown or consumed.

It is difficult to capture the nuanced implications of patterns related to agrobiodiversity simply by compiling global averages that describe large-scale trends (FAO 2019, Montenegro de Wit 2015). National and local specifics reveal shared tendencies but also disparities that can prove valuable in grasping the complexity of general trends.

In their survey of the factors that impact agrobiodiversity, the authors behind the FAO's *The State of the World's Biodiversity of Food and Agriculture* found that negative influences included urbanization and outmigration and changes in dietary preferences (FAO 2019: 70). Two sets of variables they found had more of a mixed impact included economic, sociopolitical, and cultural changes; and markets, trade, and the private sector.

These factors—urbanization; dietary preferences; economic, sociopolitical, and cultural changes; and markets, trade, and the private sector—indicate that changes in a community's consumption patterns (consumption being a keyword in this conference's theme) affect the agrobiodiversity that community is able to sustain. Social media plays a role here.

Food and agricultural industry stakeholders sometimes bemoan the effects of social media platforms on contemporary consumption patterns. I will list a few examples. Use of the term "food porn," which portrays images of food created to appeal to people's visual aesthetics as base and morally inferior, has become commonplace (McBride 2010). Some stories about food and social media zone in on the food waste that occurs when users purchase food to take photos and don't consume it all (Fujikura, Yamato, and Fukuoka 2018, e.g.). When it comes to the social media platform Instagram specifically, terms like "Instagrammable" or インスタ映え (instabae in Japanese) have come about to indicate the pursuit of sharable photos that appear polished, perfect, and desirable in a homogenizing way. An article in *The Atlantic* magazine termed this the "Instagram aesthetic" (Lorenz 2019). What are the implications of such trends on ethical food consumption? How does it impact the maintenance of less photogenic, less trendy, and more marginalized foods, for instance?

A number of food studies scholars have countered arguments that food related content on social media platforms is merely superficial, homogenizing, and trivial. Pennell (2016) found that tweets (messages less than 280 characters broadcast publicly or privately) about food on the platform Twitter offer revelatory insights into local and national food systems, including the detection of false

labeling of fish varieties and the documentation of businesses' health and safety violations. Scholars in Finland concluded that social media campaigns focusing on the positive dimensions of reducing food waste were effective in promoting awareness about the issue and teaching solutions (Närvänen 2018). Adamoli (2012), meanwhile, has demonstrated how a coalition of actors in the United States used Facebook to engage in activism in favor of the labeling of Genetically Modified Organisms (GMOs), culminating in the 2011's Right to Know Rally, a nationally coordinated protest. More directly related to agrobiodiversity, Signore, Seria, and Santamaria (2020) have shown that Wikipedia and other social media outlets are useful tools for disseminating information about biodiversity and increasing the visibility of individuals and organizations active in conserving heirloom crops and traditional knowledge.

This research examines social media content from Japan related to agrobiodiversity on Twitter and Instagram. The focus is Instagram and Twitter because they offer greater potential than platforms like Facebook, Line, and Wikipedia to reach out to individuals as of yet unconnected or unfamiliar with the person or organization engaged in messaging. I performed keyword searches using Japanese terms related to agrobiodiversity, analyzed the most popular results in terms of the roles they performed (education / advocacy and marketing / entrepreneurship). After discussing my findings, in the conclusion I discuss the latent potential of these social media platforms as well as their downsides and obstacles to their effective use.

2 Social media, agrobiodiversity, and Japan

Tens of millions of people in Japan use social media platforms, with the most popular being Line, Twitter, Instagram, and Facebook, in that order. According to Wikipedia, meanwhile, the Japanese language Wikipedia series has over 1.2 million pages, almost 15,000 regular contributors, and is the second most visited language Wikipedia (Wikipedia: 日本語版の統計 2020).

On Instagram users can tag the images they post with “hashtags” (keywords preceded by a “#”). Users may also search for posts using hashtags and choose to “follow” posts tagged with words or phrases that interest them, which will then appear in their “feed.” Instagram has a number of hashtags in Japanese related to agrobiodiversity, including # 在来種 (zairaishu, heirloom varieties) with nearly 30,000 posts and # 伝統野菜 (dentō yasai, traditional vegetables) with almost 14,000 (as of August 21, 2020, noting that neither the number of users following the posts nor the number of users who have indicated that they “like” a post is disclosed). More local hashtags include # 京野菜 (kyōyasai, a term used to refer to Kyoto vegetables) with over 81,000 posts # 加賀野菜 (Kaga vegetables) with more than 13,000, and the somewhat vague # 島野菜 (shima yasai or “island vegetables,” used in Okinawa and the Goto islands, for instance) at nearly 19,000. Because posts can have an indefinite number of hashtags, users can tag images with keywords relevant to individuals already interested in issues related to agrobiodiversity (e.g. #seedsaving) and others that have a larger number of followers (e.g. #homecooking or #kyoto), thereby potentially allowing them to expand their audience. An image itself can garner attention, say if it features visually distinctive content as do photos of small purple minden eggplant from Yamagata Prefecture (posted with the hashtag # 伝

統野菜 by the account for Maemuki Farm, from the town of Yuza in Yamagata) or larger bulbous green aodaimaru eggplant, a variety associated with Saitama Prefecture (a post tagged # 在来種 by Soya Unehata, an account for farmers from Hida Furukawa city in Gifu Prefecture). The visual distinctiveness of some unfamiliar crop varieties can clearly be an asset.

Twitter also enables communication with individuals not already connected to the account creating the posts. Like Instagram, it allows for the use of hashtags, though they are used much less frequently, and searches for content (not limited to hashtags). People can “retweet” messages written by others to their own followers and Twitter will also display tweets by unconnected individuals in a person’s Twitter feed if some of the accounts they follow have “liked” the content. While it is possible to subscribe to hashtags, as with Instagram, information about the number of subscribers is not made available. On Twitter users can include photos, video clips, and web links in their tweets. It is also easy for multiple users to exchange tweets, publicly or privately. Academic organizations have even used Twitter to hold virtual conferences in the context of the coronavirus pandemic, as did the Association for the Study of Food and Society (ASFS) and the Agriculture, Food, and Human Values Society (AFHVS) in 2020. It is not surprising, then, that organizations like the FAO and Japan’s Ministry of Forestry, Agriculture and Fisheries (MAFF) have Twitter accounts, with 390 thousand and 117.5 thousand followers respectively.

When it comes to promoting agrobiodiversity and sustainable and ethical consumption in Japan there seems to be comparatively little outreach via platforms like Instagram and Twitter. The results of searches using keywords like # 在来種, # 在来作物 # 伝統野菜, and other related terms reveal primarily tweets and Instagram posts by consumers, farmers, or those who work for corporations selling local or organic produce. One such example is the Farmers Market at United Nations University in Tokyo, active on Instagram (more than 2.5 thousand posts and almost 25 thousand followers to date) and Twitter (almost 9,000 tweets to date and nearly 9,000 followers), using the platforms to showcase participating producers and share news about ongoing and upcoming events. Three key orientations for content related to agrobiodiversity on Twitter and Instagram in Japan are marketing, education, and advocacy. Farmers who cultivate heirloom varieties use social media themselves to market their produce and network with other producers. Such is the case with the Twitter accounts for Yutaka Nōen (Kanagawa Prefecture Zama City) and Chiba Nōen (Miyagi Prefecture, Sendai City). Companies that use heirloom vegetables as ingredients in their products or in their designs also use social media for marketing purposes. Educational content ranges from posts about specific vegetable varieties and what makes them unique to instructions on how to cultivate or cook specific varieties (say sharing a recommendation for using a soy milk based white sauce for the kuro kawa squash, as @monme24 does on Twitter). On Twitter, keyword searches for # 在来種 # 伝統野菜 and # 多様性 reveal a number of exchanges between individuals interested in agrobiodiversity and heirloom vegetables. Much content on Twitter and Instagram blends these different orientations. Consider the Instagram account Tanenonakama, which promotes agrobiodiversity by teaching about different Japanese heirloom varieties. Each post includes an illustration of a variety portrayed as a girl in a kimono. Links to sites with additional information, including where

to purchase seeds or the vegetables themselves, are also included.

While younger farmers have established a strong social media presence, non-profit organizations in Japan directly or indirectly promoting action to maintain agrobiodiversity seemed comparatively absent on Twitter and Instagram, in spite of the potential for outreach. If losses in agrobiodiversity are linked to a decrease in the number of people who consume less common crop varieties, then reaching out to new groups could be achieved in part via social media platforms like Twitter or Instagram that enable users to broadcast messages to a wide audience. Takaya and Goto (2020), for instance, explain that actors in the city of Hachinohe, aware of how Instagram and social media are related to consumption trends, have incorporated the use of social media in their strategies for boosting local seafood consumption.

3 Conclusion

In order to use social media platforms effectively to promote agrobiodiversity maintenance, individuals and organizations must be aware of the dangers and downsides to platforms like Twitter and Instagram. Anyone with a digital device and a connection to the internet can post using a chosen identity and engage with other users. Though this may make it easier for people in remote areas to interact with distant strangers, it also creates a space for the spread of misinformation and disinformation (Ireton and Posetti 2018). Recent research has shown that sensational but untrue content spreads more quickly than verified information and corrections (Dizikes 2018). Power asymmetries, meanwhile, enable corporations historically at odds with actors promoting sustainability to co-opt the rhetoric of sustainability to engage in re-branding in ways that can dilute or worse lead to misinformation and disinformation (Lewis 2018).

Social media content has become commercialized in a variety of ways that also impact sustainability. It would be naïve to assume that users posting content related to agrobiodiversity simply have educational, ethical, or activism oriented motives. Indeed, much social media content is created to further goals related to “personal branding, entrepreneurialism, and micro-celebrity” (Lewis 2018) which may result in the use of hashtags unrelated to actual content as a means of gaining greater exposure and increasing views. This can make it more challenging to find and identify accurate information about agrobiodiversity and sustainability.

While certainly not limited to content pertaining to sustainability, issues also exist on the user / audience end when it comes to data use and commercialization and specifically a lack of transparency as to how user data is used and sold by platforms.

Another issue is that of labor. It is a challenge for agricultural producers, local officials, and NGO employees in more marginalized areas and unaccustomed to the norms of using such technology to maintain a regular digital presence and communicate with other stakeholders on various social media platforms.

Be that as it may, social media have become inseparable from contemporary economic, political, cultural, and social life. Individuals and organizations concerned with threats to agrobiodiversity will likely use these platforms to an increasing extent. Though tweets and Instagram photos cannot

singlehandedly stem the loss of species and landraces of crops in Japan, they can help individuals and groups seeking to promote the maintenance of agrobiodiversity broadcast their message to wider audiences.

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