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The Microculture Project: Global Data Generating Local Cultures
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Microculture.net is an attempt to make a kind of generative art that generates culture. It exists first in the public sphere as a web service. I think of it as a work of art, a new kind of activist art.

The Public Face, the Obvious Use

Microculture.net is a website that generates gardeners' almanacs. Users create accounts and tell the site their location, and then select plants or recipes of interest. The site generates a set of annual events by combining local climate data with a simulation of the plant's development. Recipes generate events when a seasonally-available ingredient is in season. Examples of events could be the beginning of the peach harvest, when the apple trees are blooming, or when one could make a good blueberry tart.

The events can then be presented in a variety of ways—as year-spanning list, as news items on a kind of blog, or as text messages.

Underlying Methodology

To generate the events, the site needs several data sets: one for climate, one for plants, one for recipes.

The climate data comes from National Oceanographic and Aviation Administration of the United States Government [1]. Data from 13,000 weather stations scattered all over the globe give daily weather observations, including temperature, relative humidity, and wind speed. The project does not yet include such basic data as soil classifications, annual precipitation, or relevant geological features (oceans, mountains).

For plant simulation, microculture.net uses a combination of Degree-Growing Day [2] data from [3], simple "days to harvest" data from seed catalogues, and the temperature at which the plant is killed by cold. There are limits as to how accurately a plant's growth can be modeled without information about sun exposure for both the plant and the area around the plant, but the average dates for the last and first occurrences of the plant's minimum temperature are the basis for the schedule of a garden; events determined by other statistics can at least be made accurate to within a few weeks.

The recipe data is gathered by crawling recipe collections, but also simply by putting up a wiki.

The Interface: Places, Plants and Recipes

The system generates information useful to people involved in a few specific activities: gardeners, hikers, those interested in seasonal gastronomy.

The interface for the site is the great bottleneck of the project: it must be simple enough for these casual users to get it to work with minimal effort.

The interface metaphor I've used is of a subscription service, like an email listserv. Users create accounts and give contact information, and then specify topics of interest. Microculture.net has three interest types: places, plants and recipes.

Place Interests

Place interests link a user to a place on Earth. Climatologists have different definitions of “microclimate,” some as simple as “the climate of a very small area.” [4] I chose to simply regard each observation station the center of its own microclimate, rather than to attempt to more-or-less arbitrarily define a global set of regions.

Place interest groups are networked by simple statistical comparisons of all places to all others. My algorithm is relatively primitive: discard pairs with large differences of altitude, temperature, relative humidity, and growing season, keep a weighted sum of the differences in metrics for the resulting pairs, and adjust the weights so that each metric is roughly equally-likely to generate a large contribution. The less the sum is, the more alike the climates are.

Each place has two lists of similar places. One list gives a halo of twenty nearby places (within 5 degrees latitude and longitude) where the weather is essentially the same. A second list of twenty places gives a global scattering of best matches, places more than 40 degrees away, separated by geography and human culture, but with the same climate. With this action, I have built a global network of similar climates.

Plant Interests

Users may subscribe to interest groups for any of the 60,000 plant varieties in the USDA PLANTS database[5], though, at the moment, there is simulation data for only 300 varieties. Plant and place interests are combined to generate annual events for a plant in a place.

Recipe Interests

Microculture.net has a collection of recipes that have been connected to the plant data. Recipes that use a particular plant are therefore able to generate annual events—for example, the tomato sauce recipe generates events when local tomatoes are ripe.

Recipes are also connected, when possible, to a place and time of origin, so users with an interest in a particular place can search for recipes of that place.

Manipulation of this network of interest groups is how microculture.net grows from being a web service into something more.

Microculture.net as a tool for change

I am an American artist. I want many things about my nation to be different: the uniformity of its culture, its dependence on industrial agriculture and specific crops, its dependence on large food-transportation networks, and the lack of climate-mindfulness of its people.

I do not think that my fellow Americans are ignorant of the harms of our culture. Rather than critique or protest, I want my work to provide pleasant suggestions that increase awareness of local climate, and, by extension, awareness of, and emotional involvement in, environmental issues. Heidegger wrote of the poet’s role of creating the world [6]; I view my job as an artist to be the creation of better culture.

My goal is to have, for every microclimate in the United States, a culture that lives uniquely in it.

This is not a project that can succeed without being popular; thus the format of my work: a harmless, charming tool that tells you when to plant your tomatoes.

Given the data the online system, and the user community, other works can be attempted. This system is an open-ended framework. What can I do in it to make a difference?

The Foundation Actions: the Pleasant Murmur

As I indicated before, the core functionality of the system is to model plant behavior well enough to help gardeners.

Any system that can do this can also predict the behaviors of plants in general, and insects. Users can sign up for notices about when the leaves are turning in the fall, or when the fireflies are blinking, or when wildflowers bloom.

Even a slightly inaccurate system like mine could be a major help with phenology—the study of the timing and location of plant events. Currently, phenology data is very difficult to come by. I imagine an iPhone app a user would start at the beginning of her hike. It periodically pops up a picture of a flower: “This is a May Apple blossom. Have you seen one today?”

One could imagine a kind of imaginary tourism driven by notes about faraway places of special value to you. It would be good to know when your mother can make pesto, or when the flowers you saw on your honeymoon have bloomed again.

A slightly perverse use of the system would be to track the produce in your supermarket to its origin, and monitor that place. You might be getting blueberries from Mexico; you might as well know when they are good. Even that level of awareness in the general population would be a step forward.

An Action: Plant Preservation

Seed Savers’ Exchange is an organization that works to preserve garden plant varietals. Market consolidation into big-box garden centers and nationally-distributed seed catalogues drives down the number of suppliers, and that drives down the number of plant types available commercially.

Retailers with national distribution networks select plants that grow well in many different microclimates. Plants that excel in particular microclimates, but fail in others, are not competitive and are disappearing from the market, frequently becoming extinct. [7]

Plants with real roles in local cultures are disappearing. This loss is of both the plant genetic material and knowledge of how to cultivate and use the plant. It is not sufficient simply to preserve seeds.

Microculture.net, with its capability to attach a plant to a recipe to a place, could counter this trend. I have already generated “recipe” stubs in the Wiki that tell how to start or grow every plant in the database. It is simple enough to attach a place affiliation to a plant. Users searching my databases could discover plants known to thrive in their areas of interest.

An Action: Cheese Theft

Consider traditional ways of making cheese: milk is gathered, cooked and strained, then set up to age. In pre-industrial cheese making, cheese makers do not require much equipment: a bucket, a fire, a shed, and maybe a cave. Such processes are extraordinarily sensitive to local terroir, from the weeds the animal accidentally eats, to the kind of wood burned, to the temperature of the cave. Trial-and-error over centuries refined these techniques, but never in ways requiring industrial processes or modern technology.

These traditions are marred if they leave their home microclimates. Perhaps the weeds are different, which changes the milk, or the cave is too warm. The tradition’s demands can be met technologically, say with chemical additives in the milk or a refrigerated warehouse. If the tradition is moved to an identical microclimate, these measures are not needed.

Climate-sensitive transfer of traditional practices could be both an excellent way of improving everybody’s cheese, and a way of reducing the energy budgets of agricultural businesses. Climate-sensitive business models would have lower equipment costs, an advantage over the entire life of the business. With the right help, they could literally spring up like weeds.

The climate analysis that I have online for this project could enable this kind of transfer. One need not stop at cheese: wine, beer, preserved meats, festivals, traditional gardening techniques—any process for which climate plays a part.

Bricolage is the construction of works from things accidentally available. Cultures have always been assembled in this way. What if the process of synthesis could be guided by climate analysis, instead of the accidents of war, fashion, or economic crisis?

For her book “Taste of Place”, Amy Trubeck interviewed Randall Graham, the proprietor of Bonny Doon Vineyard about creating wines that reflect an American terroir. The interview ends with both of them reflecting on how America need not wait out the generations of trial-and-error that produced old-world wines—they could borrow. “We [Americans] could theoretically be great synthesizers.” [8]

An Action: Culture as a Statistical Cloud

Cultures, for this project, are constellations of preferences, arbitrary and unjudged. This is a subscription model of culture, a kind of culture owned by chefs instead of nations. It would be possible to discover cultures by finding recurring interest sets. Subcultures would be sets that maintain similarities and differences from the largest local culture. Aficionado subcultures would resemble larger cultures elsewhere. The study of how to define and manipulate cloud cultures could be the work of lifetimes.

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Bibliography

[1] The NOAA data is online at http://www.ncdc.noaa.gov/
[2] and [3] Dan Herms at the Ohio State University maintains a set of web pages at http://www.arcd.ohio-state.edu that provide a definition of Degree-Growing Day and make a large set of DGD data available.
[4] T. Bedford Franklin, Climates in Miniature: A Study of Micro-Climate and Environment, Greenwood Press, 1955, p. 11.
[5] PLANTS.USDA.gov is the location of the USDA PLANTS database.
[6] Martin Heidegger, “The Origin of the Work of Art”, translated by Albert Hofstadter, in Philosophies of Art & Beauty: Selected Readings in Aesthetics from Plato to Heidegger, edited by Albert Hofstadter and Richard Kuhns, University of Chicago Press, 1964.
[7] Kent Whealy, Garden Seed Inventory, Fifth Edition, Seed Savers Exchange, p. 15.
[8] Amy B. Trubeck, The Taste of Place: A Cultural Journey into Terroir, University of California Press, Berkeley, 2008, p. 138.