ecovillage farmers, agricultural apprentices and students frequently find themselves having to align a care for saving food—often reflecting a romantic, anti-modernist/-technology 'urban gaze'—with a care for a farming system—requiring a practice-based 'slow gaze.' These tensions further reveal that the choice of (not) using labour-replacing technologies and machinery, such as mechanical harvesters, may often directly relate to either fostering or precluding spaces for societal exchange on agriculture. Following the 4s conference's theme of "Good Relations," the talk concludes by discussing why fostering such experimental spaces of engagement are central for policymakers, farmers, consumer organizations, as well as researchers.

Farmers who tinker: Alternatives to incrementalism and the growth imperative *Matt Comi, University of Kansas*

While hop yards have historically been small-acreage operations with high levels of infrastructure, US hop growing has increasingly followed a neo-plantation model of high-acreage and high-automation farms. These large hop yards often have highly developed marketing and breeding components and these growers' disruptive and innovative practices have reshaped the hop marketplace. Within this landscape are a scattered group of small-to-medium US farmers who also grow this labor-intensive, high-cost, high-infrastructure agriculture good. To maintain market viability and financial sustainability, these small-to-medium farmers improvise solutions, build their own infrastructure, gather and grow wild or novel hop varieties, and market their hops to an expanding network of local, national, and international beer makers. These farmers eschew many of the normative methods employed by large-scale hop growing, breeding, and marketing operations and instead tinker with inputs and infrastructure to improvise meaningful ways to maintain viability without growing larger. While many of these operations are medium sized growers, their ability to rethink the growth model of agriculture by engaging in immediate-term on-farm innovation and tinkering solutions illustrates how tinkering can operate as an alternative to incrementalism when considering stepwise solutions for improving financial and environmental sustainability in quality-goods and vegetable production.

Session Organizer:

Samara Brock, Yale University

Discussant:

Julie Guthman, University of California, Santa Cruz

520. Building a new heuristic: knowledge production processes in interaction III

3:00 to 4:40 pm

4S 2021 Virtual: 13

Participants:

Plan Nacional de Ciencia, Tecnología e innovación 2021-2030 (PNCTI) en Argentina: un análisis del ante-proyecto. *Judith Naidorf, CONICET-IICE-UBA; Mariangela Napoli, CONICET*

Esta ponencia propone analizar el documento preliminar del Plan de Ciencia y Tecnología 2030 elaborado por el Ministerio de Ciencia, Tecnología e Innovación productiva de Argentina. El mismo se define como un ejercicio colectivo de colaboración orientado a pensar en el nuevo Plan Nacional de Ciencia, Tecnología e innovación 2021-2030 (PNCTI) y está inscripto en el proyecto económico, social, productivo y ambiental definido en las políticas gubernamentales. Como novedad, el ante-proyecto plantea el alcance de un desarrollo científico-tecnológico orientado a reducir las principales asimetrías del país, generadas por problemas estructurales como la pobreza, la desigualdad social y la degradación ambiental, entre otros. En pos de traducir en políticas científicas concretas estos desafíos se procura la realización de interconexiones con el resto del sector público y otros actores de sectores estratégicos de la producción, trabajo y desarrollo procedentes de ámbitos académicos y de la sociedad civil. El marco teórico que adoptaremos deriva del corpus teórico del campo CTS referido al problema del uso de conocimientos científicos y tecnológicos (Naidorf, 2014) así como las contribuciones respecto de la relación entre la política y la investigación científico-tecnológica para pensar la relación ciencia-tecnología-desarrollo en contextos periféricos y con economías en vías de desarrollo (Hurtado, 2017). La metodología se basa en un análisis descriptivo del documento preliminar. Consideramos que la conformación de un ante-proyecto orientado hacia las demandas estratégicas del Estado y al cambio estructural de la matriz productiva constituyen un desafío en materia de planificación de políticas científicas.

Scientists' Interaction with Scientific Instruments and its Role in the Knowledge Production *Bahar Esen Özdemir*

Scientific instruments have long been a component that are studied concerning their various attributes in science and technology literature as they are critical not only in knowledge production but also being a center of attraction for interaction. In this paper, we investigate how the interaction of various lab members shaped around the scientific instruments. Our approach here is to take the laboratories located in Middle East Technical University's Chemical Engineering Department as the study unit and follow the process of scientific work and interactions within and without the laboratory setting, aiding in the process of scientific work, in order to draw a picture of how these interactions shape the meanings of various instruments for different scientists. These observations show us that the scientific instruments do not draw their meaning merely from their implied connotation but rather from the interaction between the instrument and the scientists. These results provide us with a perspective on the factors that create that meaning and show us how the relations and the hierarchy that are arranged within a laboratory setting. Furthermore, an insight into how these social constructs within the laboratory affect the process of scientific work is observed.

Traversing Diverse Knowledge Settings: Constructing Professional Identities as Data Scientists in Nairobi *Ravtosh Bal, Independent Researcher; Matthew Harsh, California Polytechnic State University; Ann Kingiri, African Centre for Technology Studies*

Without degree programs in data science and the university curricula in computer science unable to keep pace with the rapid advancements in the field, university students and graduates in Nairobi are looking to settings outside the university to learn the skills to be a data scientist and address local needs. Digitalization and AI- based learning technologies with their potential for increased accessibility and individualized learning enable participation across these settings. We map the educational landscape of computer/data science in Nairobi and characterize multiple knowledge settings. These include traditional university learning, self-teaching via the internet (which uses algorithms/AI/machine learning), learning communities (which are peer-to-peer and mentorship based, but also draw on internet resources and traditional university learning), and communities of practice at workplaces. Actors traverse these diverse structures of learning gaining knowledge and expertise, teaching and mentoring, networking and collaborating, and forming a professional identity that is shaped by these knowledge settings with their distinct epistemic cultures. Following recent trends in STS that apply critical epistemic analysis to learning practices, we explore how people learn across these different knowledge settings in Nairobi and how professional identities are created from credentials, training, practices, and interaction.

"Wanted! Ottoman Strawberry": Discursive Practices of Heirloom Seeds in Turkey *Maral Erol, Isik University; Müzeyyen Pandır, Isik University*

Heirloom seeds have been an oft-discussed subject in Turkey

recently, especially since the introduction of a law that forbid selling of non-certified seeds in 2006, and a new by-law that passed in 2018. As material-semiotic actors, heirloom seeds are cherished both by proponents of ecological diversity who are mostly considered on the left of the political spectrum, and by nationalists and purists who are opposed to importing hybrid seeds from Israeli companies for reasons of purity and national self-sufficiency. Both parties agree on their interest in non-GMO, organic agriculture practices, yet they have different motivations for desirability of the seeds themselves, and what they represent. As such, heirloom seeds stand in the discursive junction of nationalism, ecological diversity, sustainable agriculture, and food security. This research is an analysis of the discourses of the main actors involved in agricultural policies (e.g. Ministry of Agriculture, Chamber of Agricultural Engineers, Turkey Seed Growers Association, Farmers Union, and environmental organizations). These actors engage in different kinds of knowledge production about heirloom seeds through their discursive practices, affecting the growing, purchasing, and exchange of the seeds in question. With an aim to reveal the continuities and conflicts in the discourse on heirloom seeds, we argue that heirloom seed is a site for resistance for good relations between human and more-than-human worlds, even though there is a strong tendency to co-opt it for industrial agriculture controlled with certification and patents.

Session Organizer:

maria goñi, Universidad de la República (Uruguay)

521. Optical Media: The Impact of Visual Technologies - V

3:00 to 4:40 pm

4S 2021 Virtual: 14

Optical media, borrowed from Friedrich Kittler, is an expanded concept that connects photography, film and television with other techniques and technologies that mediate optics and vision (e.g. microscopes, telescopes, oscilloscopes, echocardiography, ad inf.). Normalized, expected and often desired, optical media shape how we perceive the reality that surrounds us, mediating our understanding and experience of our inter- and intra-relationships with ourselves, others, objects, and worlds. In so doing, they constitute power relationships that reify inequalities and uncertainties, the key themes of 4S 2021, rendering certain people, places, and things visible, invisible, or hypervisible. These issues have grown in importance in the wake of COVID-19 and social distancing, where optical media have become ubiquitous. This panel welcomes interdisciplinary research from STS and neighbouring fields that critically examine the role of these embedded and disruptive technologies in guiding our world views and relationships. By paying attention to the modes of seeing and looking that shape our perceptions, behaviours, and practices we can begin to better address their effects on other information systems including but not limited to the ones we work in, socialize in, and reside in. Questions we ask include how are modes of looking shaped by digital optical media? What potentials are there for visual manipulation, exploitation, or psychological vulnerabilities? What new possibilities for ways of thinking, interacting or organizing information do these technologies offer? Who and what is being rendered visible, invisible, or hypervisible and the power politics of optical media?

Participants:

Stitches About Our Lives In Times Of Pandemic: We Go Through The Textile To Take Care Of Ourselves, We Pull Out The Needle To Empower Ourselves *Carmen Gomez Vega, Bauhaus Universität Weimar*

Society is currently facing different challenges as a result of the sanitary emergency caused by COVID-19 in Colombia and the world. Women belong to one of the most affected groups by the pandemic and some of the most significant problems they confront are gender-based violence and the overload of care and household tasks. In this scenario, the importance of assuming equal responsibility and solidarity in the workload by men and women and the creation of spaces for networking to guarantee the well being of women become even more urgent. This work discusses the textile practice and the digital appropriation as vehicles to reflect on everyday life during this emergency, as a form of (self) care and empowerment of women in the village of Dapa (Colombia) through an off/on-line workshop. Visual anthropology is used as the main methodological approach, in which art focuses on textile practice and ethnography on the senses. Research techniques include participation, focused group interviews and the (audio) visual. Its collaborative-participatory and de-colonial character implies that the instruments and the research process are put in the hands of the participants so that the construction of knowledge can be produced both by and for themselves and by the researcher. Despite all restrictions and regulations nowadays, this work is an invitation for an exchange among women, fostering ties of support and participation both in their families and in their community.

Visualization of Vector Space as Translational Relations-Making *Richard Groß, TU Dresden*

This paper examines the role of visualizations (cf. Burri/Dumit 2008) in scientific and artistic experimental practices as related to machine learning dealing with multi-dimensional digital data. Based on my own ethnographic research, I present two ongoing case studies, one of which is situated in an interdisciplinary laboratory of data scientists and biologists in Berlin, Germany, where research on the social structure of honeybee colonies is conducted. My second case study is concerned with the studio practice of a German media artist who uses generative adversarial networks (GANs) to produce visual materials for his video works. Both cases converge in that in each of them, practitioners seek to generate meaning by way of algorithmic operations in high-dimensional vector space (cf. Mackenzie 2017). In both cases, plots and other media of making visible or "revealing" (Coopmans 2014) the structure of data sets feature as optical media of translation. In this sense, I will argue based on my field observations, visualizations of vector space are a fundamental element of relations-making. The focus of my analysis is on the "data infrastructure" (Gray et al. 2016) of such translational relations-making. Drawing upon arguments from infrastructure studies, I look at how scientific and artistic knowledge, algorithmic architectures, division of labor, institutionalized expectations, and imaginaries play into the results of the practices discussed, and what is at stake in them.

Algorithmic Sea: Exploring the Critical Making and Seeing of Color *Gabriel Pereira, Aarhus University; Sarah Schorr, Aarhus University; Carlos Oliveira, Independent Creative Coder and Scholar*

How is the sociotechnical perception of color actualized through optical media? What do algorithms of computer vision tell us about seeing color? If, as described by Carolyn Kane (2014, p.211), color is not about vision, but about a "system of control used to manage and discipline perception and thus reality," then how do computers see color? To explore this question, we combine artistic critical making methods and STS theories of algorithmic color, perception, and situatedness. Our installation "The Color of Water: Algorithmic Sea" (algorithmicsea.com) offers participants the interactive process of assembling a sea of colors. Participants are invited to submit images of water through an interface as they make selections of colors. These choices are shown alongside the colors picked by different AI algorithms, and are then added to a sea of pulsating colors. Inspired by the play of light on water, our algorithmic sea is composed of undulating hexagons, highlighting the flowing quality of color seeing (by humans and non-humans). Accepting and working from the opacity of machine learning algorithms, our paper contributes to contemporary STS calls that highlight the richness of partial accounts rather than catch-all calls for transparency, accountability, and explainability. Where Louise Amoore (2020) suggested "stay[ing] with the difficulty of intuiting what the model saw as a form of partial, situated, and locally specific account," our work puts this into critical practice by representing