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"

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)

BEIJING US EMBASSY 北京美国大使馆

CHAOYANG 朝阳农展馆 东四环北路

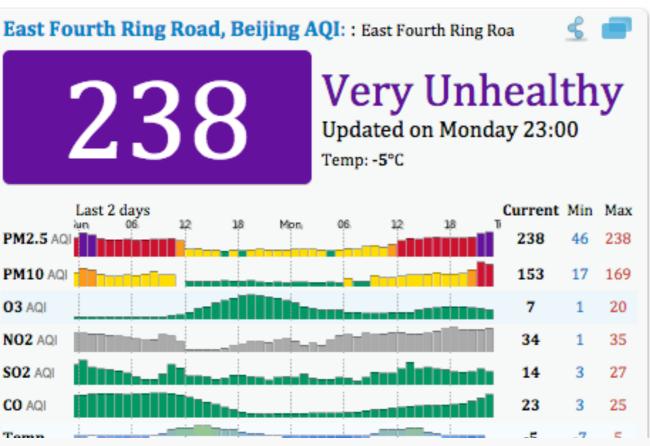
EAST FOURTH RING DONGCHENG DONGSI CHAOYANG OLYMPIC 东城东四

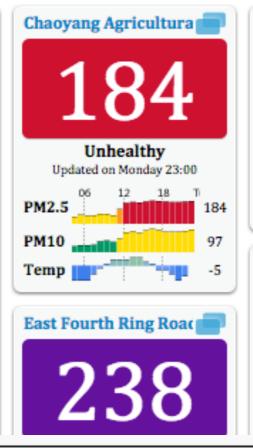
朝阳奥体中心

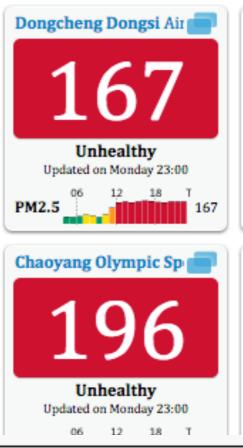
QIANMEN E ST, 前门东大街

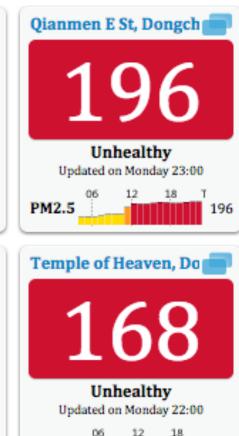


LOCATE THE NEAREST CITY









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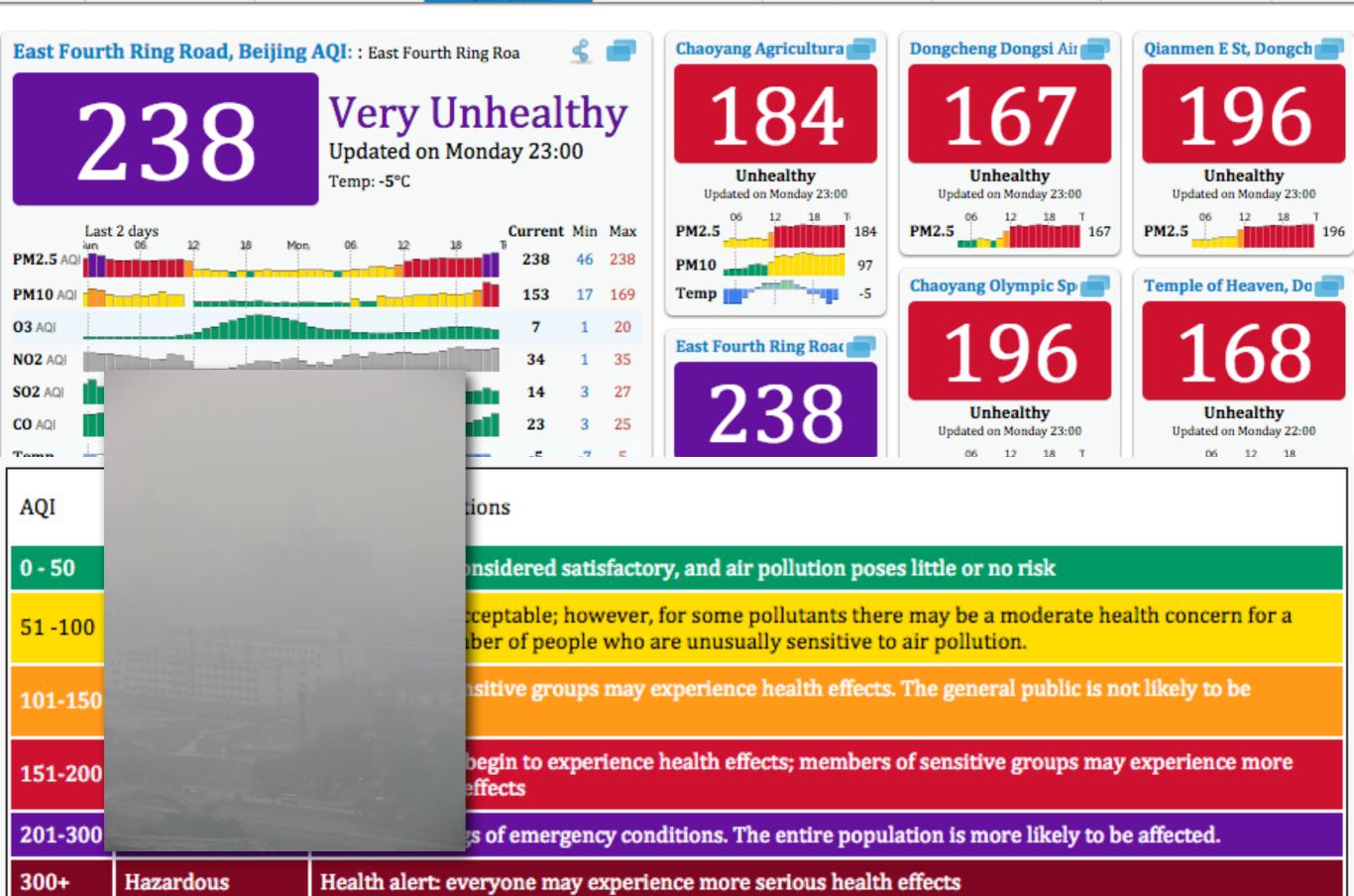
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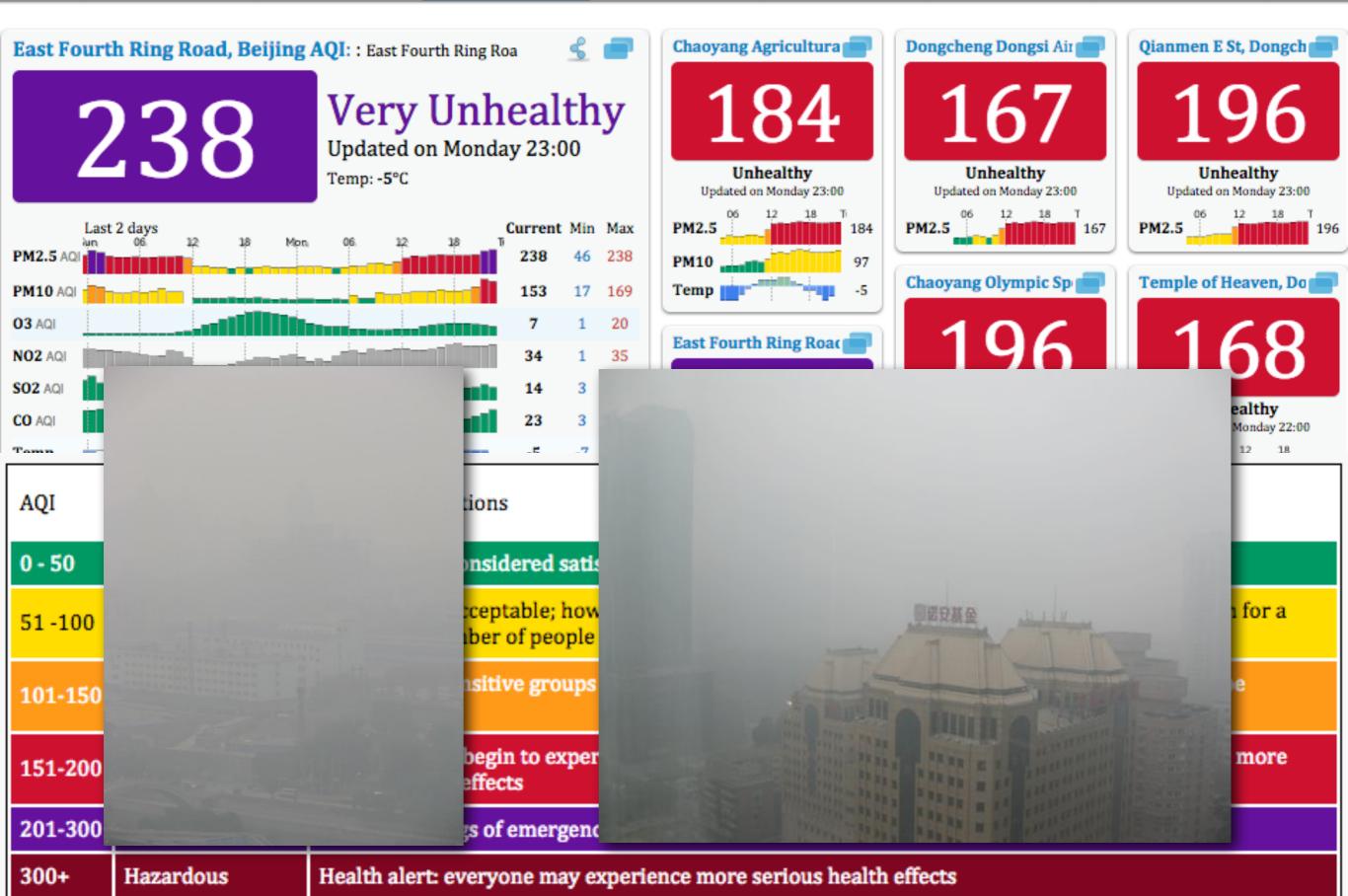
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LOCATE THE NEAREST CITY









San Pedro Bay Ports Clean Air Action Plan



Map View Current Data Yesterday's Data Daily Highs Historical Data Reports

Glossary

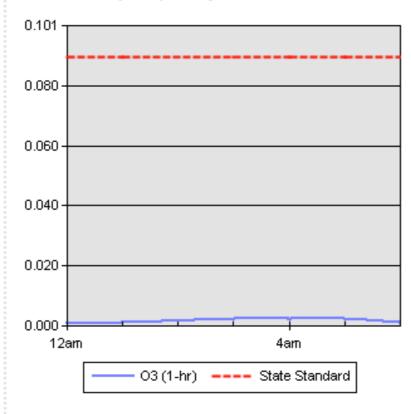
CAAP Home > Air Quality > Current Data - real-time air quality information

All data is preliminary

Port of Long Beach - Inner Port O3 (1-hr)

Monitored Parameter	Averaging Period	Current Value	Units	State Standard	Federal Standard
O ₃	1-hr	0.001	ppm	0.09	-
O ₃	8-hr	0.001	ppm	0.07	0.08
PM ₁₀	24-hr	40.5	μg/m ³	50	150
PM _{2.5}	24-hr	15.5	μg/m ³	-	35
NO ₂	1-hr	0.044	ppm	0.25	-
CO	1-hr	2.160	ppm	20.0	35.0
CO	8-hr	2.121	ppm	9.0	9.0
SO ₂	1-hr	0.003	ppm	0.250	0.075
SO ₂	24-hr	0.002	ppm	0.04	0.14
Wind Speed	1-hr	3.2	mph	-	-
Wind Direction	1-hr	N	direction	-	-
Temperature	1-hr	56.8	deg F	-	-
Relative Humidity	1-hr	68.0	%	-	-
Rain	1-hr	0.00	in/hr	-	-
Rain	Daily Total	0.00	in	-	-
Rain	Monthly Total	1.11	in	-	-
Rain	Yearly Total	3.91	in	-	-

03 (1-hr) Daily Observations



^{*} Indicates reading occurred during instrument calibration



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 All deta is preliminary						a is preliminary	
Select A Site		Observation To	Graph				
Port of Long	Beach - Inner Port	O3 (1-hr)					

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 O_3

 O_3

PM₁₀

 $PM_{2.5}$

San Pedro Bay Ports Clean Air Action Plan



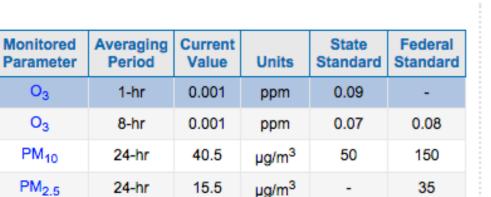


Map View Current Data Yesterday's Data Daily Highs Historical Data Glossary Reports

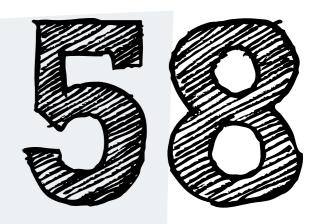
CAAP Home > Air Quality > Current Data - real-time air quality information

All data is preliminary

Select A Site	Observation To Graph
Port of Long Beach - Inner Port	O3 (1-hr)



03 (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

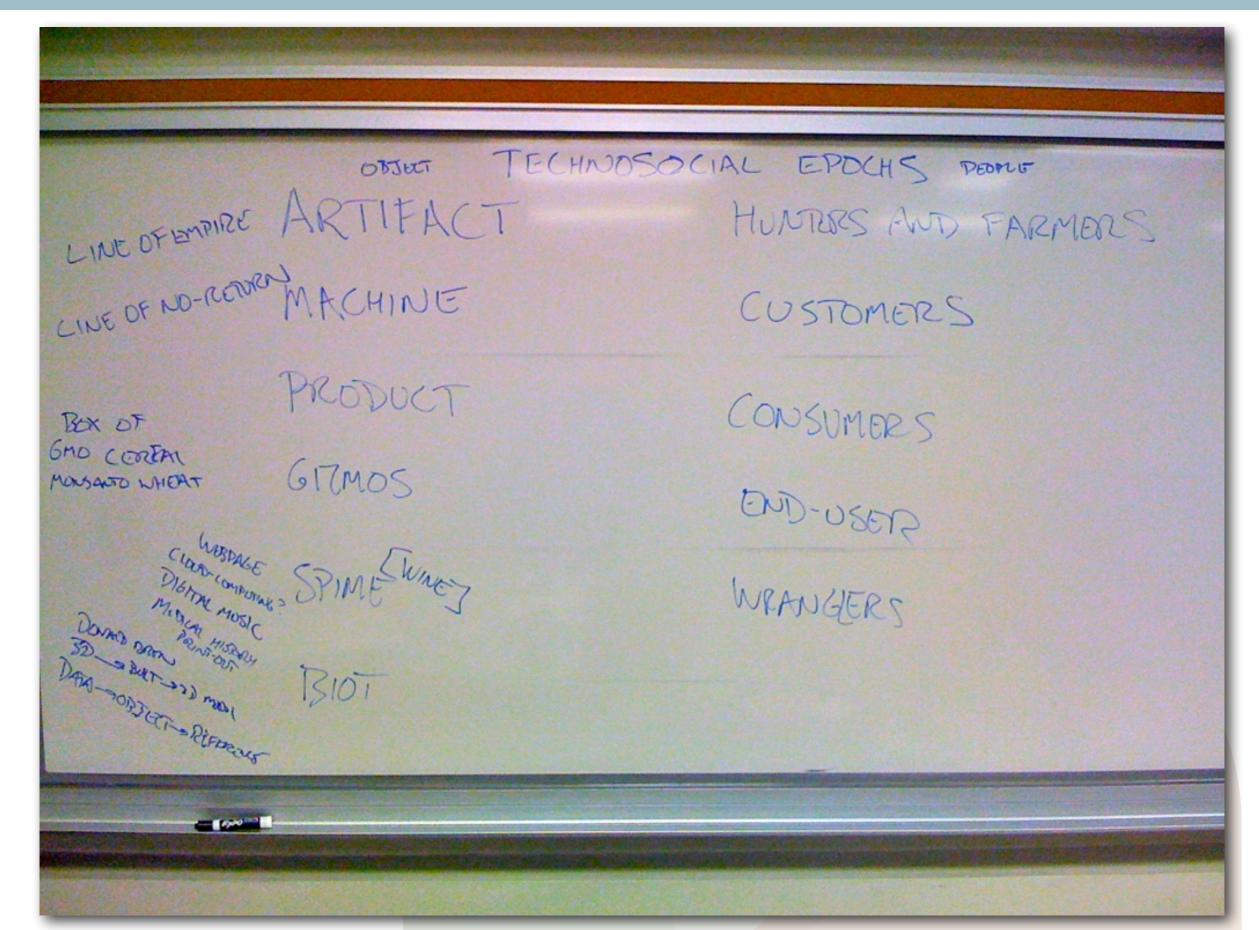
"The status quo uses archaic forms of energy and materials which are finite and toxic. They wreck the climate, poison the populace and foment resource wars. They have no future."

"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?



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"

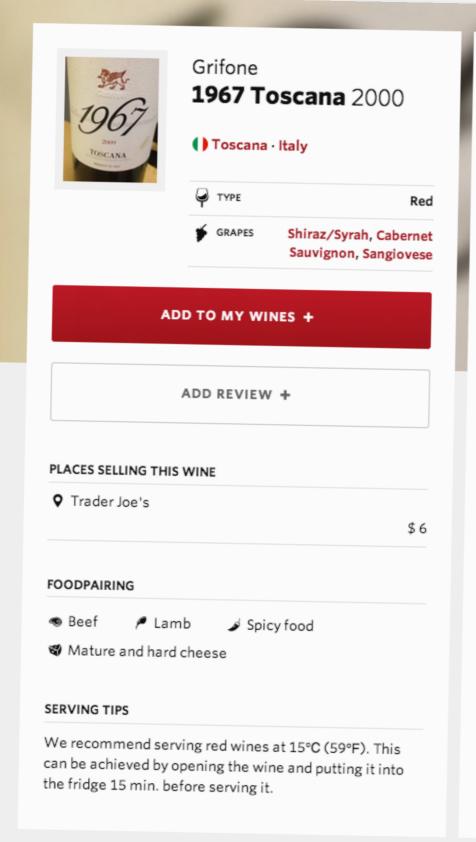
"It is important to explicitly acknowledge the downsides of any technological transformation"

"Tomorrow composts today"

"What can you no longer earn a living without?"

"What technological feature would a country be completely conquerable if they lost it?"







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."

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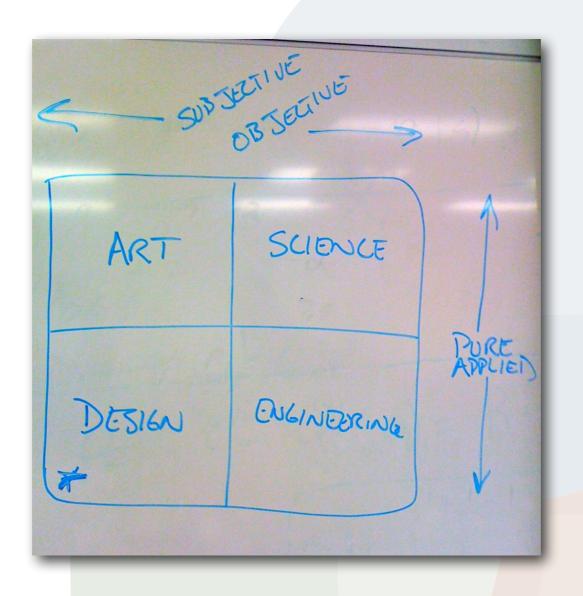
"Effective design helps Wranglers to Wrangle better."

Ch 4: The Personal is Historical



Ch 4: The Personal is Historical





"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."

Ch 5: MetaHistory

"Nanobuds" Could Turn Almost Any Surface Into a Touch Sensor

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

Your Online Journal, Built from Heartbeats, Sleep Patterns, and Hikes

Material Cools Buildings by Sending Heat into Space

Discarded Laptop Batteries Keep the Lights On

MATTERS



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Is the Darknet a glimpse into the web of the future?

Google's Intelligence Designer

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

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

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Ch 5: MetaHistory

"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."

Ch 5: MetaHistory

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"





"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"

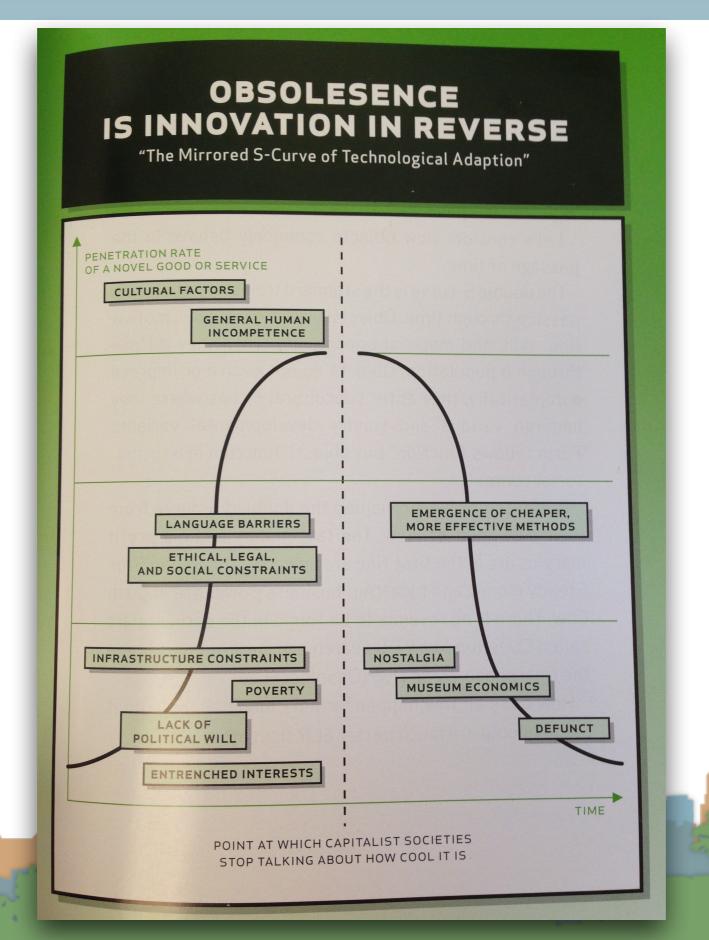
"Entropy requires no maintenance"

"Pollution is not subject to consumption"

"Entropy requires no maintenance"

"Pollution is not subject to consumption"

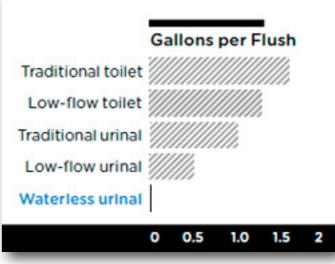
"We don't consume waste"



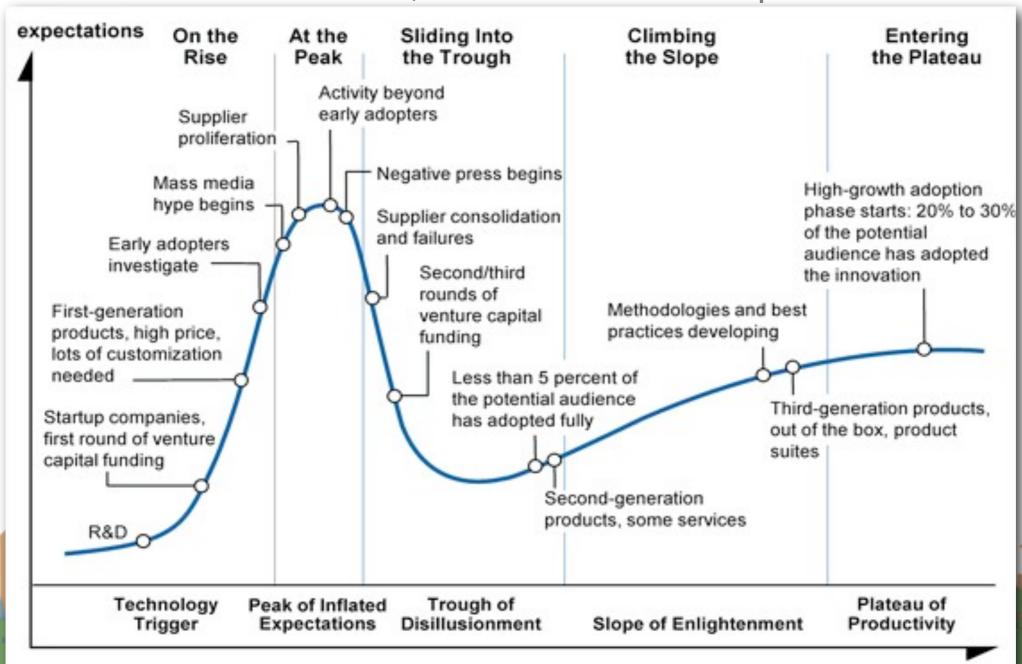
How do thing move along this curve?

"It isn't magic. People do it. Some people are better at it than others"

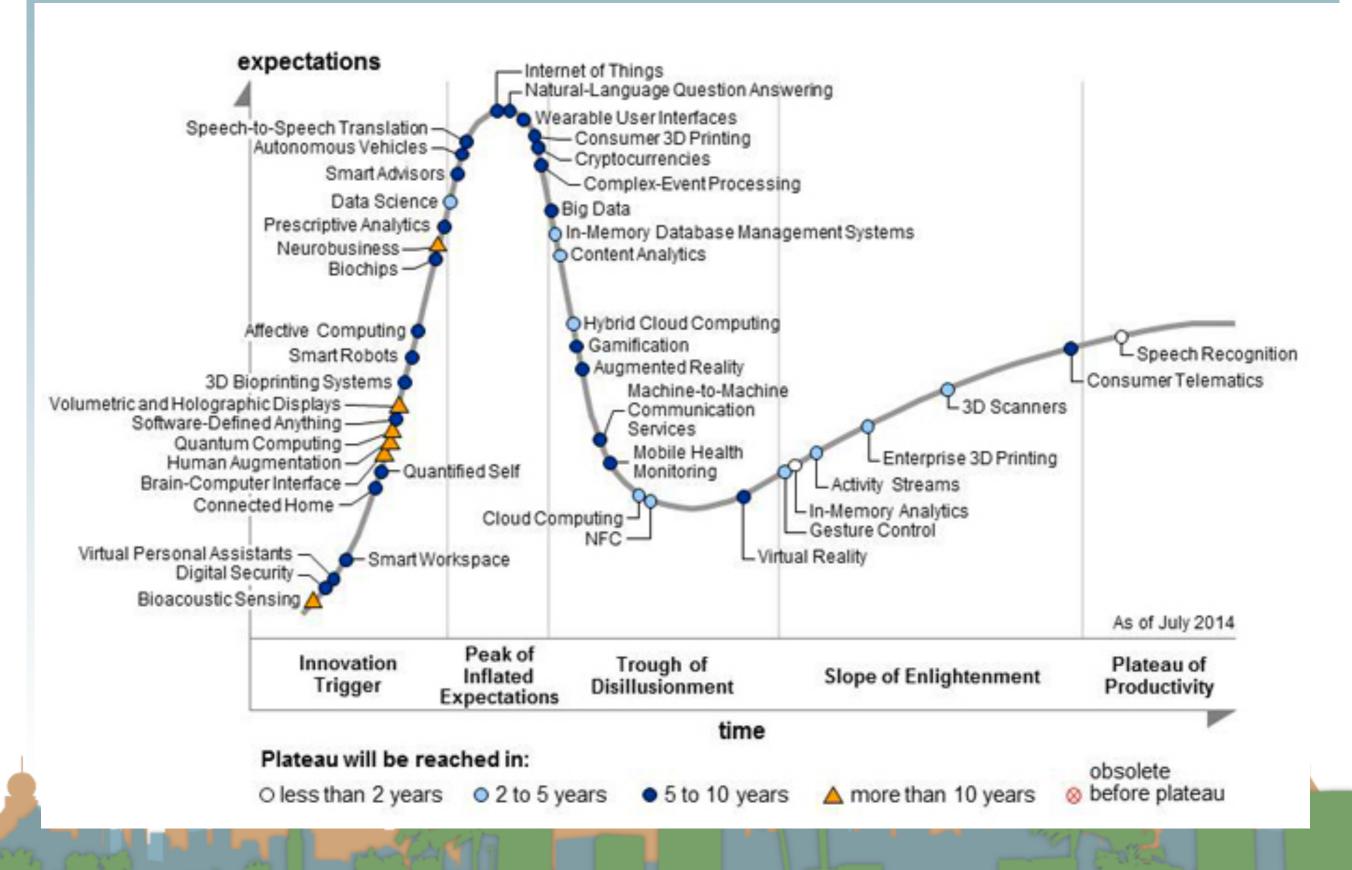




"Gartner's Hype Cycle characterizes the typical progression of an emerging technology, from over-enthusiasm through a period of disillusionment to an eventual understanding of the technology's relevance and role in a market or domain. Each phase is characterized by distinct indicators of market, investment and adoption activities."



time



Interstitial











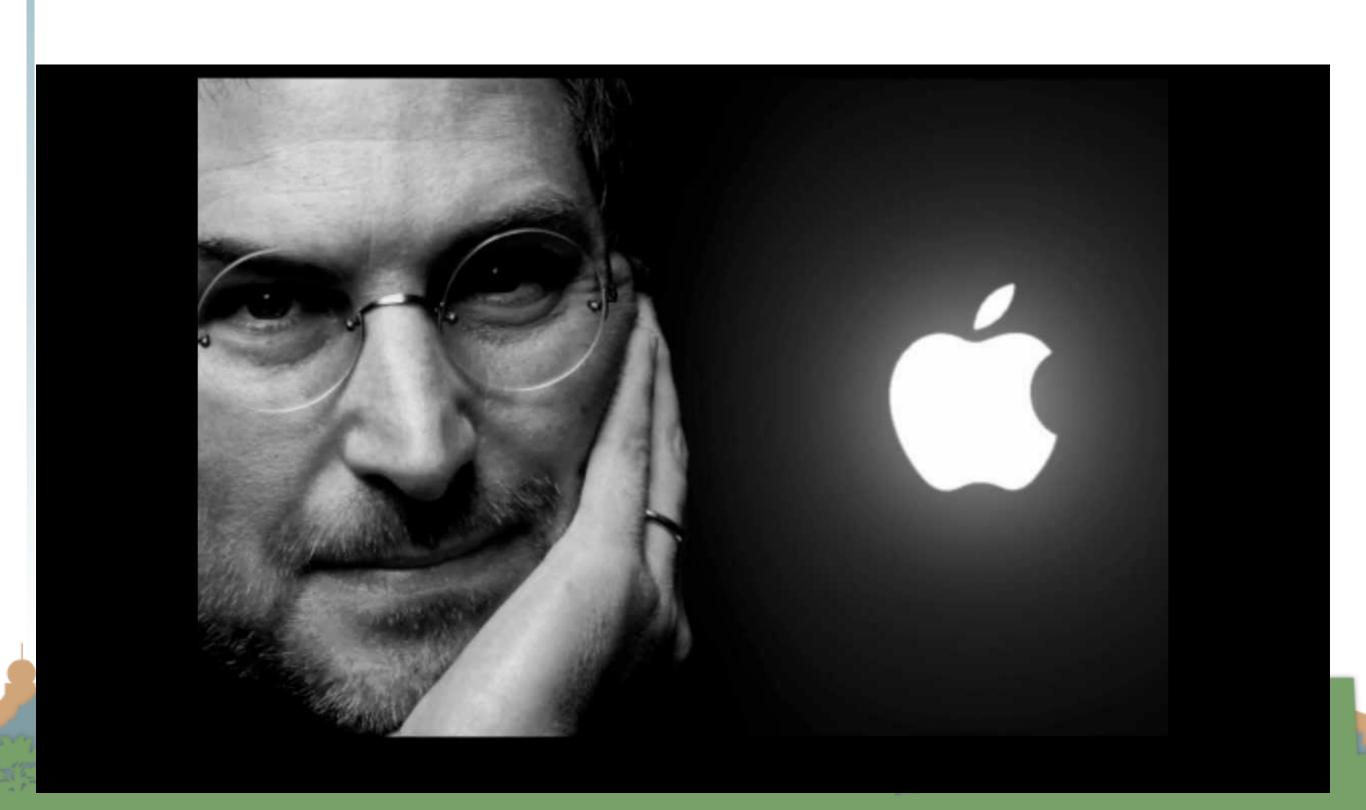




"Most Advanced, Yet Acceptable"



"being designery"



"an absolutely acceptable object would be invisible"



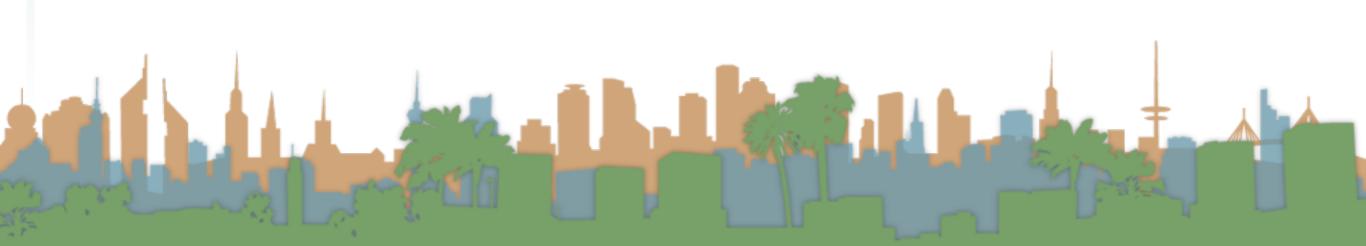
"On eBay [and Amazon] it's now common to find objects for auction for a penny. I can have that object for a penny, because the point was to inveigle me into the auction process and a relationship with the auctioneer. If i'm given something for free, in a GIZMO-End User situation, then I need to be warily aware that this is almost certainly a loss leader of some kind meant to lure me into some tangled production chain."



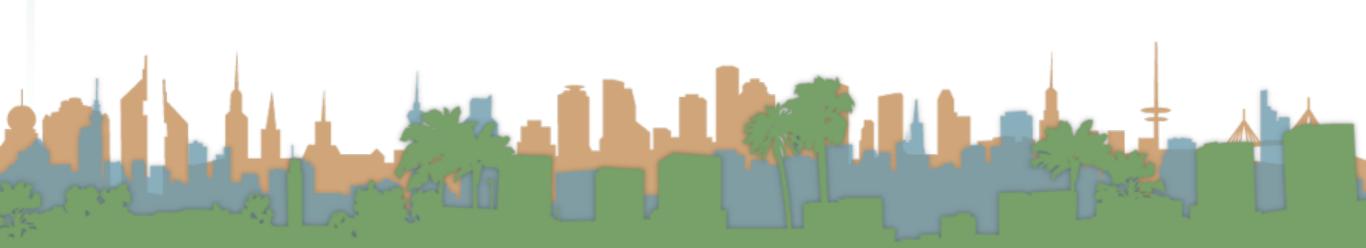
"I'm not supposed to worry my pretty little head about any of that, but you know something? I know that I am paying for it somehow. Those phenomena do impinge on me: legal, social, ethical, environmental, all of them... They should inform my decision about whether I buy that bottle and integrate its contents into my body."



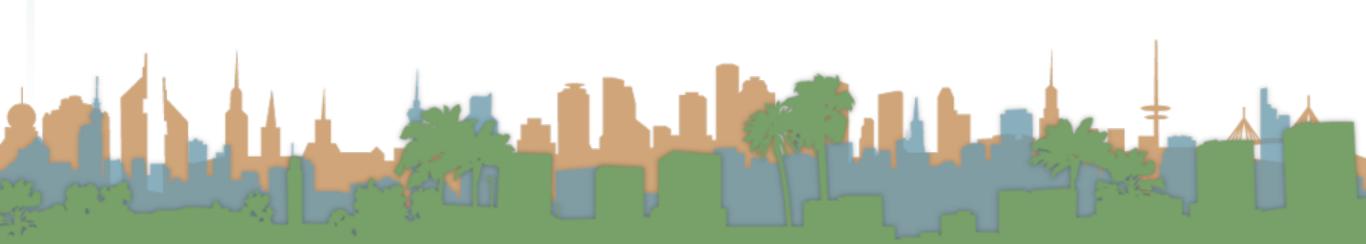
"My relationship to this bottle of wine is a parable of my human relationship to all objects."



Who is able to expose all these externalities in a way that is Most Advanced Yet Acceptable?

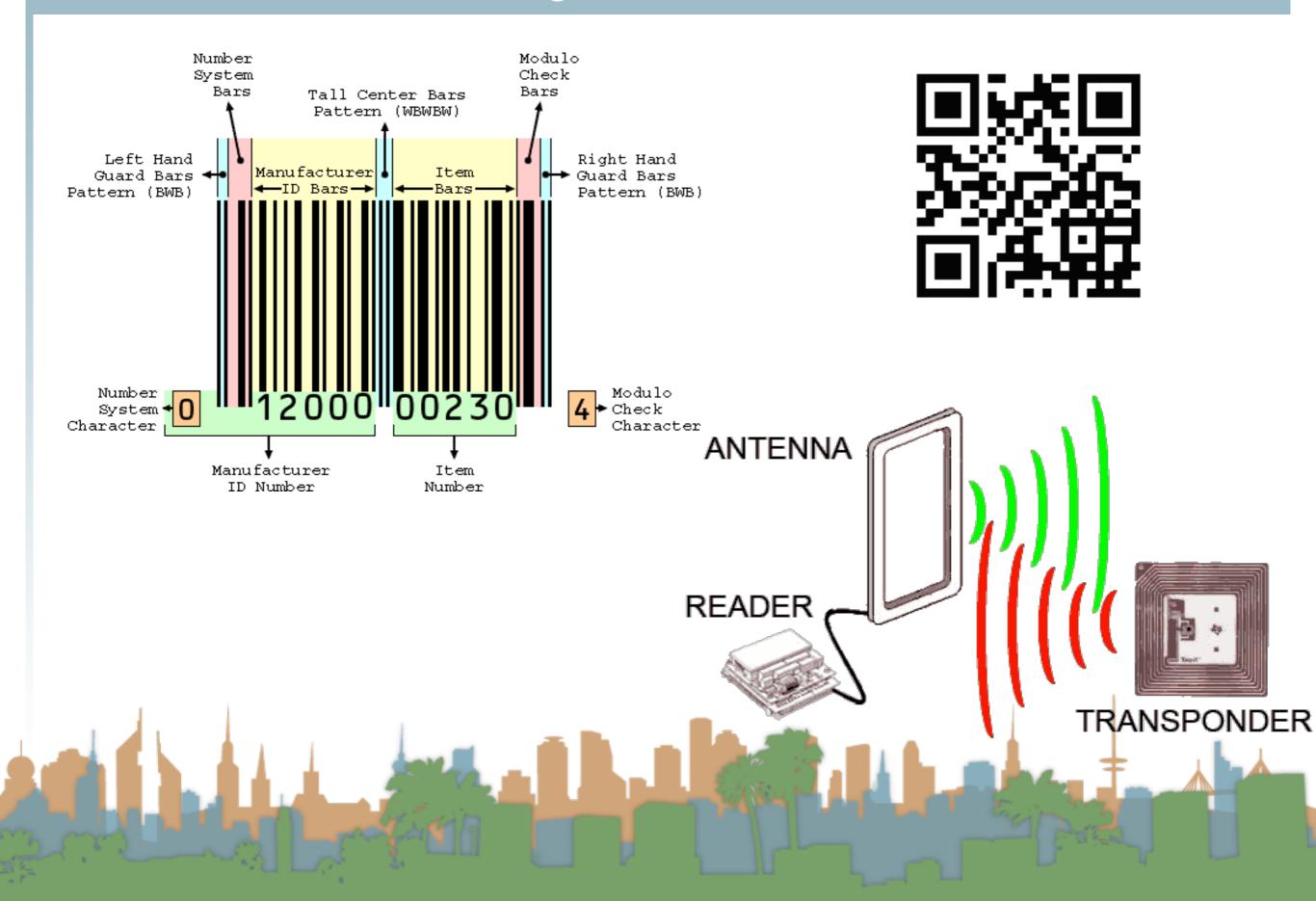


Designers



"a thing is not merely a material object, but a frozen techno-social relationship."



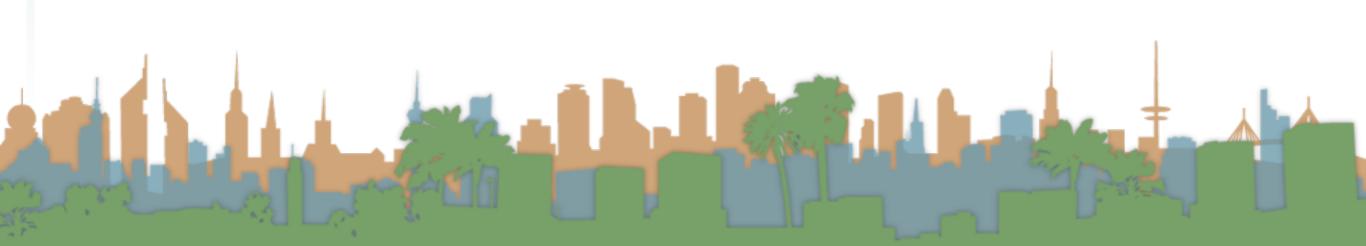


RFID

- 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 protaganist of a documented process. It is an historical entity with an accessible, precise trajectory through space and time"



IoT

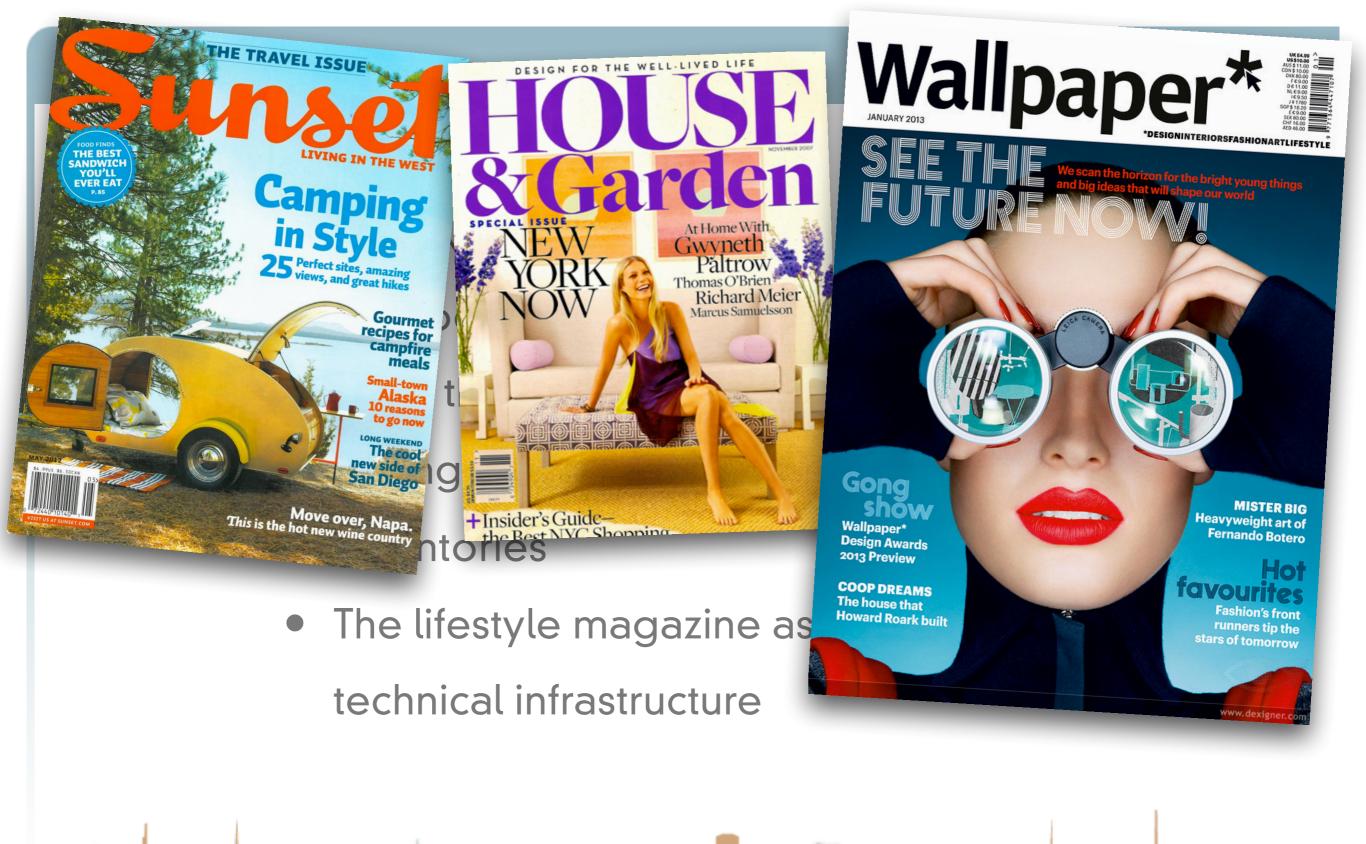
- GPS enabled monitors
- Global Network
- What does the design of a system that is aware of most things at all times look like?
 - Wranglers
 - Inventories
 - The lifestyle magazine as a dynamic sociotechnical infrastructure



 The lifestyle magazine as a dynamic sociotechnical infrastructure



 The lifestyle magazine as a dynamic sociotechnical 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

Shaping Things

"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.

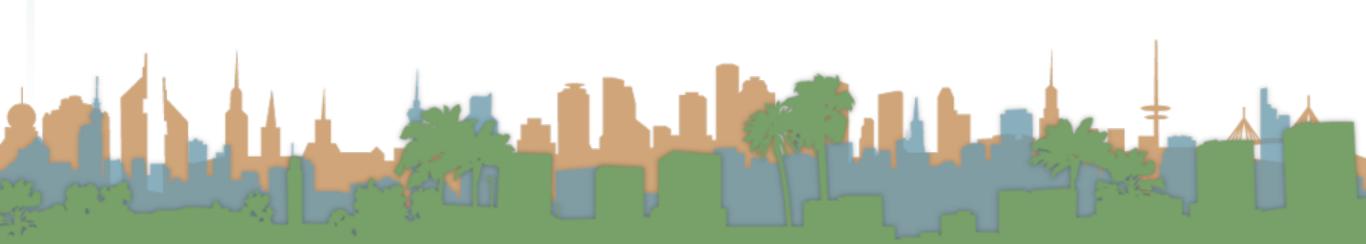
It's not a question of designing an internet of things to meet my so-called "needs."

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."

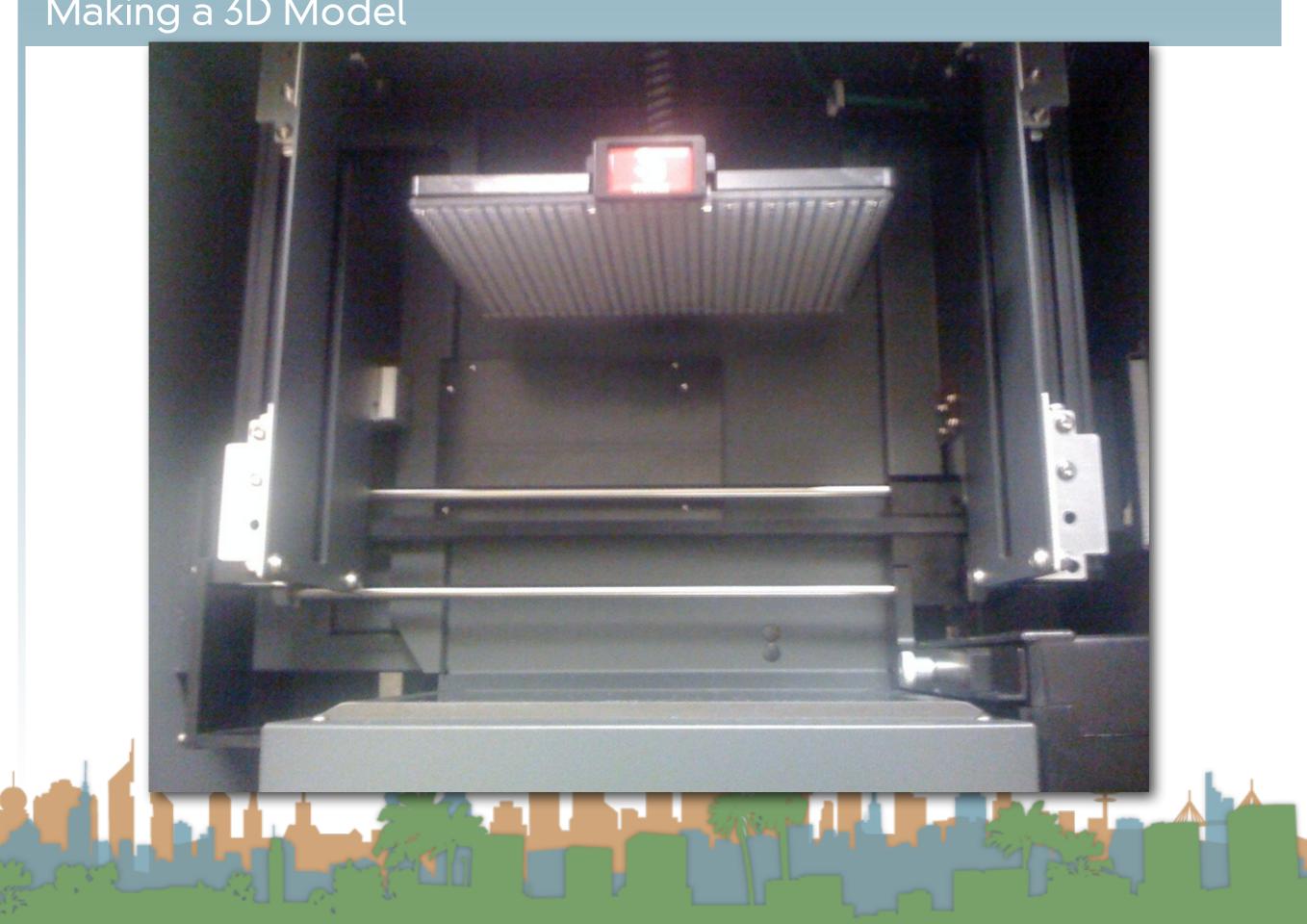


Fabbing • fabricators will disintermediate the product and gizmo worlds





Making a 3D Model plash FTI 230 Desktop Modeler











Money

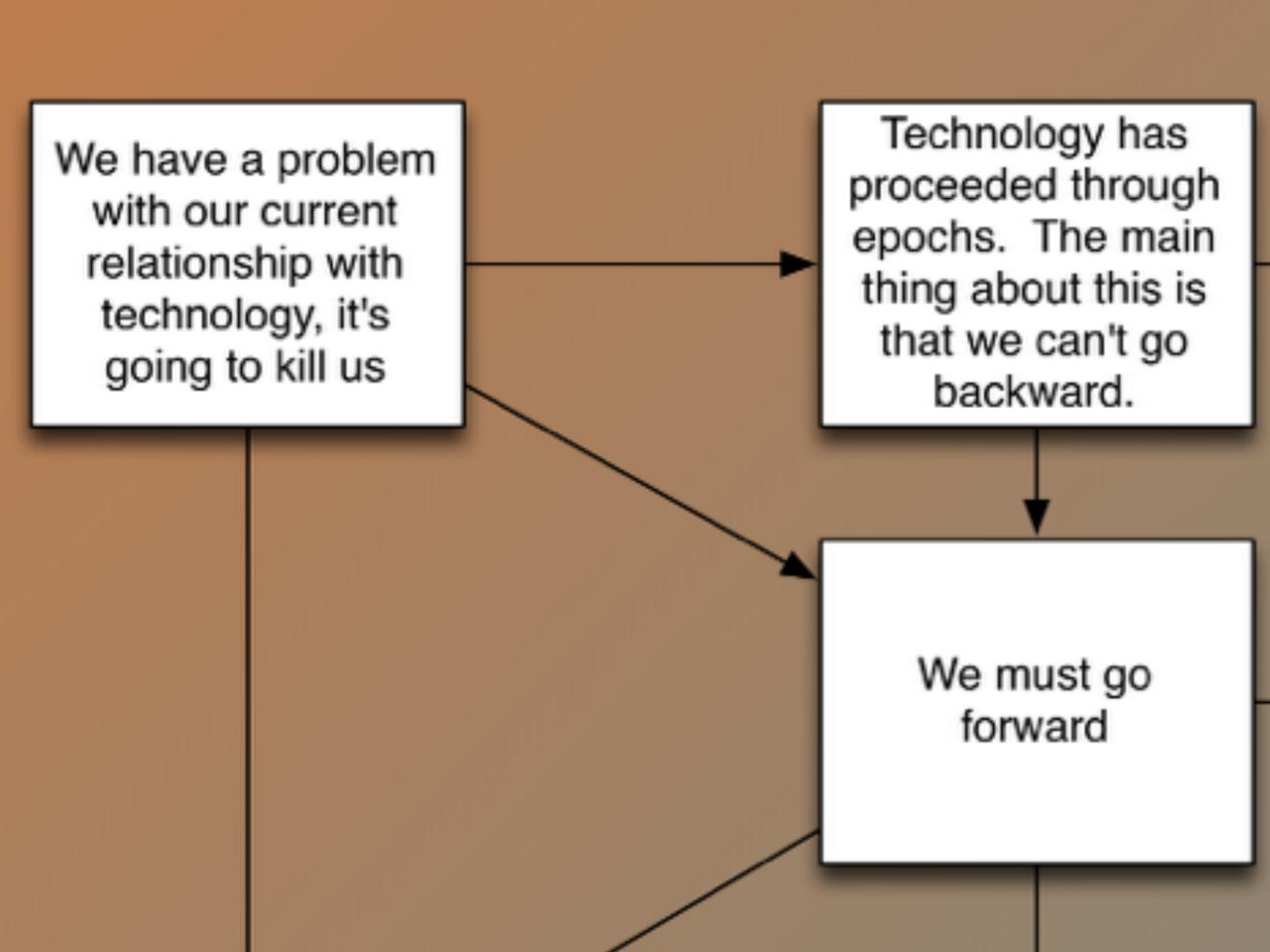
- Gold
- Paper money backed by gold
- Paper money not backed
- Electronic money
- Credit History

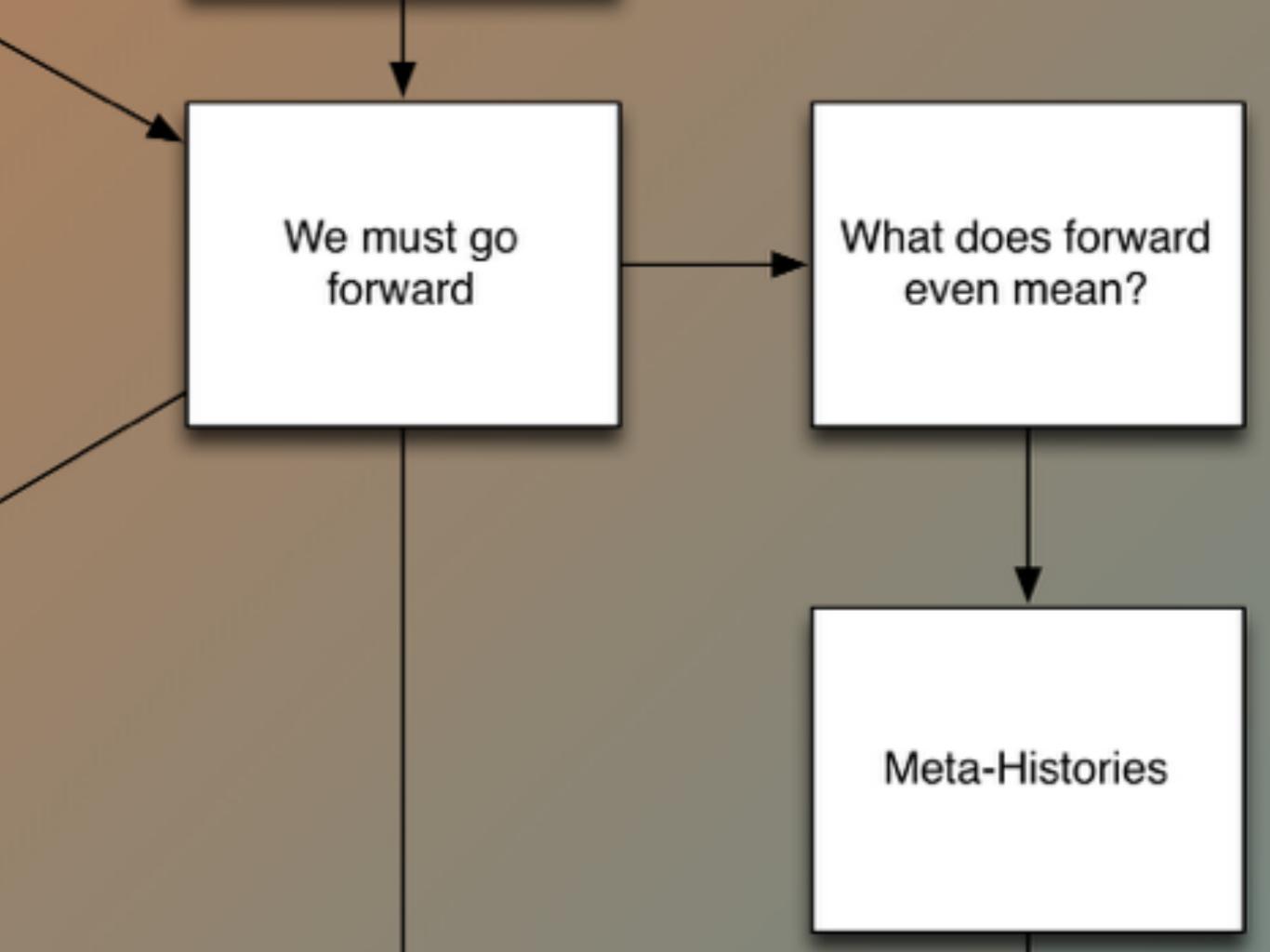
Pulling it • Problem all together

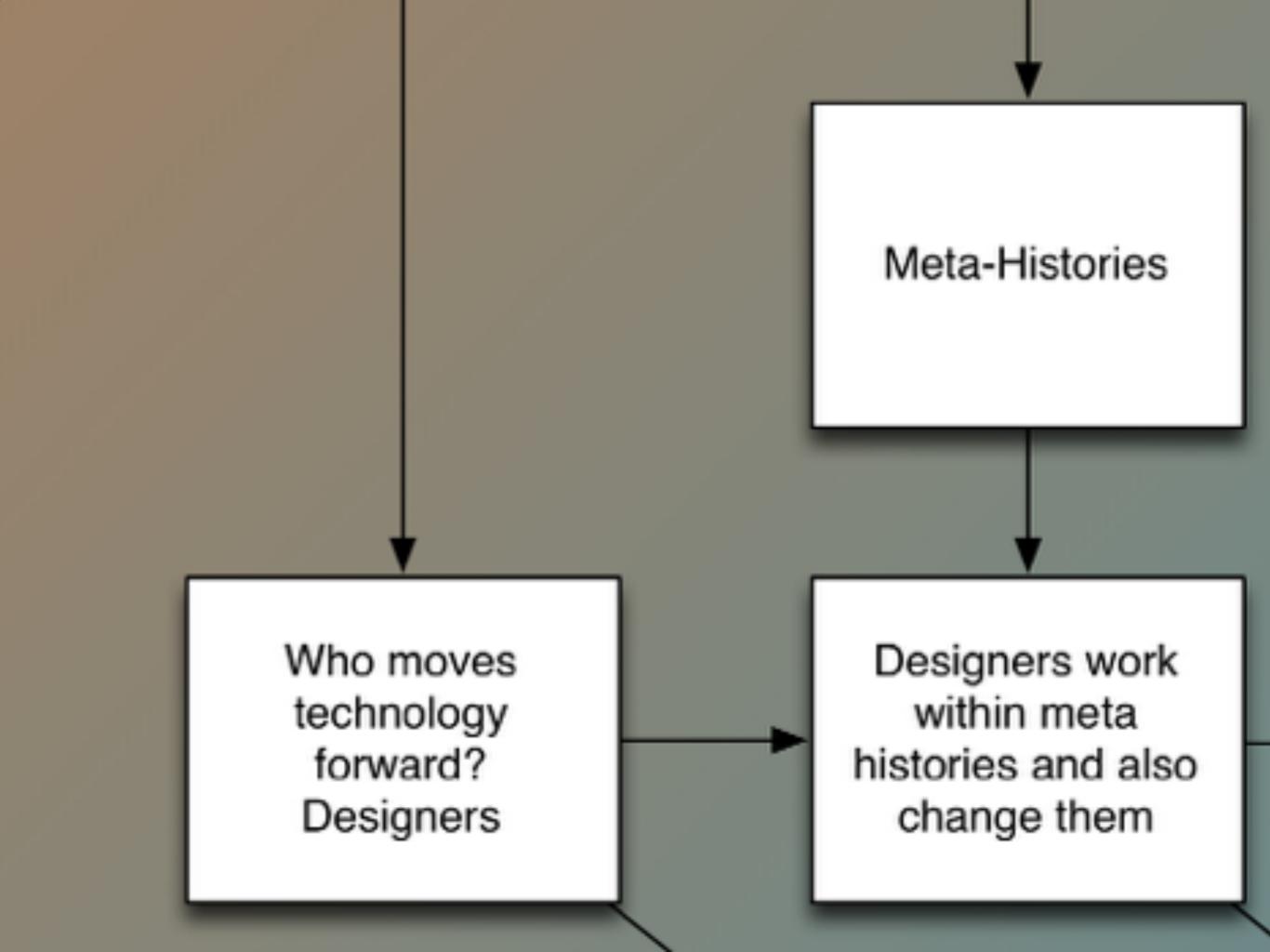


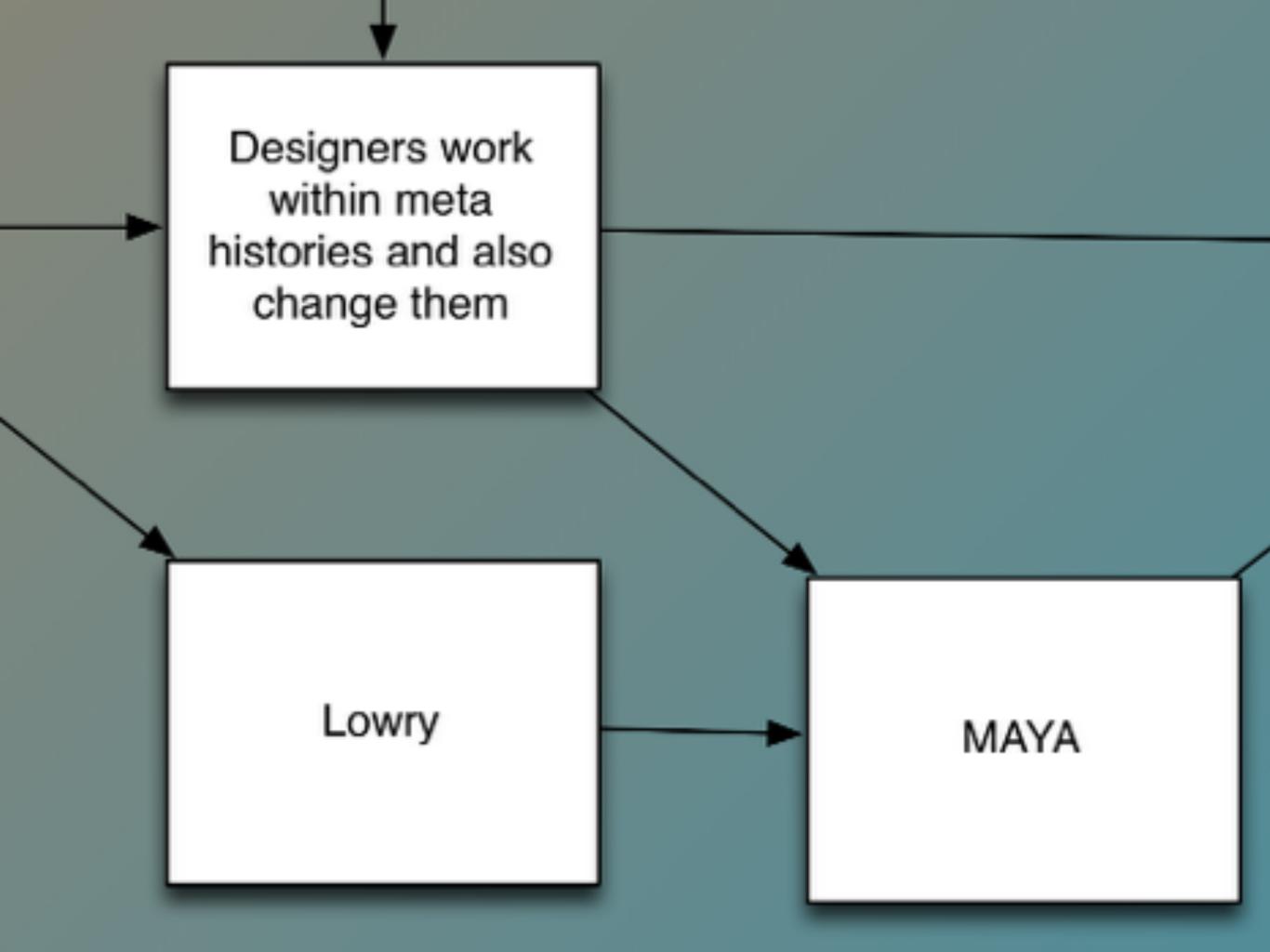
We have a problem with our current relationship with technology, it's going to kill us

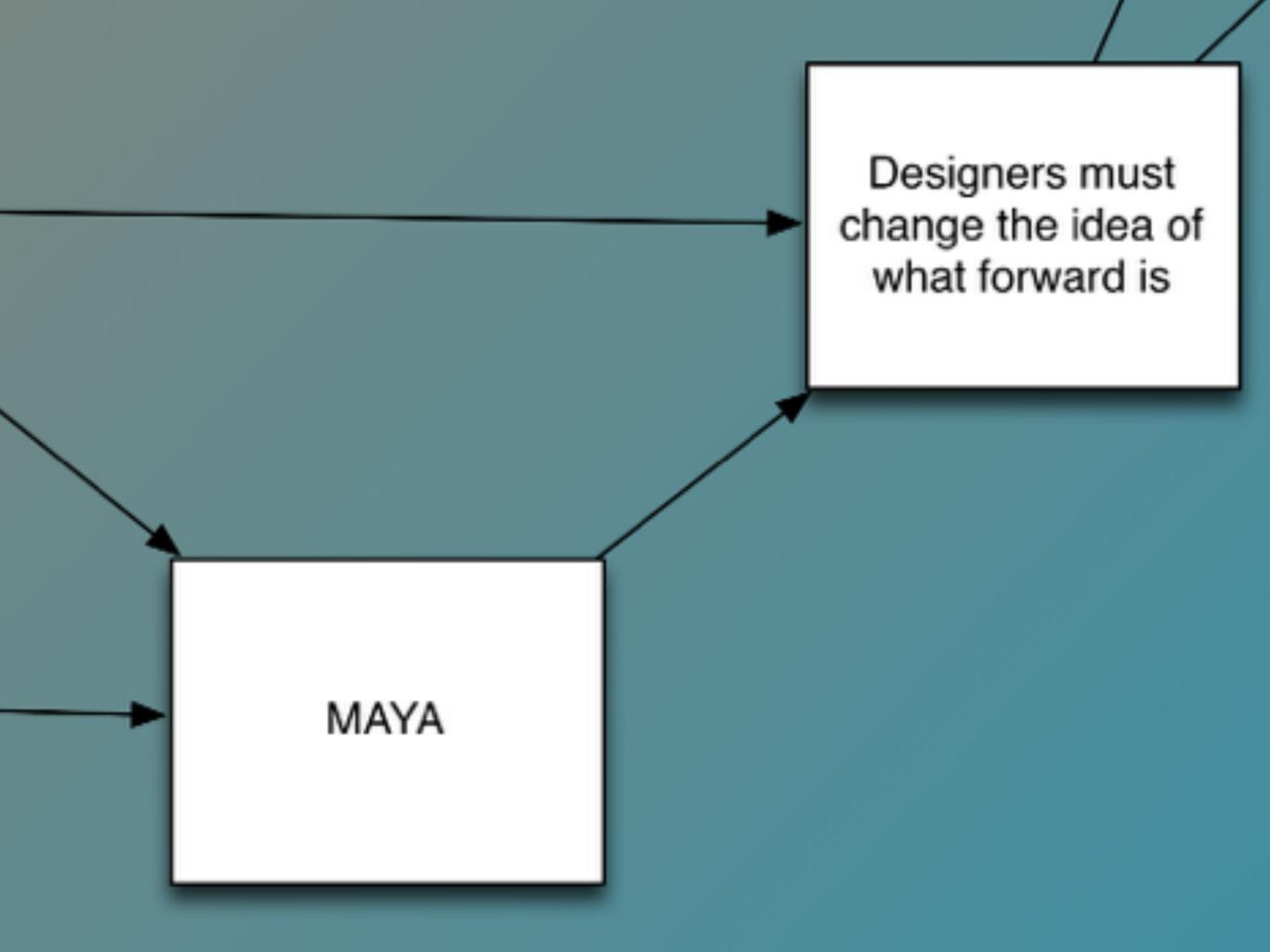
We must go forward faster then we are going now

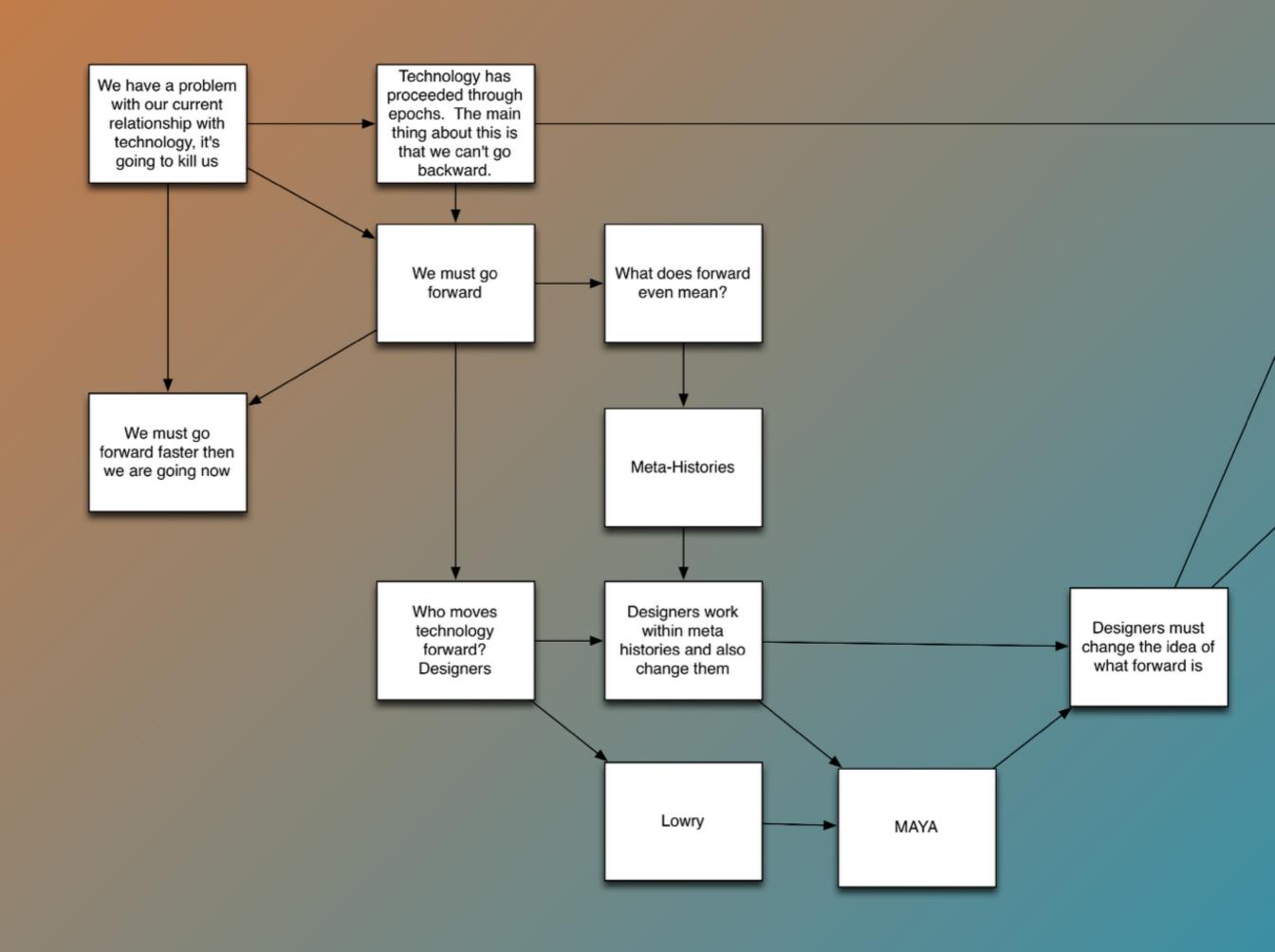


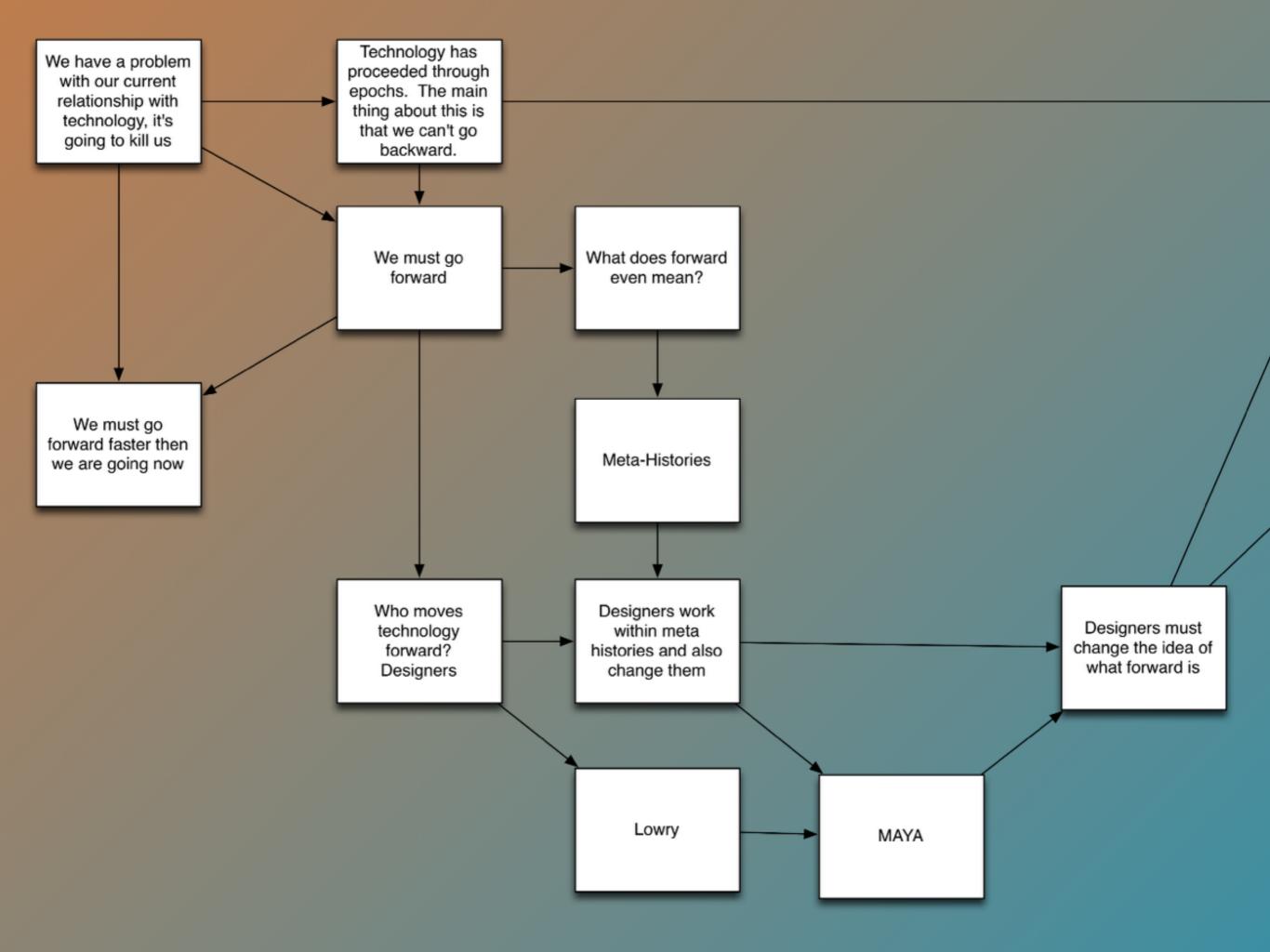


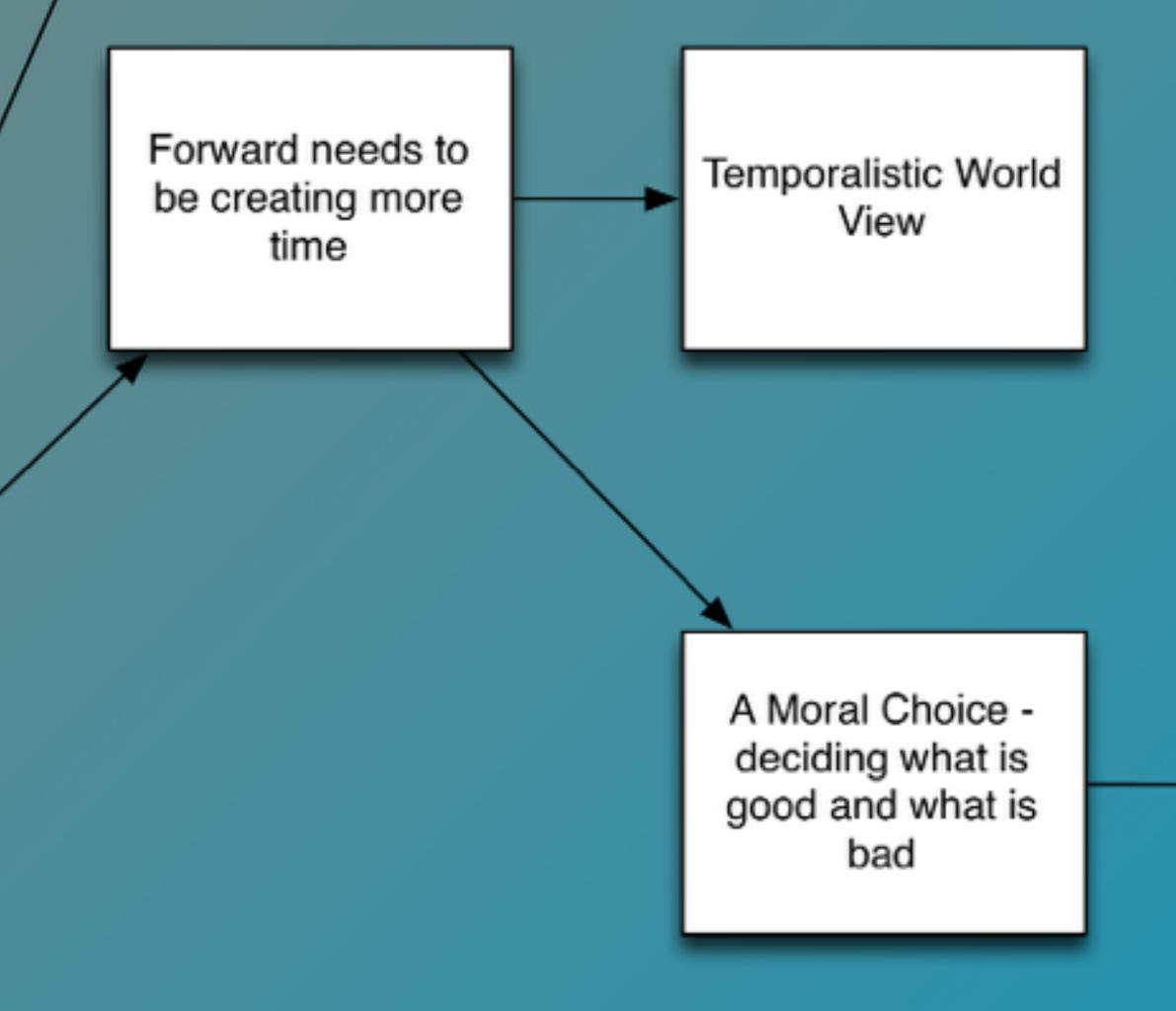


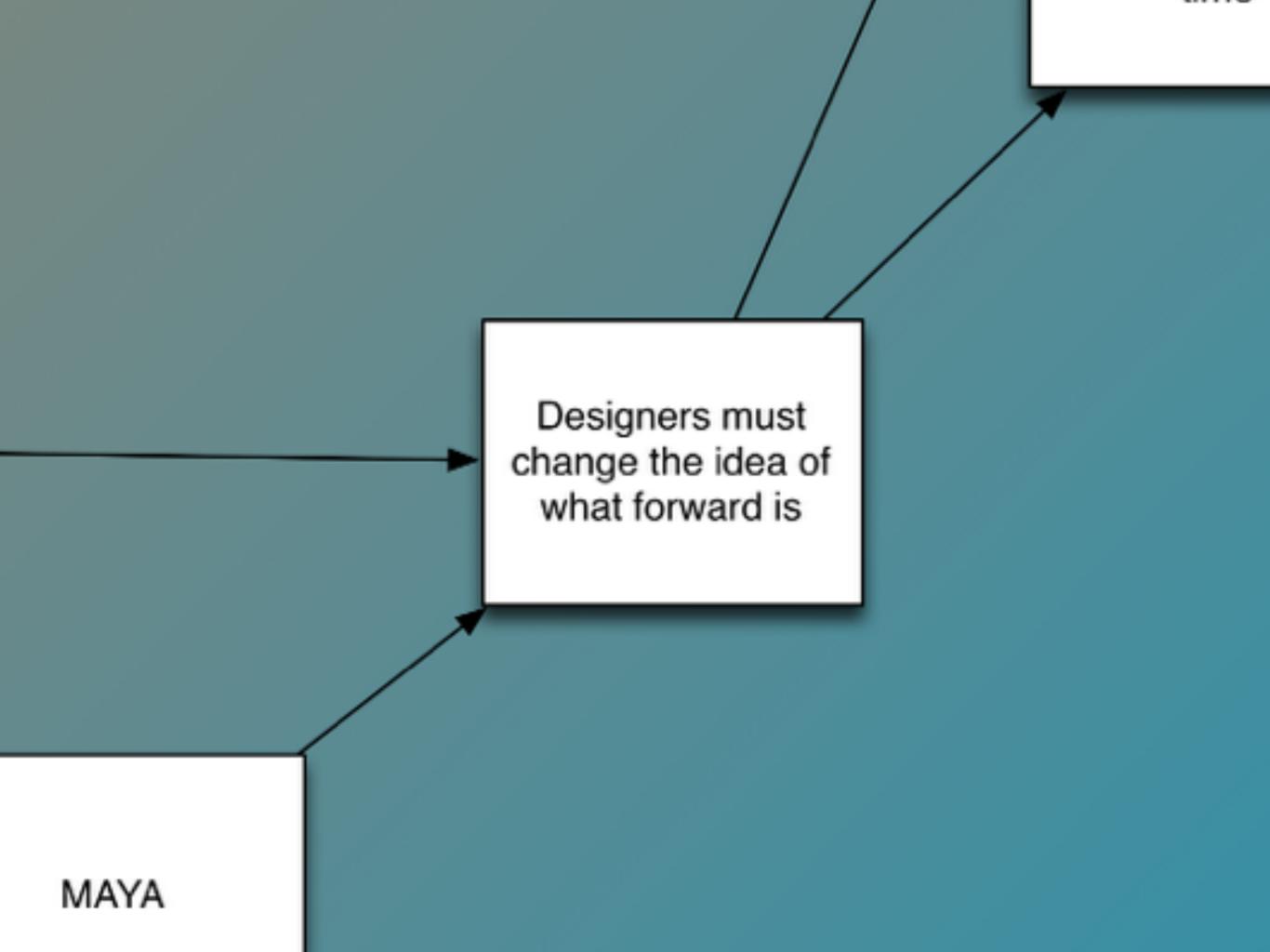








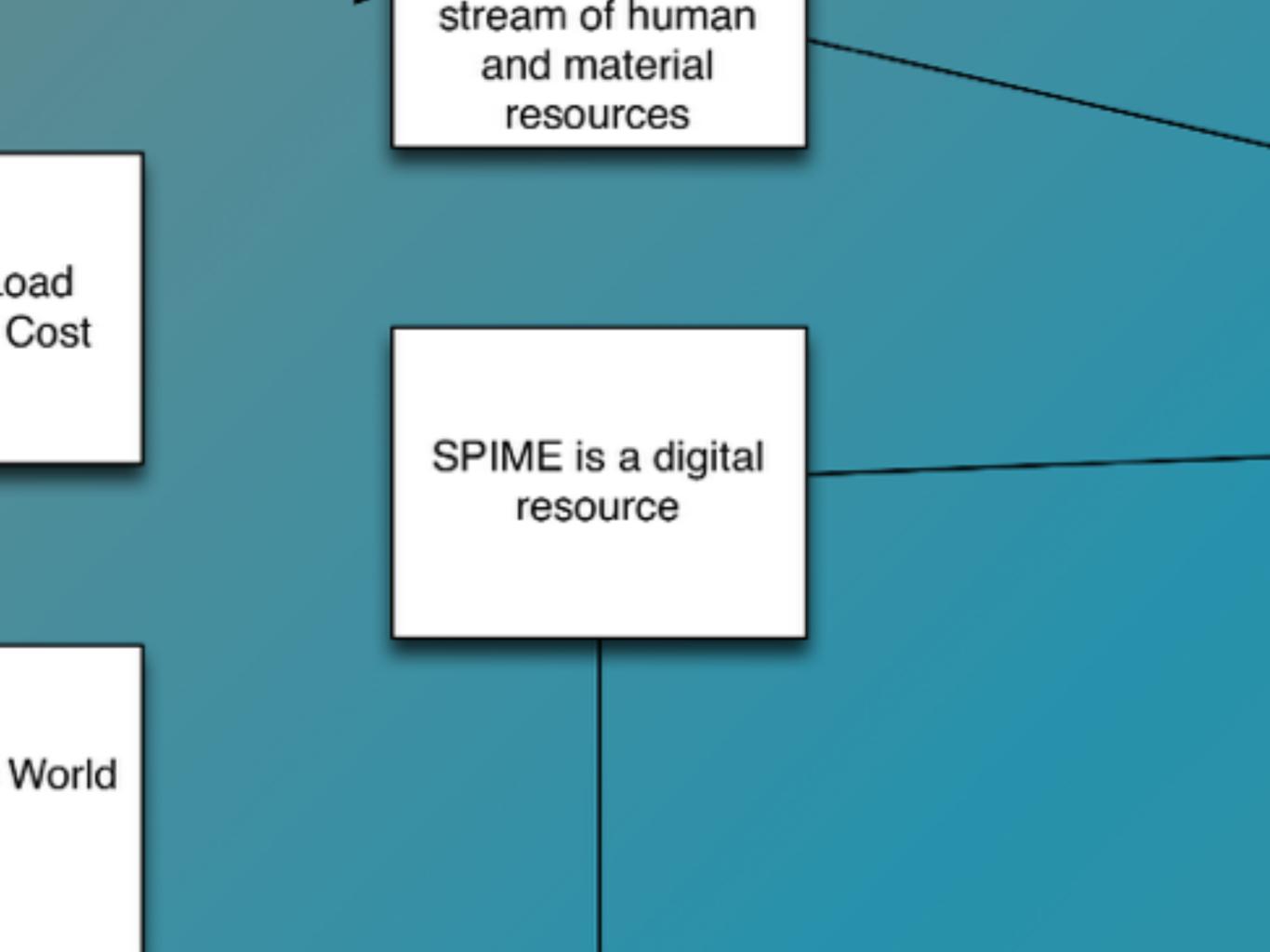


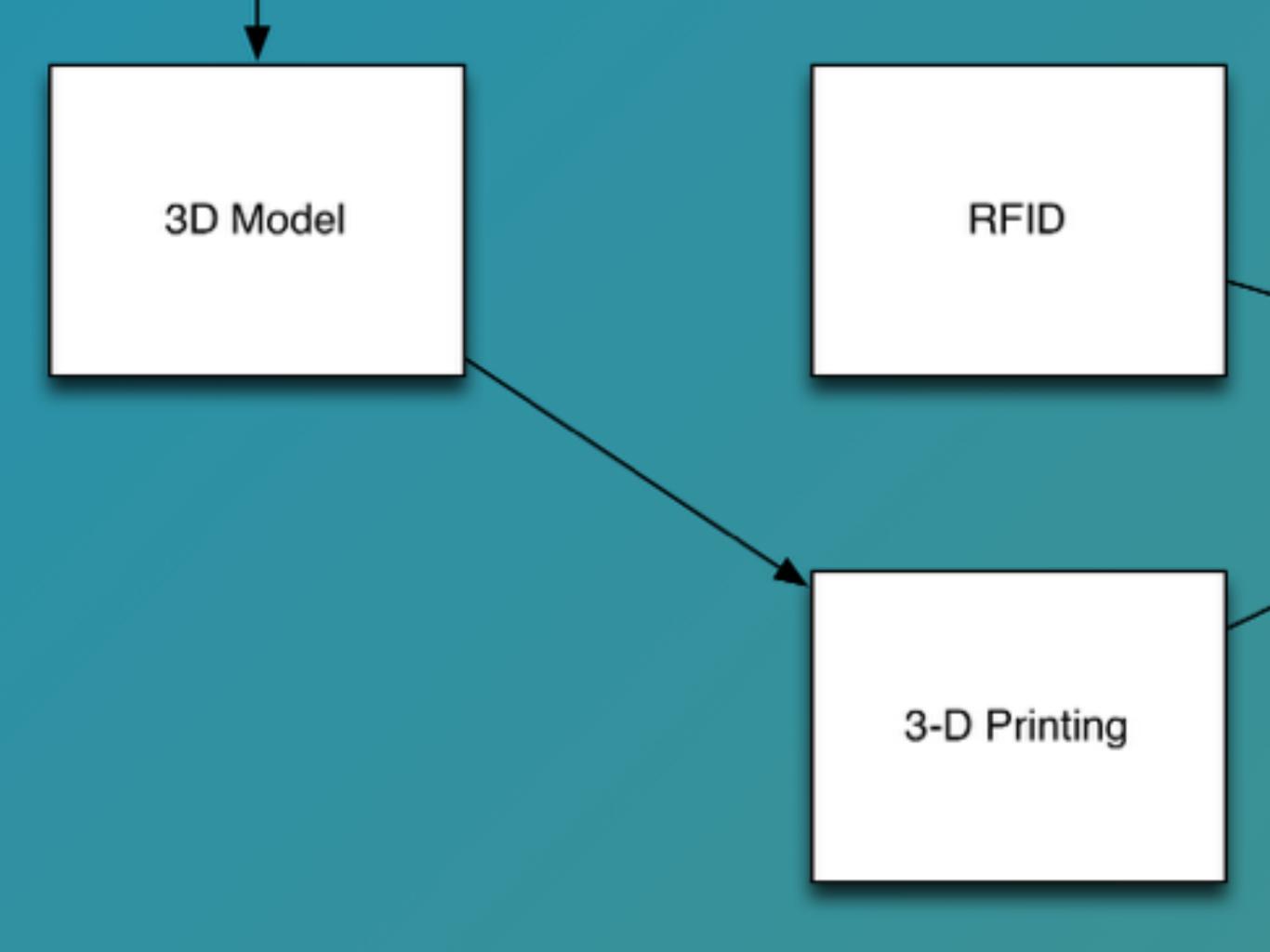


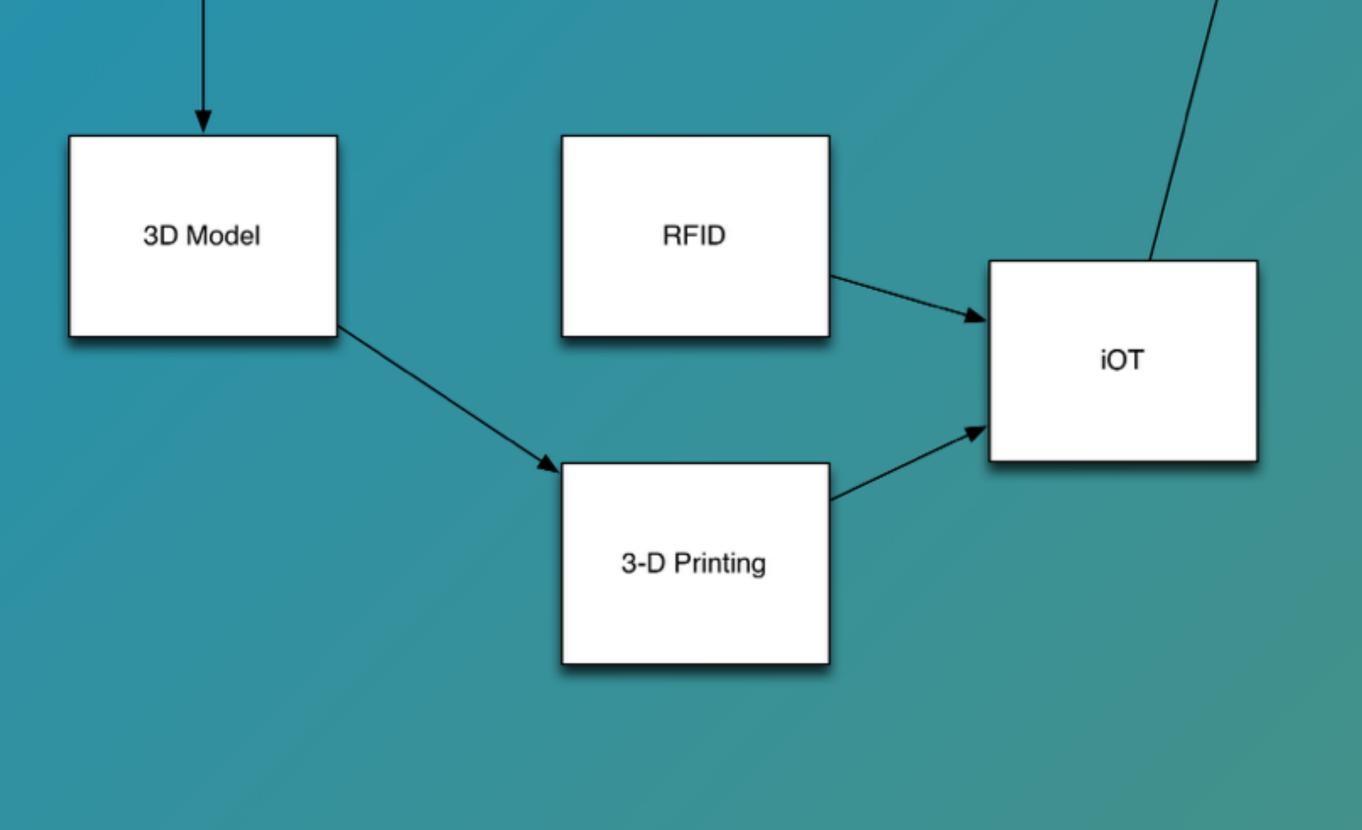
Reconfigure the relationship between objects and people again

Cognitive Load Opportunity Cost

A wine bottle represents a snapshot in a stream of human and material resources

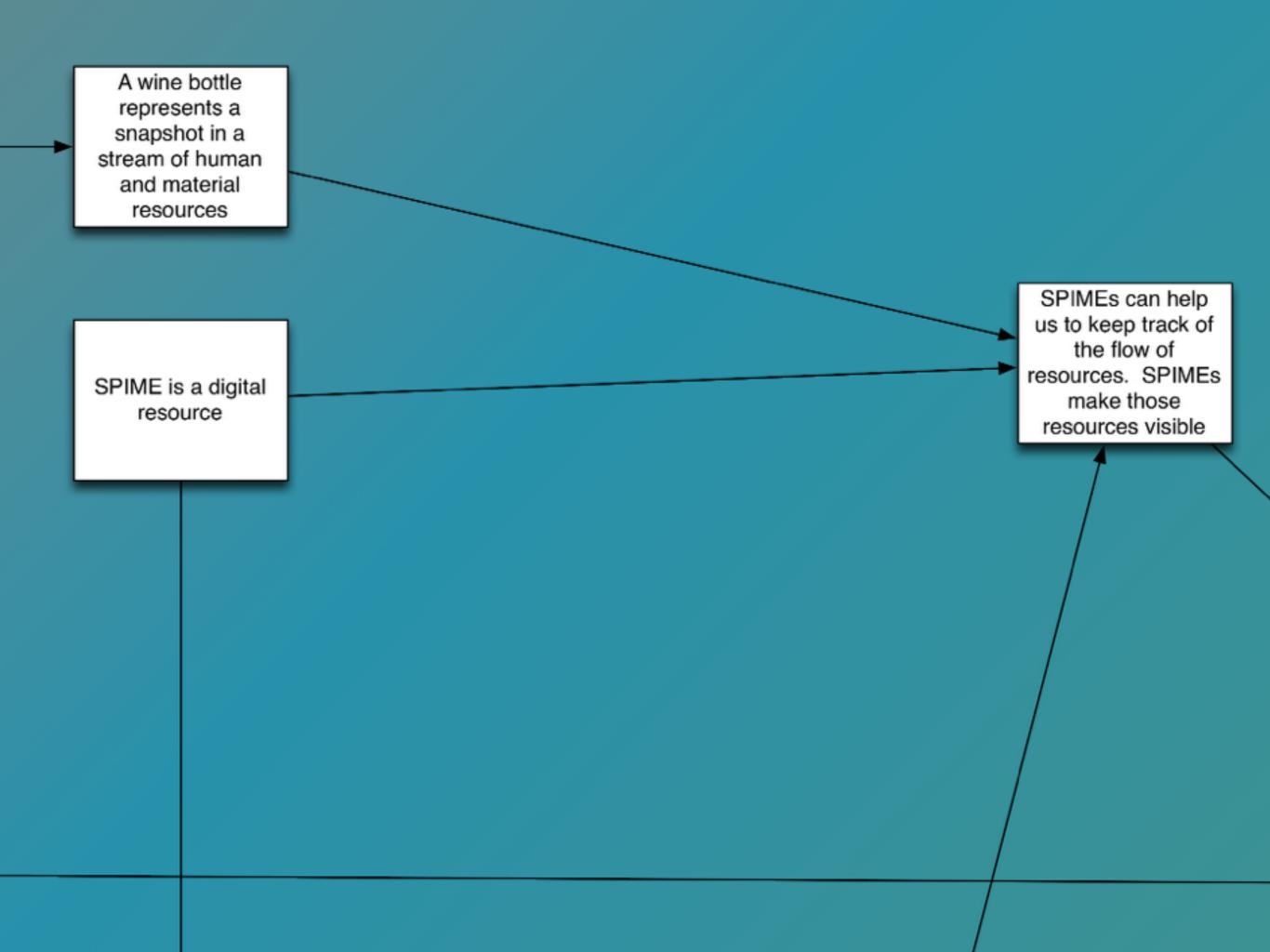


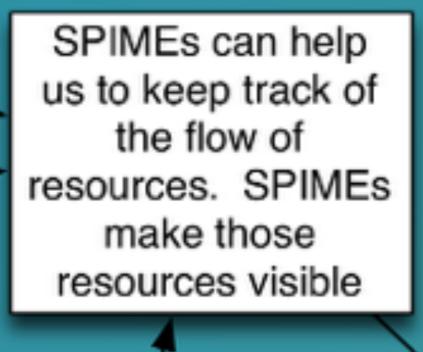




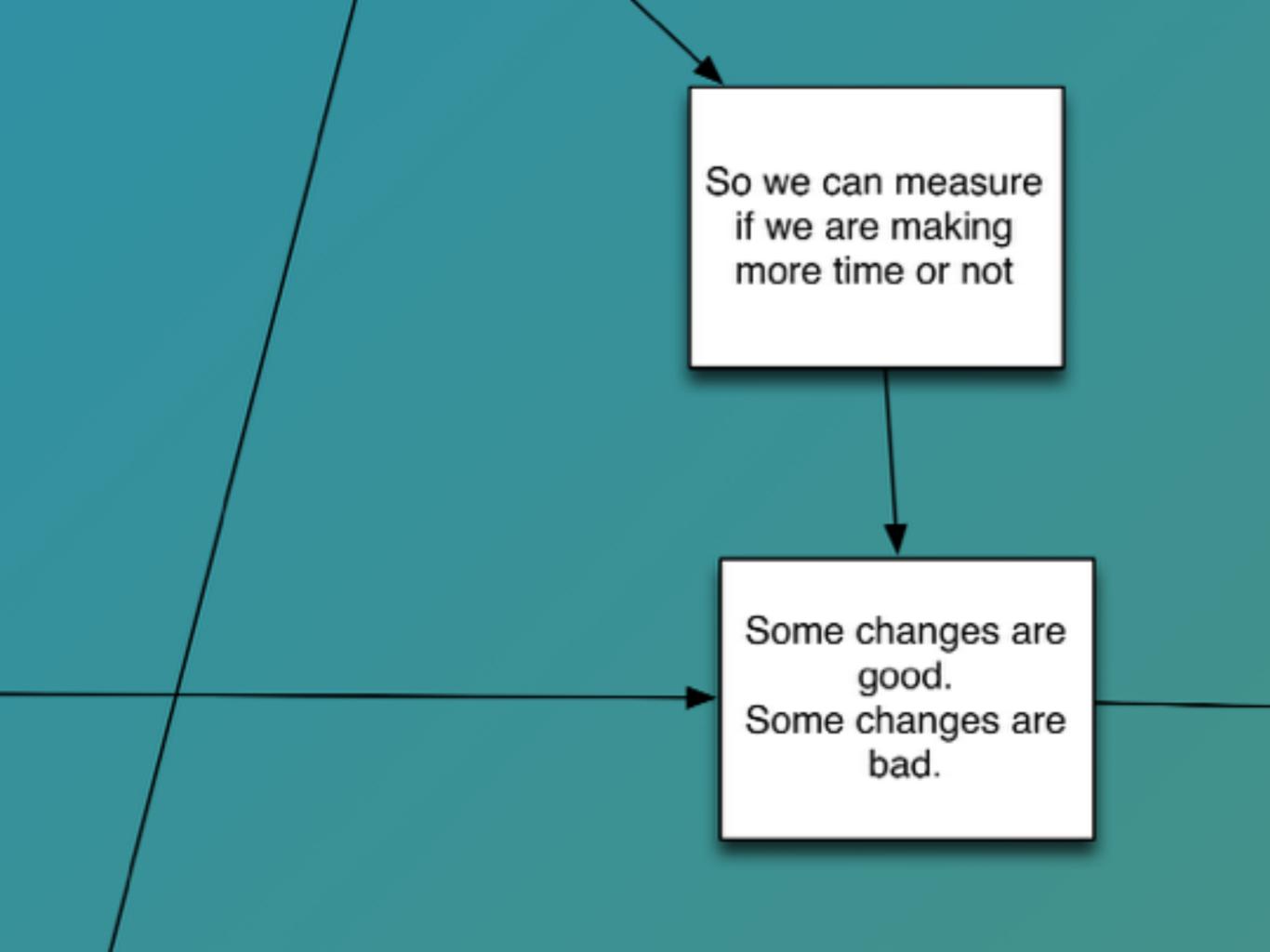
A wine bottle represents a snapshot in a stream of human and material resources

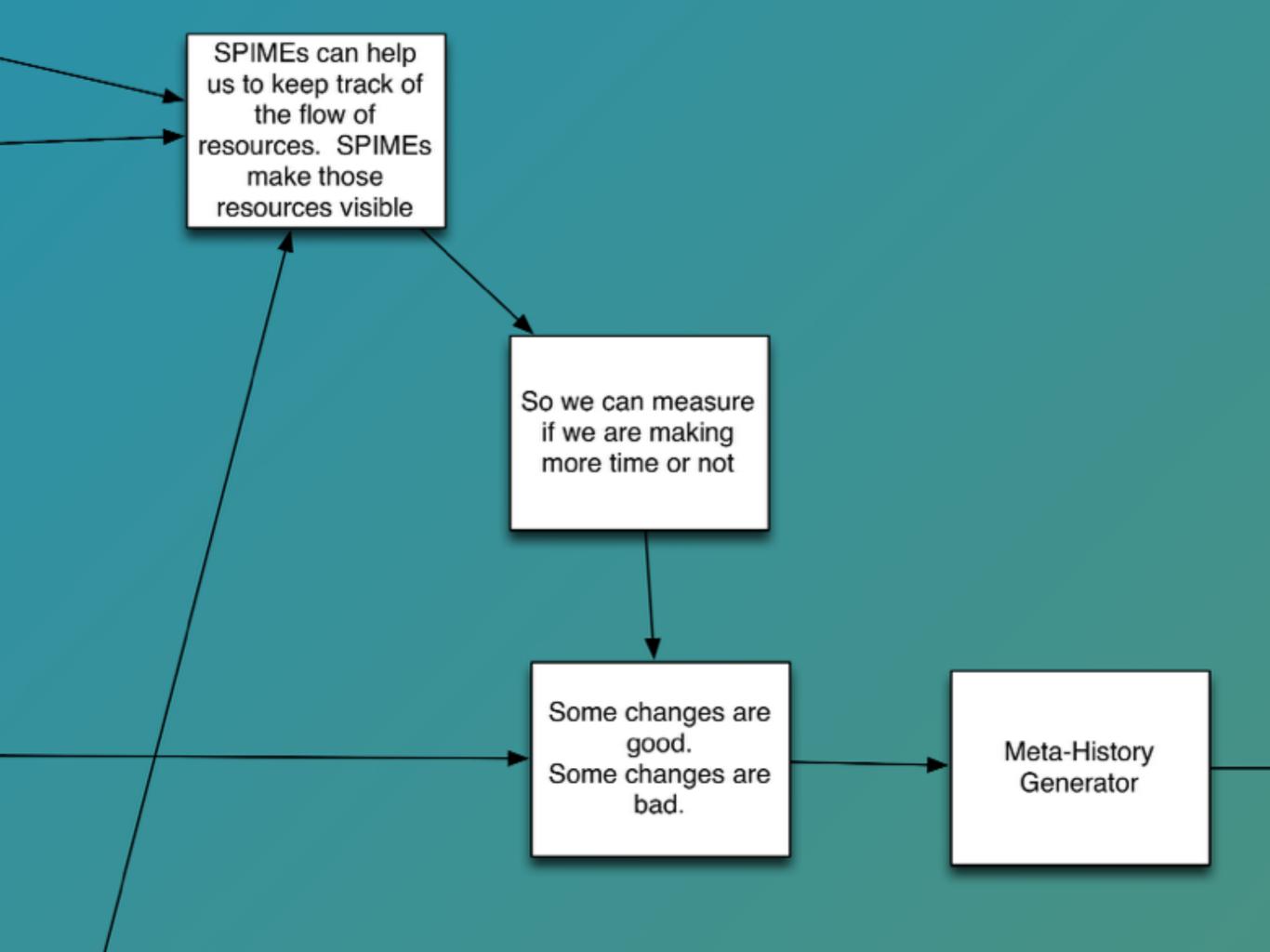
SPIME is a digital resource



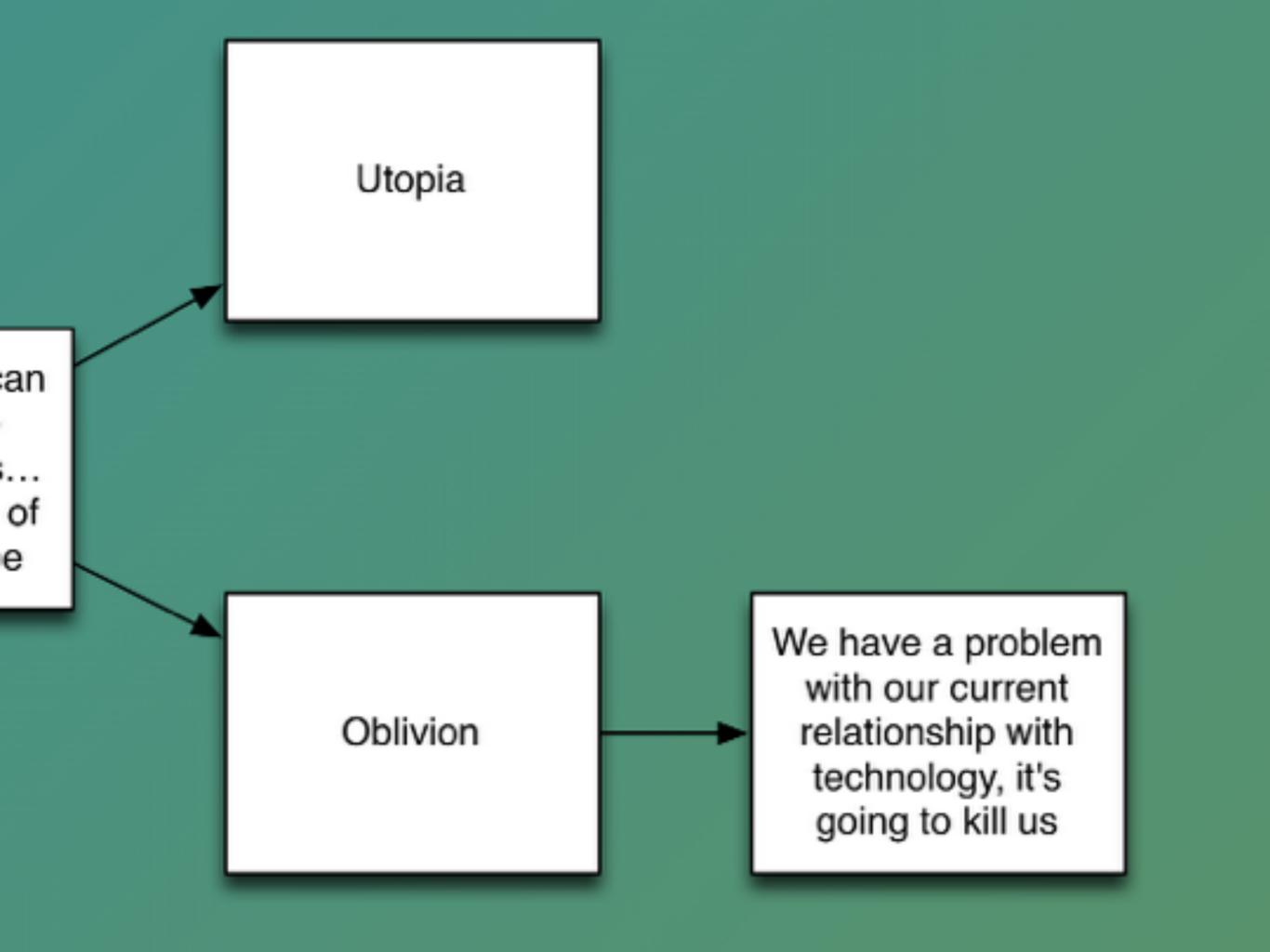


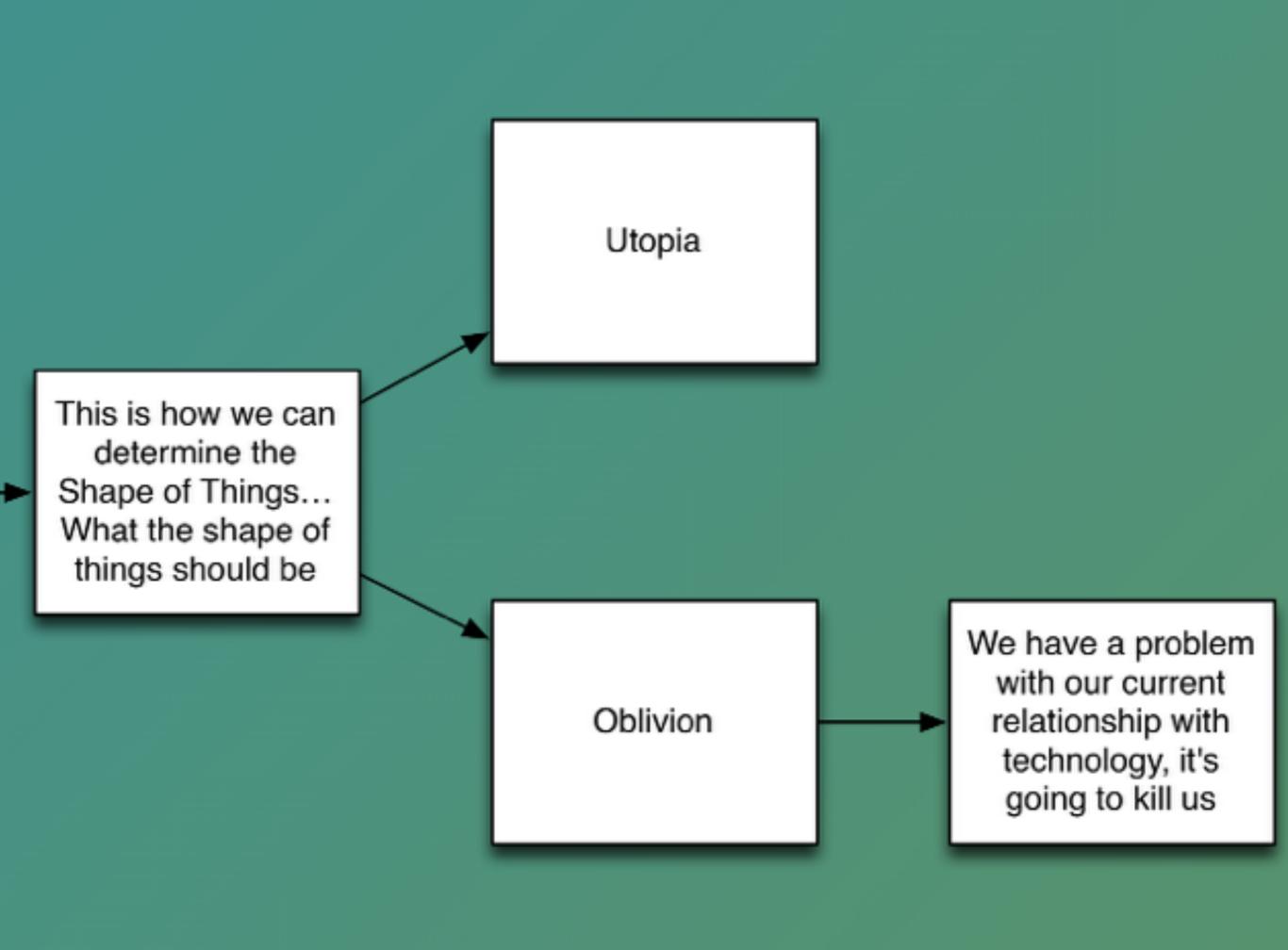
So we can measure if we are making more time or not

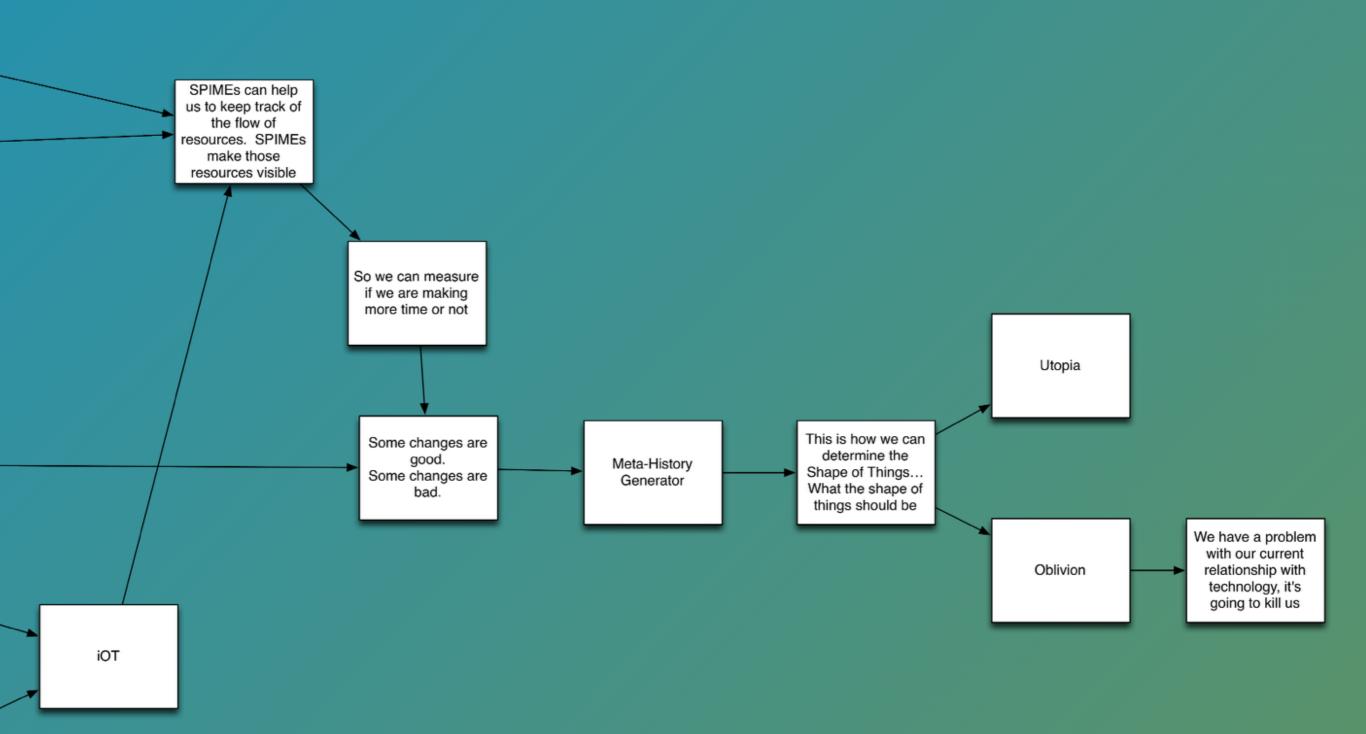


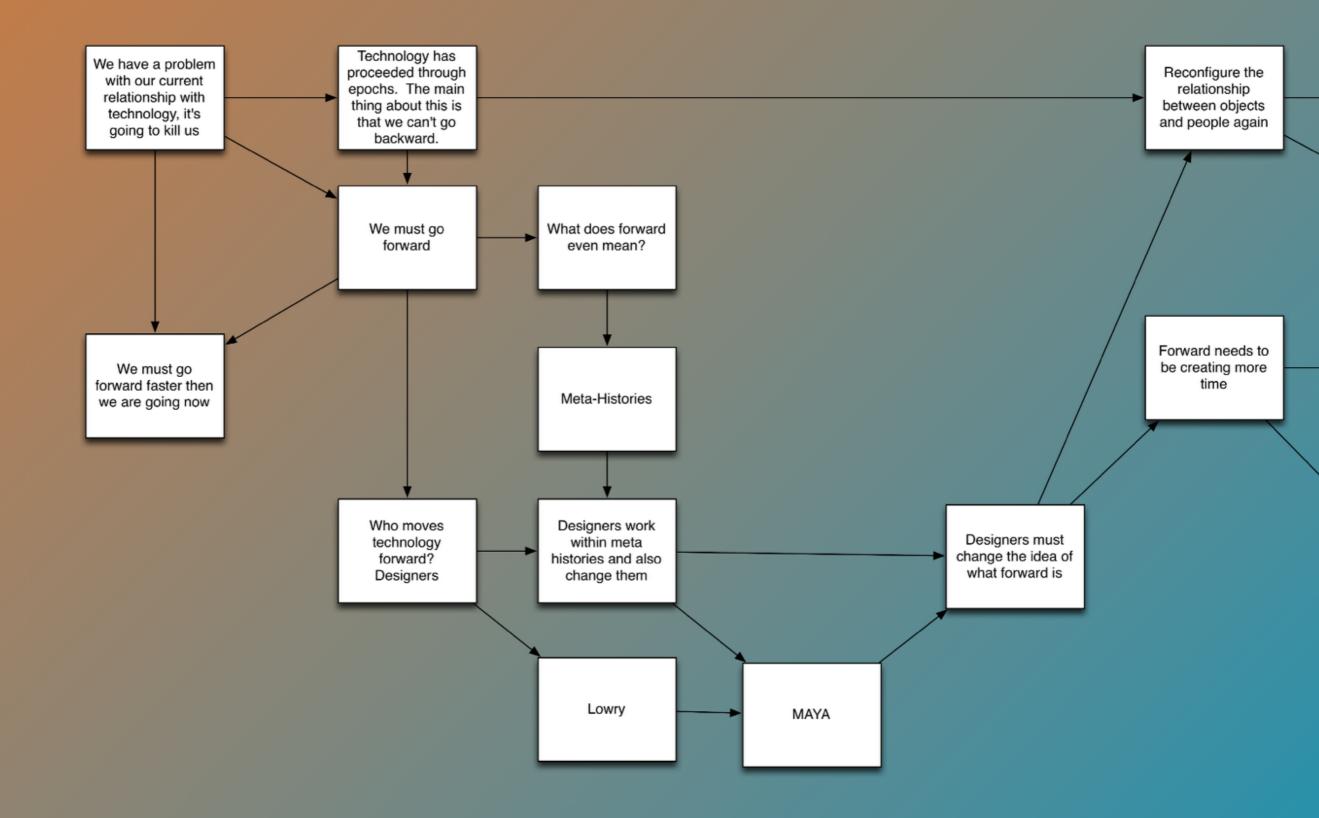


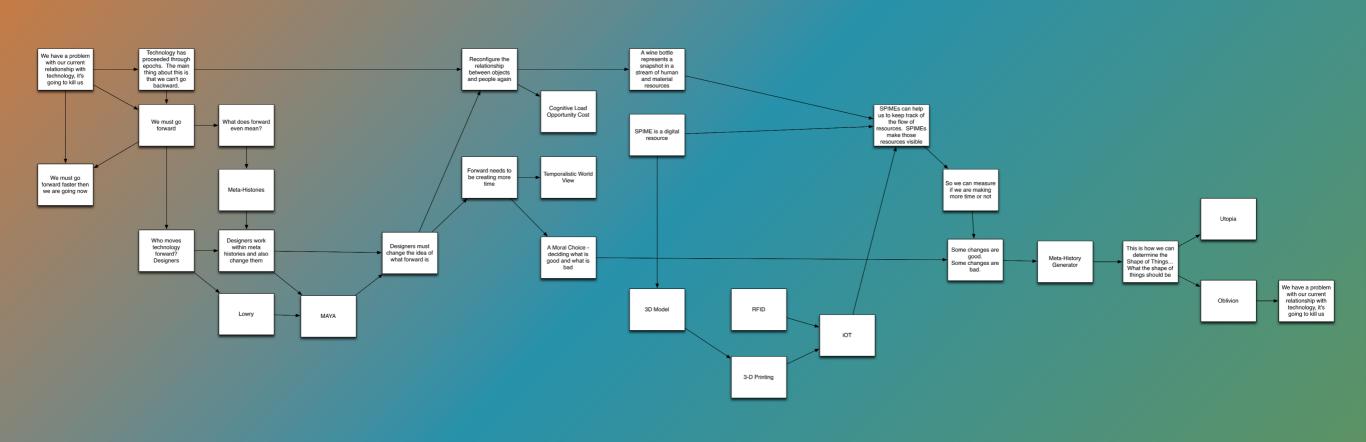
Utopia This is how we can determine the Shape of Things... What the shape of things should be Oblivion













Shaping Things

"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."



Shaping Things

"I hope you are the kind of person that can do it'

