User Interaction: Shaping Things

Associate Professor Donald J. Patterson
INF 133 Fall 2014
“New forms of design and manufacture are appearing that lack historical precedent”

“Our current scale/methods of manufacturing and consumption are not sustainable”
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Beijing US Embassy Air Pollution: Real-time Air Quality Index (AQI)

East Fourth Ring Road, Beijing AQI: 238
Very Unhealthy
Updated on Monday 23:00
Temp: -5°C

East Fourth Ring Road

AQI
Air Pollution Level
Health Implications

0 - 50 Good Air quality is considered satisfactory, and air pollution poses little or no risk
51 -100 Moderate Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
101-150 Unhealthy for Sensitive Groups Members of sensitive groups may experience health effects. The general public is not likely to be affected.
151-200 Unhealthy Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects
201-300 Very Unhealthy Health warnings of emergency conditions. The entire population is more likely to be affected.
300+ Hazardous Health alert: everyone may experience more serious health effects
Beijing US Embassy Air Pollution: Real-time Air Quality Index (AQI)

East Fourth Ring Road, Beijing AQI: 238
Very Unhealthy
Updated on Monday 23:00
Temp: -5°C

Current: 238
Min: 46
Max: 238

PM2.5 AQI: 184
PM10 AQI: 167
O₃ AQI: 196
NO₂ AQI: 168
SO₂ AQI: 168
CO AQI: 23

 AQI Interpretations

0 - 50: Good
51 - 100: Moderate
101-150: Unhealthy
151-200: Very Unhealthy
201-300: Hazardous
300+: Health alert: everyone may experience more serious health effects
Beijing US Embassy Air Pollution: Real-time Air Quality Index (AQI)

East Fourth Ring Road, Beijing AQI: Very Unhealthy

Temp: -5°C

Updated on Monday 23:00

238

Current: 238
Min: 46
Max: 238

Last 2 days:

PM2.5 AQI:

PM10 AQI:

O3 AQI:

NO2 AQI:

SO2 AQI:

CO AQI:

Health alert: everyone may experience more serious health effects

Unhealthy

184

Updated on Monday 23:00

Temp: -5°C

PM2.5

PM10

Unhealthy

167

Updated on Monday 23:00

Unhealthy

196

Updated on Monday 23:00

Unhealthy

168

Updated on Monday 22:00

Beijing was classified as a Very Unhealthy AQI of 238, which is considered hazardous. The Air Quality Index is predicted to worsen if the weather remains the same. It is recommended to stay indoors if possible.
Ch 1: To Whom It May Concern
## San Pedro Bay Ports
### Clean Air Action Plan

**Map View** | **Current Data** | **Yesterday's Data** | **Daily Highs** | **Historical Data** | **Reports** | **Glossary**

**CAAP Home** > **Air Quality** > **Current Data** - real-time air quality information

### O3 (1-hr) Daily Observations

<table>
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<tr>
<th>Monitored Parameter</th>
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<tr>
<td>O3</td>
<td>1-hr</td>
<td>0.001</td>
<td>ppm</td>
<td>0.09</td>
<td>-</td>
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<td>15.5</td>
<td>μg/m³</td>
<td>-</td>
<td>35</td>
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<tr>
<td>NO2</td>
<td>1-hr</td>
<td>0.044</td>
<td>ppm</td>
<td>0.25</td>
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<tr>
<td>CO</td>
<td>1-hr</td>
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<tr>
<td>CO</td>
<td>8-hr</td>
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<td>ppm</td>
<td>9.0</td>
<td>9.0</td>
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<tr>
<td>SO2</td>
<td>1-hr</td>
<td>0.003</td>
<td>ppm</td>
<td>0.250</td>
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<tr>
<td>SO2</td>
<td>24-hr</td>
<td>0.002</td>
<td>ppm</td>
<td>0.04</td>
<td>0.14</td>
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<td>Wind Speed</td>
<td>1-hr</td>
<td>3.2</td>
<td>mph</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wind Direction</td>
<td>1-hr</td>
<td>N</td>
<td>Direction</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Temperature</td>
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<td>56.8</td>
<td>°C</td>
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<tr>
<td>Relative Humidity</td>
<td>1-hr</td>
<td>68.0</td>
<td>%</td>
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<td>-</td>
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<td>Rain</td>
<td>1-hr</td>
<td>0.00</td>
<td>in/hr</td>
<td>-</td>
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<tr>
<td>Rain</td>
<td>Daily Total</td>
<td>0.00</td>
<td>in</td>
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<tr>
<td>Rain</td>
<td>Monthly Total</td>
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<td>Rain</td>
<td>Yearly Total</td>
<td>3.91</td>
<td>in</td>
<td>-</td>
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All data is preliminary.
San Pedro Bay Ports
Clean Air Action Plan

CAAP Home > Air Quality > Current Data - real-time air quality information

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San Pedro Bay Ports
Clean Air Action Plan

CH 1: To Whom It May Concern

CAAP Home > Air Quality > Current Data - real-time air quality information

Select A Site - Observation To Graph

Port of Long Beach - Inner Port

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O₃ (1-hr) Daily Observations

0.101

0.080

0.060

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“Effective intervention takes place not in the human, not in the object, but in the realm of the technosocial”

Human Computer Interaction duality
“The status quo uses archaic forms of energy and materials which are finite and toxic. They wreck the climate, poison the populace and foment resource wars. They have no future.”
“The quest for a sustainable world may succeed, or it may fail. If it fails, the world will become unthinkable. If it works, the world will become unimaginable”
What are Sterling’s technosocial epochs?
Ch 2: Tomorrow Composts Today

- **Object**
  - Artifacts
  - Machines
  - Products
  - Gizmos
  - Spime

- **Technosocial Epochs**
  - Biote
  - Cyber
  - Digital

- **People**
  - Hunters and Farmers
  - Customers
  - Consumers
  - End-Users
  - Wranglers

- **Line of Empire**
  - Line of No-Return

- **Box of GMO Corn**
  - Monsanto Wheat

- **Data**
  - SD -> Batt -> 22 Model
  - Data -> Object -> Rep

- **DNA**
What separates epochs?
What separates epochs?

“We know that this revolution has become the new status quo when even the fiercest proponents of the earlier technoculture cannot physically overwhelm and defeat the new one”
“It is important to explicitly acknowledge the downsides of any technological transformation”
“It is important to explicitly acknowledge the downsides of any technological transformation”

“Tomorrow composes today”
“What can you no longer earn a living without?”

“What technological feature would a country be completely conquerable if they lost it?”
Ch 3: Old wine in new bottles
Ch 3: Old wine in new bottles

Grifone

**1967 Toscana 2000**

- **Type**: Red
- **Grapes**: Shiraz/Syrah, Cabernet Sauvignon, Sangiovese

**ADD TO MY WINES +**

**ADD REVIEW +**

**PLACES SELLING THIS WINE**

- Trader Joe's
  - $6

**FOODPAIRING**

- Beef
- Lamb
- Spicy food
- Mature and hard cheese

**SERVING TIPS**

We recommend serving red wines at 15°C (59°F). This can be achieved by opening the wine and putting it into the fridge 15 min. before serving it.

**AVG. RATING**

2.9 out of 5 stars

**AVG. PRICE**

$6

**WINE'S RANK WITHIN**

- **Winery**: MEDIUM
- **Region**: LOW
- **Country**: MEDIUM
- **Globally**: MEDIUM

1,477,975th of 2,494,741 wines globally

**RATE THIS WINE**

0.0

**SHARE THIS WINE**

[facebook][twitter][googleplus]
Designers in a GIZMO world must design for cognitive load and opportunity cost
"...in an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes. What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it" (Simon 1971, p. 40-41).
“Everyone can’t be a designer there’s not enough time in the world for people to sacrifice infinite amounts of opportunity and cognition.

This means that in a SPIME world designers must design not just for objects or for people but for the technosocial interactions that unite people and objects.”
“Metrics make things visible”

“Spimes begin and end as data”
“When the entire industrial process is made explicit, when the metrics count for more than the object they measure, the gizmos become spimes.”
When the entire industrial process is made explicit, when the metrics count for more than the object they measure, the gizmos become spimes.
“Effective design helps Wranglers to Wrangle better.”
“Design is not science”
“Design is not science”
“How do people know what to expect from their things?”
“metahistory is the ultimate determinant of the shape of things”
“The premier argument for metahistorical intervention is that the status quo will kill us”
“A society that can’t sustain itself may have strong ideas about its metahistory, but objectively speaking it has no future.”
“Nanobuds” Could Turn Almost Any Surface Into a Touch Sensor

Stretchy, conductive films made of novel nanobuds could bring touch sensors to more surfaces.

Google’s Intelligence Designer

The man behind a startup acquired by Google for $628 million plans to build a revolutionary new artificial intelligence.

NEW SINCE LAST VISIT 25

01. Coding is cool as White House unveils computer science school initiative
02. Apple manager gets year in jail, $4.5m fine for selling industry secrets
03. 19 hospitalized at furry convention due to “seemingly intentional” gas leak
04. Tor privacy service used in a majority of online bank heists, report says
05. Mysterious politician steps in to buy Bitcoin startup HashFast’s assets

With new “inks” containing semiconductors, researchers have been able to print LEDs for the first time.

Playful new cooking based on traditional methods and weird ingredients will supplant the industrial techniques that dominate...

CONTINUE →

Microsoft rings in 12 days of holiday deals with $79 Toshiba tablet

3 hours ago

Samsung SSD 850 Evo solid-state drive is a keeper

4 hours ago

Top performance for a low price

2 hours ago

Samsung SSD 850 Evo (pictures)

2 hours ago

New Nissan Murano takes concept styling to the road

3 hours ago

Which Canon dSLR?

1 minute ago

Uber banned from India’s capital after alleged rape

36 minutes ago

Ex-Apple exec going to jail for kickback scheme

1 hour ago

A startup wants to make it easier for people with epilepsy to detect seizures and let others know when they need help.

TOP POST: Sharp Aquos Crystal: A $240 smartphone that out-designs most flagships
“The ability to make small mistakes in a hurry is a vital accomplishment for any society that intends to be sustainable”

“A society with spimes has design capabilities closed to societies without them.”
Sterling argues for a techno-social intervention in our *metahistory* so we don’t kill ourselves
“A SYNCHRONIC SOCIETY synchronizes multiple histories. In a SYNCHRONIC SOCIETY, every object worthy of human or machine consideration generates a small history. These histories are not dusty archives locked away on ink and paper. They are informational resources, manipulable in real time.”
“The values of a synchronic society are temporalistic: Do we gain more time by doing this or less time?”
“Temporalistic thinking is a moral worldview”

“A society with declining life expectancy is clearly retrogressive. A society with a high infant mortality rate is maladjusted. A society riddled by plagues, diseases, resistant and emergent microbes and environmental illness is decadent.”
“We are in trouble as a culture, because we lack firm ideas of where we are in time and what we might do to ensure ourselves a future. We’re also in trouble for technical and practical reasons: because we design, build and use dysfunctional hardware”
Nokia ReMade
“Animals can’t design. Apes will fling objects, but humans will throw objects, practice throwing them and refine the grain of the material so that the thrown object throws better.... Humans get far better at interacting with objects than any animal can ever manage; and since humans are also capable of abstract analysis; they are also better at getting better. Humans have technosociety.”
“Entropy requires no maintenance”
“Entropy requires no maintenance”
“Entropy requires no maintenance”

“Pollution is not subject to consumption”
“Entropy requires no maintenance”

“Pollution is not subject to consumption”
“We don’t consume waste”
OBsolescence
is innovation in reverse
“The Mirrored S-Curve of Technological Adoption”

Penetration Rate
of a novel good or service

Cultural Factors

General Human Incompetence

Language Barriers

Ethical, Legal, and Social Constraints

Infrastructure Constraints

Poverty

Lack of Political Will

Entrenched Interests

Emergence of Cheaper, More Effective Methods

Nostalgia

Museum Economics

Defunct

Point at which capitalist societies stop talking about how cool it is

Time
How do things move along this curve?

“It isn’t magic. People do it. Some people are better at it than others.”
“Gartner’s Hype Cycle characterizes the typical progression of an emerging technology, from over-enthusiasm through a period of disillusionment to an eventual understanding of the technology’s relevance and role in a market or domain. Each phase is characterized by distinct indicators of market, investment and adoption activities.”
It's been at least 100 days since your last Domino's. But who's counting?

DOMINO'S
MONTHS WITHOUT
DOMINO'S?
YOU'VE DEPRIVED YOURSELF LONG ENOUGH.

ORDER ONLINE | MENU | COUPONS
Ch 8: The Stark Necessity of Glamor
Ch 8: The Stark Necessity of Glamor
“Most Advanced, Yet Acceptable”
Ch 8: The Stark Necessity of Glamor

“being designery”
“an absolutely acceptable object would be invisible”
“On eBay [and Amazon] it’s now common to find objects for auction for a penny. I can have that object for a penny, because the point was to inveigle me into the auction process and a relationship with the auctioneer. If I’m given something for free, in a GIZMO-End User situation, then I need to be warily aware that this is almost certainly a loss leader of some kind meant to lure me into some tangled production chain.”
“I’m not supposed to worry my pretty little head about any of that, but you know something? I know that I am paying for it somehow. Those phenomena do impinge on me: legal, social, ethical, environmental, all of them... They should inform my decision about whether I buy that bottle and integrate its contents into my body.”
“My relationship to this bottle of wine is a parable of my human relationship to all objects.”
Ch 9: An end-user drinks GIZMO wine

Who is able to expose all these externalities in a way that is Most Advanced Yet Acceptable?
Ch 9: An end-user drinks GIZMO wine

Designers
“a thing is not merely a material object, but a frozen techno-social relationship.”
Ch 10: 11: 12: Internet of Things
RFID

- Review the Technology
- Pets and RFID
  - pets who don’t have RFID
- Passive vs. Active
- WISPs
  - http://wisp.wikispaces.com/WISPHardware
- Skimming
- an “Internet of Things”
“A SPIME is by definition, the protagonist of a documented process. It is an historical entity with an accessible, precise trajectory through space and time”
IoT

- GPS enabled monitors
- Global Network
- What does the design of a system that is aware of most things at all times look like?
  - Wranglers
  - Inventories
- The lifestyle magazine as a dynamic socio-technical infrastructure
IoT

- GPS enabled monitors
- Global Network

What does the design of a system that is aware of most things at all times look like?

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What does the design of a system that is aware of most things at all times look like?

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The lifestyle magazine as a dynamic socio-technical infrastructure
Spime

- What happens when “The model is more detailed than the physical object it models.”
- De novo
- Reverse Engineered
- Interaction effects
- SPIME monitors++
- Intellectual property
“It may not seem that I “need” all that information, but that’s an old-fashioned way to think. I don’t “need” every web page on the internet, either.

It’s not a question of designing an internet of things to meet my so-called “needs.” It’s vastly cheaper and simpler just to enable automatic information-generating devices and processes, then search them mechanically and cybernetically, to figure out what I “need.”
Fabbing • fabricators will disintermediate the product and gizmo worlds
Making a 3D Model

The Eighth International Conference on Ubiquitous Computing
Orange County

intel Microsoft Research Google IBM Research NOKIA SAMSUNG

Making a 3D Model
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Money

- Gold
- Paper money backed by gold
- Paper money not backed
- Electronic money
- Credit History
Pulling it all together • Problem
We have a problem with our current relationship with technology, it's going to kill us
We must go forward faster then we are going now
We have a problem with our current relationship with technology, it's going to kill us.

Technology has proceeded through epochs. The main thing about this is that we can't go backward.

We must go forward.
We must go forward

What does forward even mean?

Meta-Histories
Who moves technology forward? Designers

Designers work within meta histories and also change them

Meta-Histories
Designers work within meta histories and also change them.
Designers must change the idea of what forward is.
We have a problem with our current relationship with technology, it's going to kill us.

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We must go forward

What does forward even mean?

Meta-Histories

Who moves technology forward? Designers

Designers work within meta histories and also change them

Lowry

MAYA

Designers must change the idea of what forward is
A Moral Choice - deciding what is good and what is bad

Forward needs to be creating more time

Temporalistic View
Designers must change the idea of what forward is
Reconfigure the relationship between objects and people again

Cognitive Load Opportunity Cost
A wine bottle represents a snapshot in a stream of human and material resources.
SPIME is a digital resource
A wine bottle represents a snapshot in a stream of human and material resources.

SPIME is a digital resource.
A wine bottle represents a snapshot in a stream of human and material resources.

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SPIMEs can help us to keep track of the flow of resources. SPIMEs make those resources visible.
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So we can measure if we are making more time or not.
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Some changes are good.
Some changes are bad.
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Meta-History Generator
This is how we can determine the Shape of Things... What the shape of things should be
Utopia

Oblivion

We have a problem with our current relationship with technology, it's going to kill us
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Oblivion

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Technology has proceeded through epochs. The main thing about this is that we can't go backward.

We must go forward.

What does forward even mean?

Meta-Histories

Who moves technology forward? Designers

Designers work within meta histories and also change them

Lowry

MAYA

Forward needs to be creating more time

Designers must change the idea of what forward is

Reconfigure the relationship between objects and people again.
“The only sane way out of a technosociety is through it, into a newer one that knows everything the older one knew and knows enough new things to dazzle and dominate the denizens of the older order. That means revolutionizing the interplay of human and object. It means bringing more attention and analysis to bear on objects than they have undergone. It also means engaging with the human body and it’s affordances, with our health and our ease and our comfort, with our working environment, with our lungs and our skin and our bones.”
“I hope you are the kind of person that can do it’