THE BIOLOGICAL COMPUTING LAB (1958-74)

reflective reflexive research at Illinois

Kevin Hamilton
Associate Professor & Program Chair, New Media
School of Art and Design
CYBERNETICS
Norbert Wiener
something happens to the input value
output changes the conditions

different things happen to the input value
SELF-ORGANIZING SYSTEMS
FEEDBACK
The Macy Conferences
Dr. Heinz Maximilian von Foerster, who worked in European research laboratories and scientific concerns from 1936 to 1948 has been promoted to associate professor and placed in charge of the U. of I. electrical engineering department's vacuum tube research laboratory. Dr. von Foerster was born in Vienna, Austria, and came to the U.I. last September.

After World War II he was with the radio section of the American Information Service in his native country. He received his Ph. D. from the Universitaet Breslau in 1944 and has attended the Technische Hochschule, Vienna, and the Universitaet Berlin. From 1946 to 1948 he was editor of Scientific Reports.
The principle of undifferentiated encoding

The electrical activity of a receptor cell (and of all nerve cells as well) encodes only the magnitude of the perturbation that caused its activity, and not the nature of the perturbing agent (encoded is only "That much at this point of my body" but not "What").

Figure 1

A pyramidal neuron from the sensory-motor cortex of a cat. The drawing was made from a tracing of three photographs taken with the microscope focused at different depths of a Golgi (osmic-dichromate) preparation.

Electrical activity measured with a micro-probe on the axon of a sensory input neuron. (Frequency Modulation.)
A section from the sensori-motor cortex of a cat stained by the Golgi-Cox method. The perikarya and dendrites of about 34 per cent of the neurons are stained; the axons usually fail to impregnate with this method.

SECOND-ORDER CYBERNETICS
RADICAL CONSTRUCTIVISM
BCL

PEOPLE
SOME LOCAL BCL AFFILIATES
(and their base disciplines)

Heinz Von Foerster / electrical engineering
Mai Von Foerster / theater
Gordon Pask / psychology
Ross Ashby / psychiatry
Murray Babcock / electrical engineering
Herbert Brun / music
Gottard Gunther / logic, philosophy
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Francisco Varela / biology, neuroscience
Humberto Maturana / biology
Ricardo Uribe / electrical and computer engineering
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Francisco Varela / biology, neuroscience
Humberto Maturana / biology
Ricardo Uribe / electrical and computer engineering
Stuart Umpleby / engineering, management
Paul Weston / electrical engineering
Steve Sloan / mathematics
Lebbeus Woods / architecture
William Wegman / visual art
SOME BCL REMOTE AFFILIATES

Ivan Illich
Warren McCullough
Margaret Mead
Gregory Bateson
Stafford Beer
Stewart Brand
Ranulph Glanville
DOOMSDAY
Friday, 13 November, A.D. 2026
BCL
TEACHING
HEURISTICS
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NOTES BY SCRIBES AND METASCRIBES

E.E. 272; E.E. 490; Biophys 491

* 1, June, 1972 *
WHY GO TO COLLEGE?

Student Motivation for Attending the University of Illinois

Our intent when beginning this project was to determine why an individual attended this university. More importantly, were the justifications for one's attendance intrinsically or on the other hand, were they materially oriented.

In our attempt to discover an answer, we instituted a random sample of five hundred students, of whom we asked to pick the three most important reasons for being at the University of Illinois from the following list:

Do you attend the University because of:

a) education
b) financial reward
c) occupational training
d) attaining status
e) independence
f) to leave home
g) marriage
h) avoid draft
i) expected by parents
j) other

The graphic representation of the general sample shows that 31.1% came to school primarily for an education; almost 12% are enrolled in school in pursuit of financial rewards, and that 20% attend the University in order to acquire certain occupational training.

For the most part, the female and male samples are basically the same. The only differences are that females have a financial reward motivation of only 18% whereas the corresponding male percentage is 21. This difference can probably be attributed to the percentage of females who came to school seeking marriage (12.5%). The females plan to make up the difference through marriage. Another distinct difference which is obviously understandable, is the motivation towards draft avoidance. Almost 13% of the males are in school to avoid military service whereas for females, 16 are in school to avoid the draft. The fact that females consider draft avoidance a motivation allows for an error of 15 in the survey.

From the information obtained, it is our opinion because of the high percentage of people who are motivated to attend school for an education and/or occupational training, that most students have an intrinsically oriented factor for their attendance at the University of Illinois.
1. Get fixed up on date with "nice girl."
   - girl is ugly
     - develops headache during date
     - won't go out with you again
   - girl is attractive
     - you have a great time
     - you start dating
       - she finds another guy:
         - you lose
       - she gets serious
         - you want out
   - girl transfers schools
     - shoots you down
   
2. Meet girl in class
   - already has boyfriend
     - have rotten time
     - start dating
       - she finds someone else
       - girl won't sleep with you
         - starts sleeping with you
         - says you're no good in bed
   - goes out with you
ITS RELATIONSHIPS
ITS DESIRES
WITH ITS CONSTRAINTS
FOR OURSELVES,
WE HAVE CREATED
WE LIVE IN THE SYSTEM
THE UNIVERSITY IS A SELF-ORGANIZING SYSTEM DERIVING ITS ORDER FROM THE PEOPLE WHO COMPOSE IT. ACCEPTANCE OF THIS UNIVERSITY AS AN INEVITABLE INSTITUTION, REFLECTS THE ABSENCE OF DESIRE OR AN ILLUSORY HOPE. CHANGE IS OFFERED. EXPLOIT IT. MAKE YOUR DESIRES IMPLICIT IN YOUR ACTIONS AND YOUR GOALS.
hunger → eating → meals

sex drive → *uc*ing → marriage

Corvair → Nader → protection

federal consumer protection bureau

schools

curiosity → learning → universities

departments

The Structural Mentality

American society, if nothing else, has an almost infinite capacity to institutionalize. At the left are but four examples. Take any phenomena, find a way of coping with it, then institutionalize it and sanctify it and build a structure.

This is the prevailing philosophy of education in America. I cite for evidence: Department of Psychology, Department of Communications, Dept. of Psycholinguistics, etc., etc. A quote from a recent Faculty Newsletter—"Public problems don't fit disciplines and departments; hence various types of interdisciplinary centers are being explored. When need and function are clear, such a multi-faceted structure may provide the most exciting and relevant coupling to the problems."

This is a disaster!

Interdisciplinary departments are not a way of coping; they're a way of CO-OPTING!

The INVISIBLE College

I propose formation of an "invisible college". This college will have no building, no departmental chairman, get no government financing, and could possibly become the most important entity on this campus. It will be organized along functional, not structural.

Education as access to tools

Most people come here to get educated. A few come to get the tools they need to do the things they want to do. To these few here are some two-legged tools; they are recommended by your peers. This is by no means a complete list of the good people here, but a start. Use the Tear up your advance enrollment sheet and start over
Walt's Used Furniture, 317 North Neil, Champaign.

The Salvation Army Red Shield Thrift Store, 511 North Neil, Champaign, open 9:00 - 4:00.

SECONDHAND STORES

Mercy Hospital Auxiliary Resales, 503 N. Neil, Champaign, open Tuesday through Saturday 12:30 - 4:30.
FREE TELEPHONE

In order to make one's stay at the University of Illinois more pleasant there are certain so called gimmicks one can learn. For example, we all have loved ones far away; for some inane reason the American Telephone and Telegraph Company has seen fit to take advantage of our unfortunate situation by charging exorbitant rates to use their silly damn phones. Fortunately there are several ways one may talk to a loved one without supporting a monopolistic, bureaucratic, institutional complex.

LOCAL LEVEL

There are two ways in which one can make a local call with one tenth of the normal rate in this type of pay phone.

The first way is to drop a coin worth one tenth of a dime down the nickle slot and then you hit the coin release one and one half seconds later. This technique takes a little while to perfect but once you get the hang of the timing it will prove to be great fun. The second way to make a local call for the same price is to get a thin piece of cardboard approximately two inches long. One should place it down the nickle slot and then drop a penny down. You will pleasantly rewarded with a sound of a dial tone. Tragically both of these methods are obsolescent with the advent of a new type of pay phone which has slits for your money. Neither of these methods work on this type of pay phone. But do not give up hope for it is just a matter of time before something is thought of to save our glorious contry and their phone company from eating up all our dimes.

NATIONAL LEVEL

There are several ways in which one can liberate themselves from the

FREE FOOD

MENU OF FREE FOODS
(especially for U. of I. apartment dwellers)

BREAKFAST
cold or hot cereal
toast with butter and jelly
coffee, tea, milk, hot chocolate
All can be obtained by going (backwards) through the line at F.A.R.
Pretend you are a resident and are going back for "seconds".
NOTE: extra bread can be obtained at this time for future use—as well as packs of margarine, teabags, and packets of sugar.

MID-MORNING SNACK
Coffee and crackers
Find a used cup at the UNION and have it filled at the counter where second cups are free in the Commons. Crackers are available in the vending machine room.

LUNCH
soup and crackers
vegetables
salad with choice of dressing
peanut butter and jelly sandwich
bread and butter
choice of beverage
A Guide to T.G.I.F. spots...

Beer Joints---

Kama (on campus) 608 E. Daniel, C.  
Large crowds of people, noisy,  
usually easy to get served unless  
large number of high school students  
are in town. Has that "lived in" effect  
no appreciable difference between sinks  
and urinals... All types of beer, malt  
liquor, raunchy pizza. Sights seen  
there: card playing, drinking games.

Stan Walther's Gridiron (located down the  
street from Kam's) Crowded, friendly  
atmosphere, has more class than Kama,  
good pinball machines and jukebox.  
Great bratwurst and steak sandwiches.  
Beers, domestic and imported. Popular  
place to sit around and rap.

Wigwam (on campus) 708 S. Sixth. Used  
to be the place in the "good old days"  
Reputed to be hangout for those with  
questionable sexual attitudes. Bar  
caters to old gogies rather than  
young whippersnappers.

Bidwells (Wright Street, north of campus)  
oldest beer joint in town. Just sold  
out, so its future is uncertain.

Treno's (1117 W. Oregon, U.) occasional  
bands, teeny-bopperish atmosphere,  
cheap popcorn, offers a full menu,  
generally hard to get served.

Chances R (65 Chester, C.) THE place on  
campus to go for a great time. Best  
bands in the area, relaxed atmosphere.  
Hard liquor is served, along with beer  
Students are catered to. Guys must be  
20, 19 with a date, girls at least 18.

Brown Jug (Sixth Street) Features medi-  

No Matter Who

Red Lion Inn (corner, 3rd & Green) Good  
place to go after a flick, features  
good bands to dance to but the beer  
and pizza is expensive so considering  
cover charge it is an expensive evenir.

Midways (901 8.4th) raided often, place  
to go for guys without dates. Just  
another "cheap thrill."

FINE CUISINE............................

Italian Patio #1 First and University  
Finest $1.40 chicken dinner in the city  
of Champaign. Sit around and relax  
while flirting with the waitresses and  
talking to Papa Pippity.

Spudnugs 600 block of Green Street  
Great place for a quick snack before  
 dinner. Inexpensive donuts and good  
social climbing.

Jolly Roger Hidden in downtown Urbana  
 near Lincoln Square. Best Pizza in  
central Illinois, south of Genoa.  
Whether eating a meal, or watching the  
townees, Jolly Roger is always a good  
feed. Bring lots of cash.

Po Boys Rustic old shack by the railroad  
track, in the heart of North Champaign.  
An institution for Hot Beefs and Potato  
salad. Costs less than a dollar.

House of Chin 700 Block of Sixth street  
Trying to impress that certain girl  
with your roll of money, take her to  
chins! Terrific egg roll and egg foo  
yong, set in a refreshing oriental settin.

MacDonalds 5 points or Kirby and Meal.  
Closest thing to a home meal. "20%  
beverages and wines included."

Walters Restaurant (corner 2nd and  
Clinton) Popular with the Tokyos  
and Japans gotdads. Has the best  
Chinese food in Champaign. At  
least that's what my Uncle says.  

Green Lake Restaurant Best  
Mexican food in Champaign.  

The old ones [haven't changed,  
just moved over to the other side of  
the street].

The Voice of the People
There are no typical drug users at the U of I. People who may appear to be quite “straight” in dress and attitude join the “hippy” elements in the case and, in some instances, the sale of drugs. Estimates of drug usage involving the confusion of such factors as outward appearance are often misleading of the true picture on the campus.

Individual drug users at the university differ as much as individuals differ. People vary in the types and quantities of drugs which they use. Some individuals will smoke grass and refuse psychedelic substances, others will use large quantities of both, and others may refuse both while being addicted to pills such as amphetamines and barbiturates. Individual differences in the way they use drugs is a desired effect and in the use of drugs.

Marijuana is one of the most common and widespread drugs used at the university. Current estimates of individuals who use or have used marijuana at the U of I number upwards of ten thousand people.

OPERATION INTERCEPT AND THE ECONOMICS OF MIND EXPANSION

The Nixon Administration’s Operation Intercept, while depleting the supply of Mexican marijuana available in most areas of the U.S., has been a boon to Champaign-County marijuana dealers. Relying on local sources of grass to make up for part of the deficit caused by the government, local dealers have worked hard this year to provide their fellows with a means of getting high while making record profits for themselves as the Nixon Administration’s plan has brought the cost of marijuana levels competing with heroin in many sections of the country.

Today, marijuana is one of Champaign County’s cash crops and at the right time in the year is easily available to persons interested in providing a means of getting high for free and/or finding a way of supplementing a deficit in a student budget. The typical marijuana-dealer-time road only seeks out productive acreage, streams, and creeks of Champaign County in order to find a healthy marijuana crop to harvest.
METAGAMES
BCL RADICAL?
An Unfinished Revolution?

Heinz von Foerster and the Biological Computer Laboratory (BCL), 1958–1976
THE BIOLOGICAL COMPUTING LAB (1958-74)
reflective reflexive research at Illinois

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Special thanks to Jamie Hutchinson for images and research.