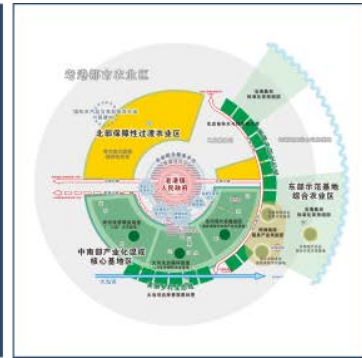


ICC-Preconference-Workshop  
Atlases and Infographics

# GeoInfographics

An Integrative Information Design Model to Promote  
Thematic Atlas Innovation



Xi TANG @ East China Normal University · SHANGHAI  
Institute of Cartography · School of Geographic Sciences  
xtang@geo.ecnu.edu.cn

14 July, 2019 | Tokyo





## Atlases (maps) & Infographics (Graphics)?

Infographics in Atlases: Concept of **definition** and **classification**

Erwin Raisz Atlases – an Early Multi-method Approach to Cartographic **Communication**

Exploring **Personalization** of Infographics and **Stories** in the Atlas of the Ageing Society

Juxtaposing Government and **Social Media Data** in **Delivering** Responsive Geospatial **Information** via an **Online** Atlas Services: A Case of Criminal Graphics in Jakarta City

GeoInfographics: an Integrative Information **Design** Model to Promote Thematic Atlas **Innovation**

Infographics in **Digital** Thematic Atlases – Possible Applications

Modern **Storytelling** through Infographics in Early Statistical Atlases





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Infographics in Digital Thematic Atlases – Possible Applications

Modern Storytelling through Infographics in Early Statistical Atlases





# 口味说明 PRODUCT SPECIFICATION

www.guokr.com

10  
FLAVORS



- 巧克力  
CHOCOLATE
- 蜜方  
HONEY
- 波旁  
BORBÓN
- 花魁  
GORO G1
- 阿宝  
ABOL G1

- 禾纳斯  
MANDHELING HORAS
- 大岩石  
GRAND ROCK S18UP
- 全麦面包罗布斯塔  
SUPER ROBSTA
- 澳洲秘密  
AUSTRALIA'S SECRET
- 日式深煎  
芳醇な深煎









# Motivation & Contents

Progress

1

Maps & atlas, are still commonplace ?  
Have they made some changes today  
on their bodies and spirits ?

Should we piece together maps for a atlas ?  
or incorporate maps, in accordance with  
specific issues, into a new framework of  
spatial information expression ?

2

Design



Problems



Paradigm

Connotation

Architecture

Representation

Tonality

Practices





Progress



地圖

? constant ◀

# MAP

▶ Change ?

地圖



Ancient origins +  
Traditional map birth

4500 yrs

Modern surveying &  
mapping +  
Traditional map formation

350yrs

Information science rise +  
Modern map development

60yrs (today)

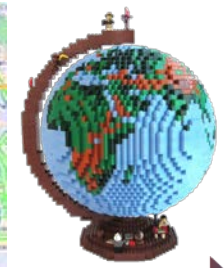
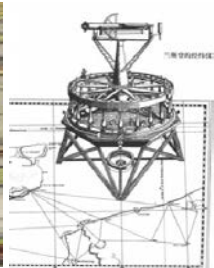
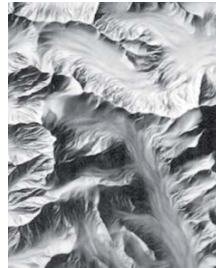
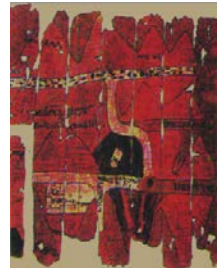
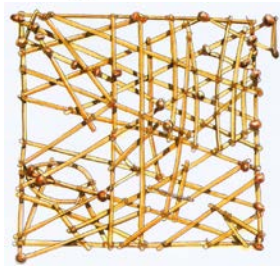
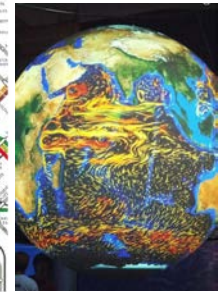
Information acquisition

Information storage

Info classification & retrieval

Analysis prediction & simulation

Data mining & knowledge discovery



The evolution characteristics of map design:

**“Organic” Expression** (human) vs **“Mechanical” Constuction** (things&tech)



曾经，地图让我们足不出户丈量指点每一方世界。  
Once, the map allowed us to measure each side of the world.



他让我记住每一座城市 村镇  
Made me memorize every damn city, town,

TV serial 《Game of Thrones》





今天，地图构筑社会空间，让我们自由无缝穿梭在现实与虚幻之间。

Today, maps create a social space that allows us to seamlessly shuttle between reality and fictions.



Game 《911 Operator》



而我们似已忘记它的身骨、血脉和温度，迷茫于一帧帧的幻象之中。

And we seem to have forgotten its bones, blood and temperature, and have confused in numerous frames of illusion.





我们自豪地以为自己沧海拾珠抓住了什么.....

We are proud to think that we have picked up the pearls from the vast sea...

[Aerial 3D Panoramas](#)

[360 Video](#)

[Contact](#)

[Read Article](#)

[World Map](#)

[Guest Book](#)



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**Iguazu Falls, Argentina-Brazil. Grand tour**

[Photogallery](#)

*AirPano*



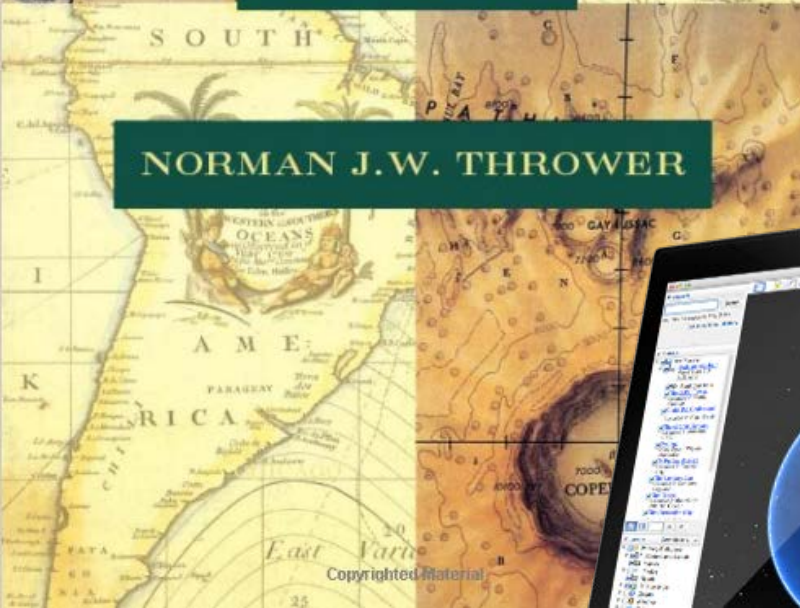
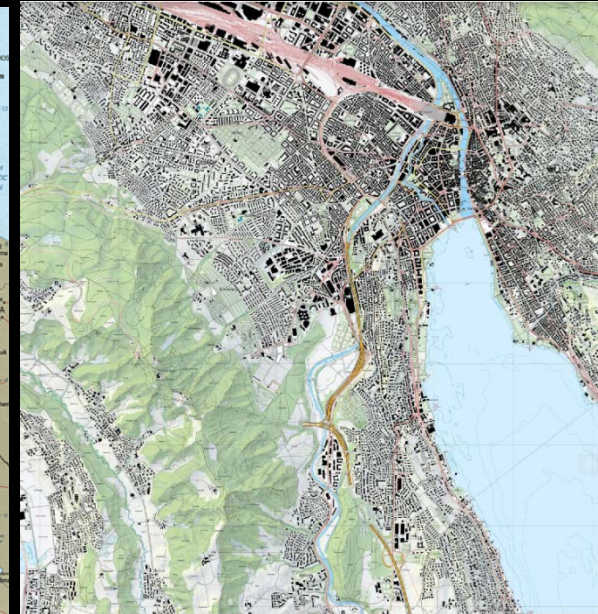
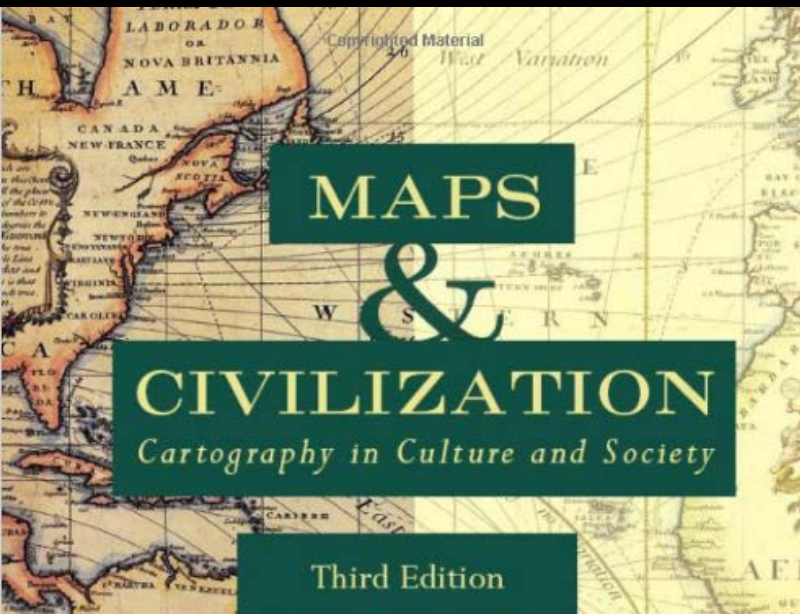
Best panoramas  
 Visited panoramas





却不知悄然里遗弃了什么.....

However, we don't know what we have lost, missed or abandoned inadvertently...





Progress

Personalized requirements  
among diverse **user** groups  
must be given more  
importance in multiple  
application scenarios !



➡ WHERE !



The “Humanistic Turn” of Map Design !



Progress

Truth

Good

Beauty

真

善

美



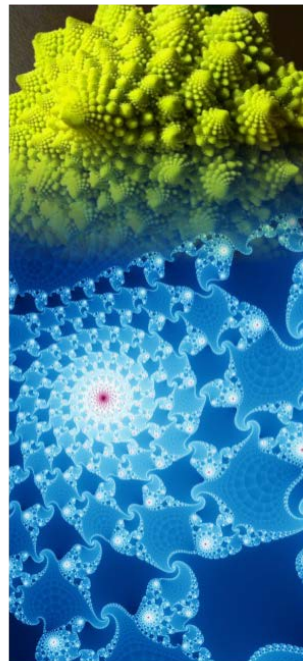
对象内涵 (事)

Understanding  
Objects



用图体验 (技)

Experience  
Technology



形式调性 (美)

Representation  
Aesthetics

(德) 康德

Kant (Germany)

《纯粹理性批判》——真——哲学——知

*Critique of Pure Reason*——Truth——Philosophy——Understanding

《实践理性批判》——善——伦理学——意

*Critique of Practical Reason*——Good——Ethics——Will

《判断力批判》——美——美学——情

*Critique of Judgment*——Beauty——Aesthetics——Feeling

The “Humanistic Turn” of Map Design !



# The “Humanistic Turn” of Map Design ?



美



Aesthetics



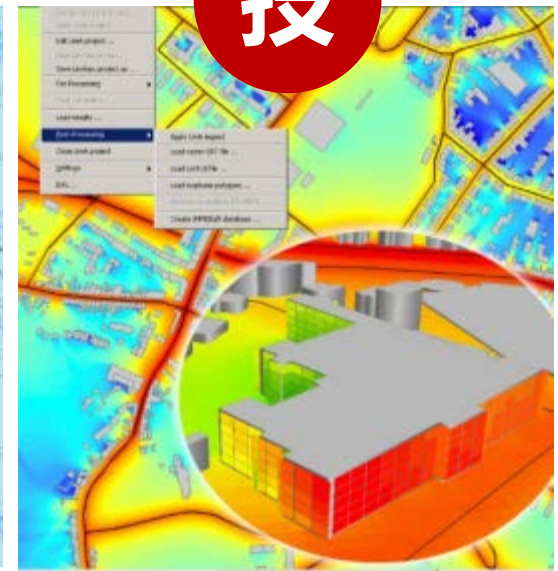
事



Objects



技



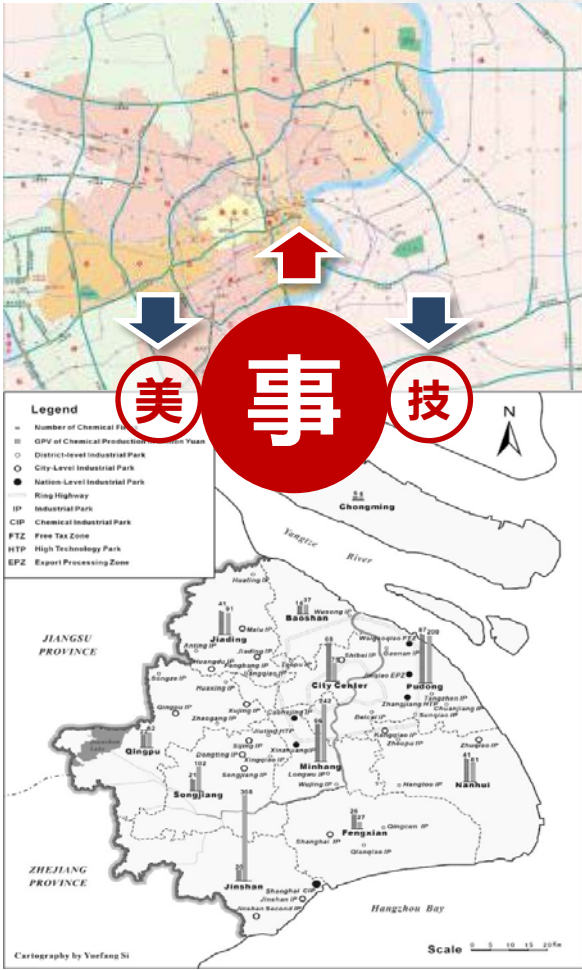
Technology



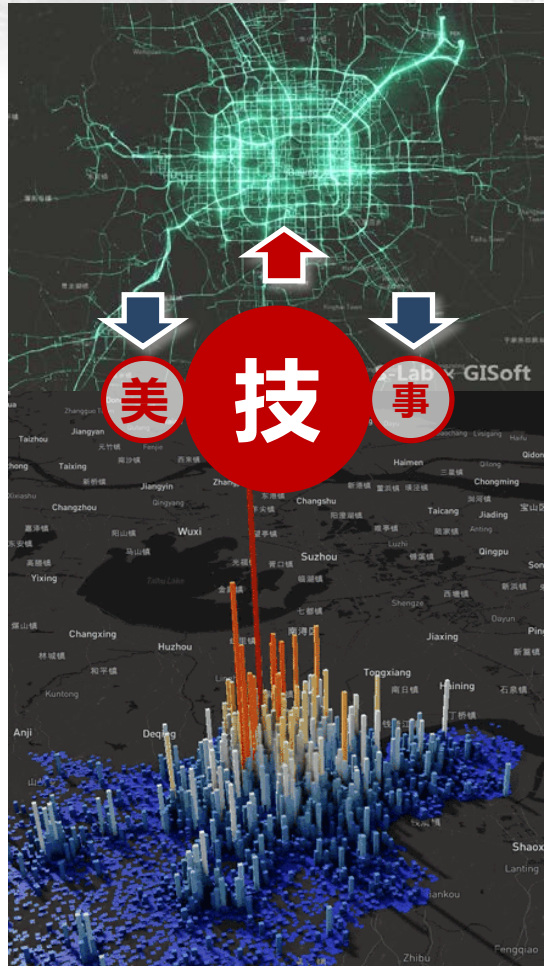
The “Humanistic Turn” of Map Design ?



Regret



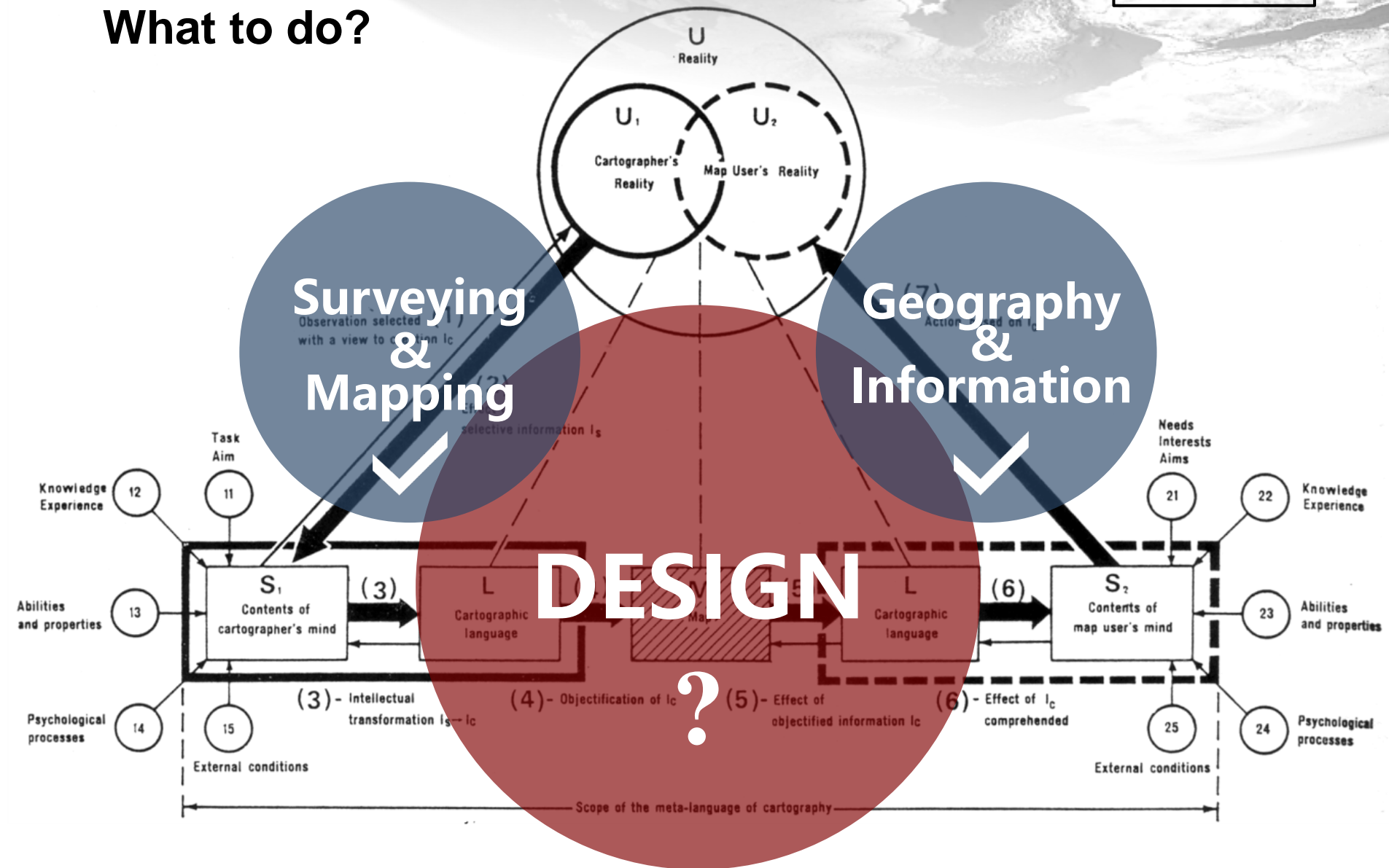
Bottleneck



Maze



# What to do?

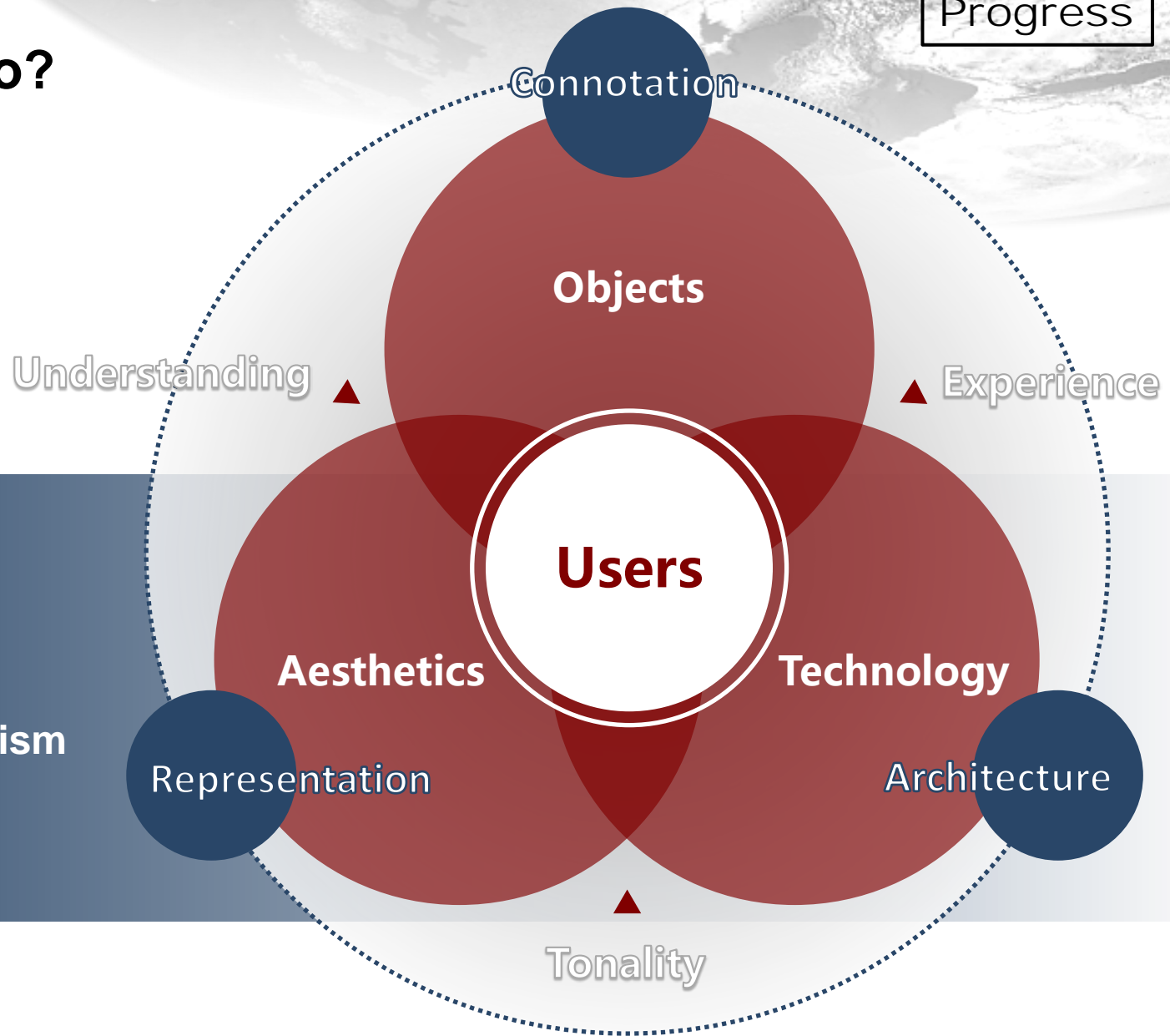






# How to do?

Progress



A Trinity of  
Humanistic  
design organism



## How to do?

Genuine

Apperception

Aesthetic

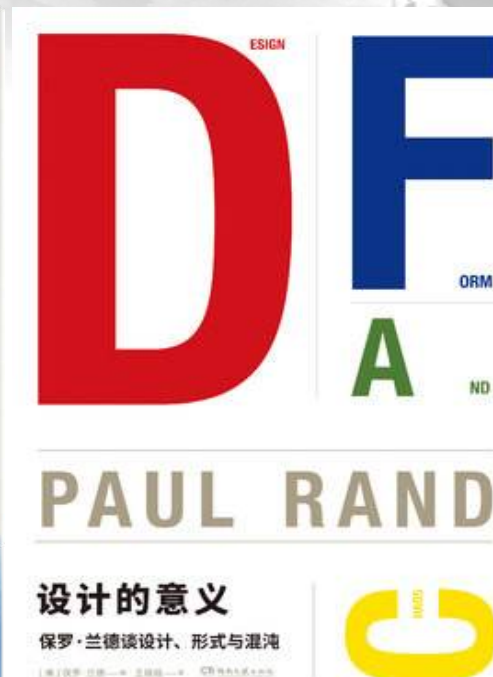
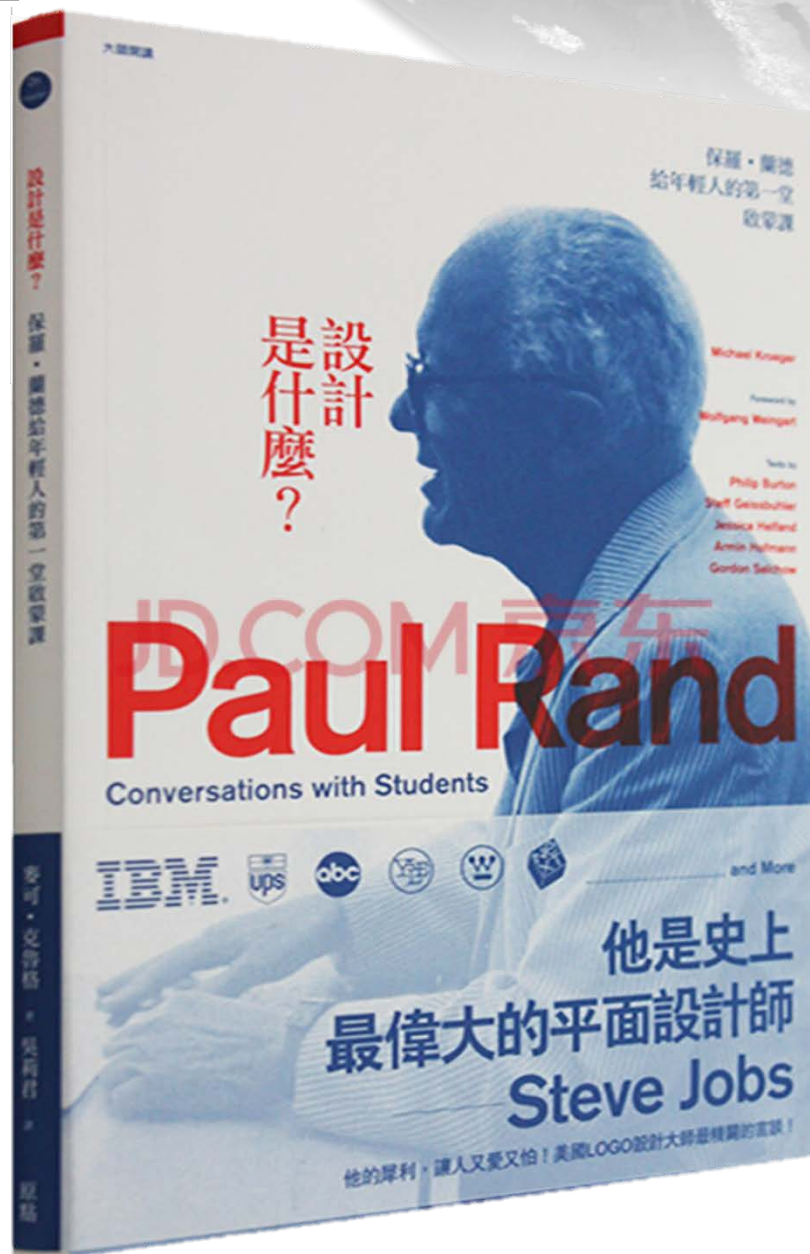
Graphics



**“Aesthetical Graphics, Genuine Apperception”**



Progress



艺术简化：“在洞察本质的基础上所掌握的最聪明的组织手段”



# Paul Rand.

他是史上最伟大的平面设计师 —— 史蒂夫·乔布斯 (Steve Jobs)

设计是什么

保罗·兰德给年轻人的第一堂课

Paul Rand  
Conversations with Students

+

保罗·兰德

伟大的设计师与卓越的教师

Paul Rand  
A Great Designer and Excellent Mentor

[美] 迈克尔·克罗格 / 著

王敏 / 编著

朱橙 / 译

周子圣 / 特约编辑

世界图书出版公司

“ Everything is Design ! ... ”

“ Design is a relationship between form and content. ”

艺术简化: “在洞察本质的基础上所掌握的最聪明的组织手段”



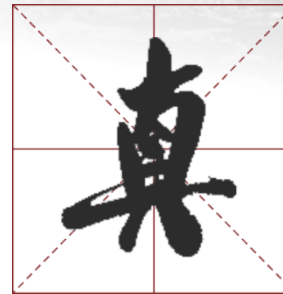
# How to do?



v.s.



Genuine



Aesthetics

v.s.



Function  
Apperception  
Information

+

Form  
Graphics  
Deisgn

=

# “ Information Design ”

**RICHARD SAUL WURMAN**  
**INFORMATION ARCHITECTS**  
In-for-ma-tion Ar-chi-tect [L. info-  
tectus] n. 1) the individual who  
organizes the patterns inherent  
in data, making the complex  
clear. 2) a person who creates  
the structure or map of infor-  
mation which allows others to  
find their personal paths to  
knowledge. 3) the emerging 21st  
century professional occupation  
addressing the needs of the age  
focused upon clarity, human un-  
derstanding and the science of  
the organization of information.  
-in-for-ma-tion Ar-chi-tecture  
**PETER BRADFORD EDITOR**

**Information Anxiety** is produced  
by the ever-widening gap be-  
tween what we understand  
and what we think we should  
understand. It is the black hole  
between data and knowledge,  
and it happens when infor-  
mation doesn't tell us what we  
want or need to know.  
In this breakthrough book  
Richard Saul Wurman ex-  
plains why the information







**Connotation**



**Architecture**

**Representation**

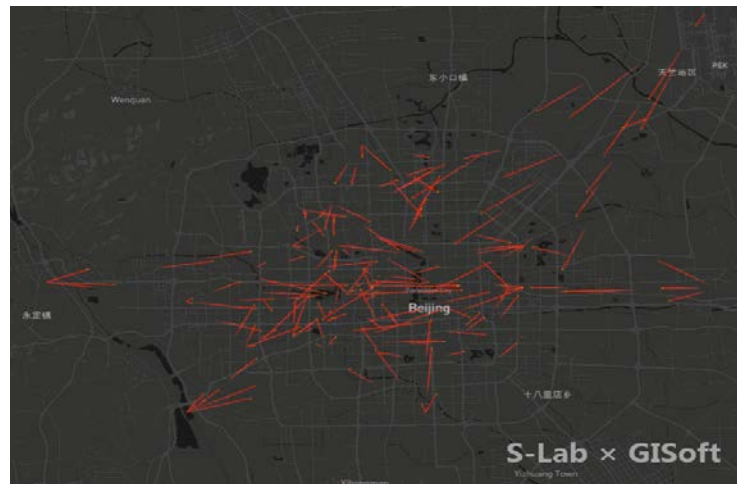
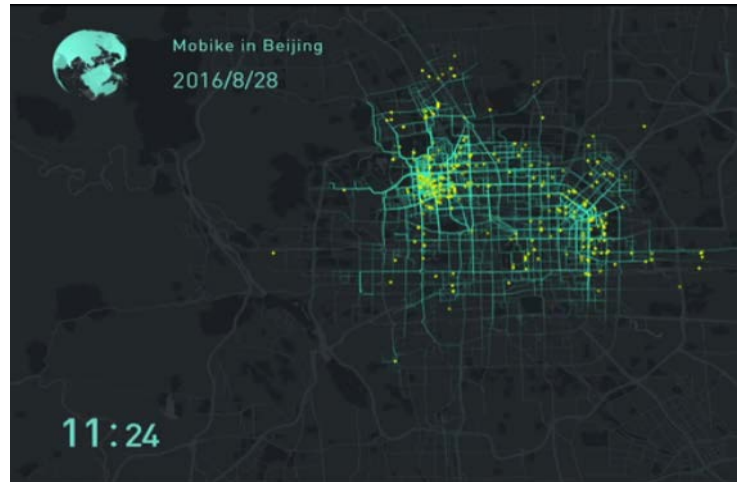
**Tonality**

Problems | Paradigm | Practices



# Connotation of Map & Atlas Design



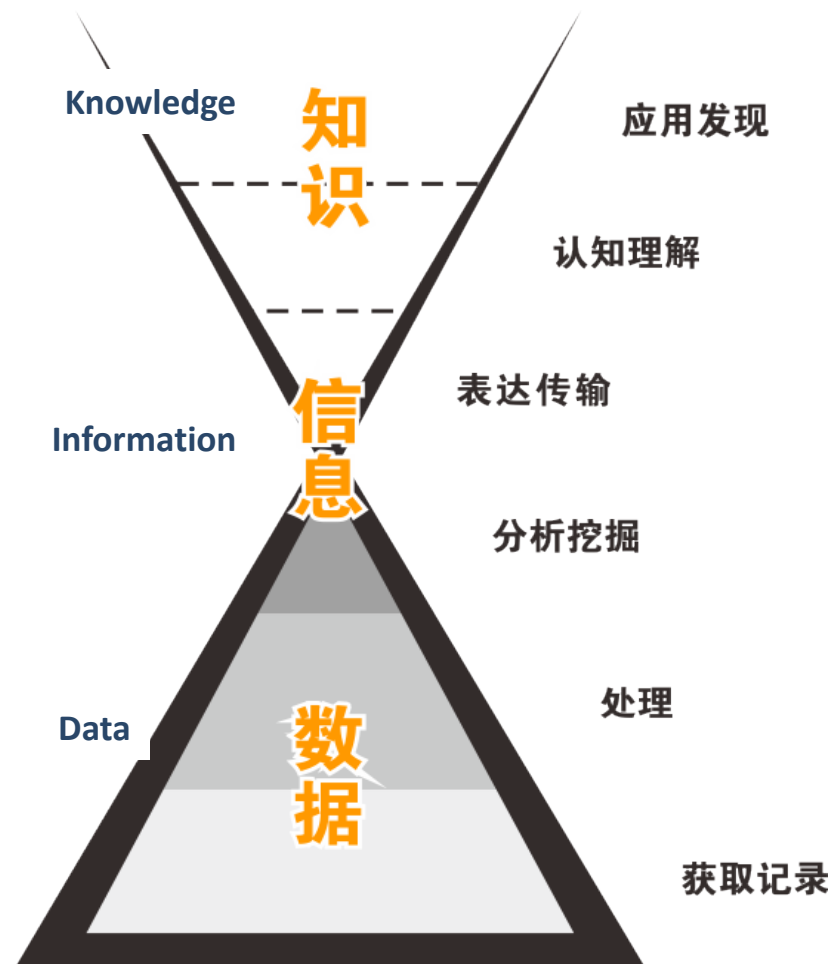
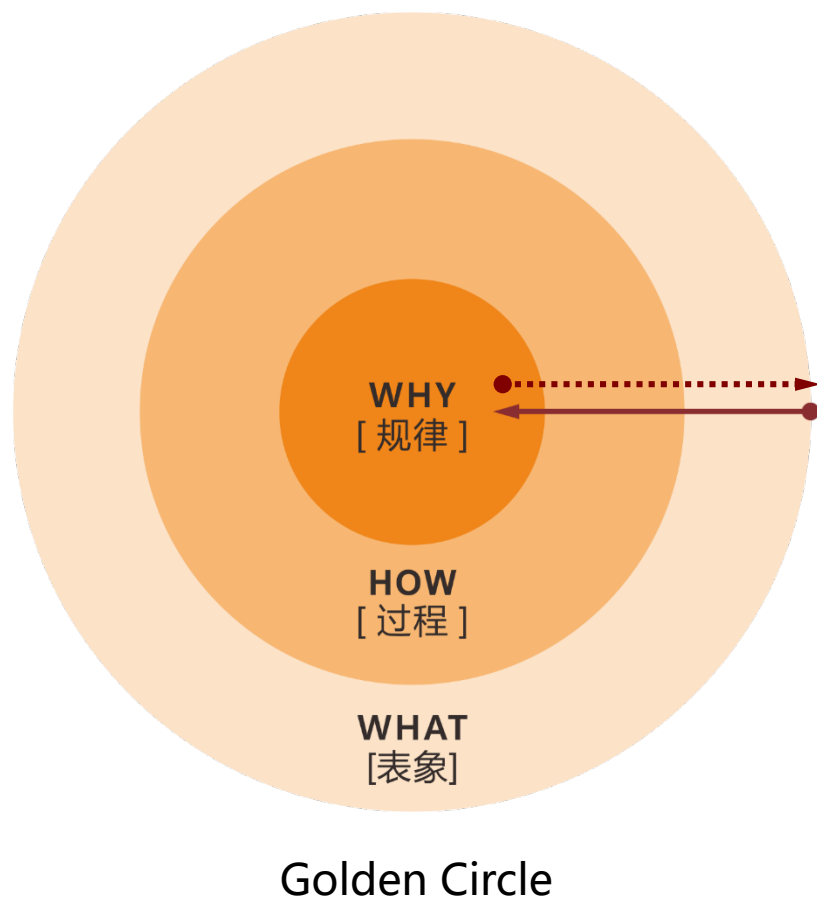


**Not data quality, but data character** (Bin JIANG, 2018)

(Uncertainty in the emerging big data paradigm: data vs meaning vs experience? )



Problems | Paradigm | Practices



Data-driven “Visualization” to Knowledge-service-oriented “Intelligibility”

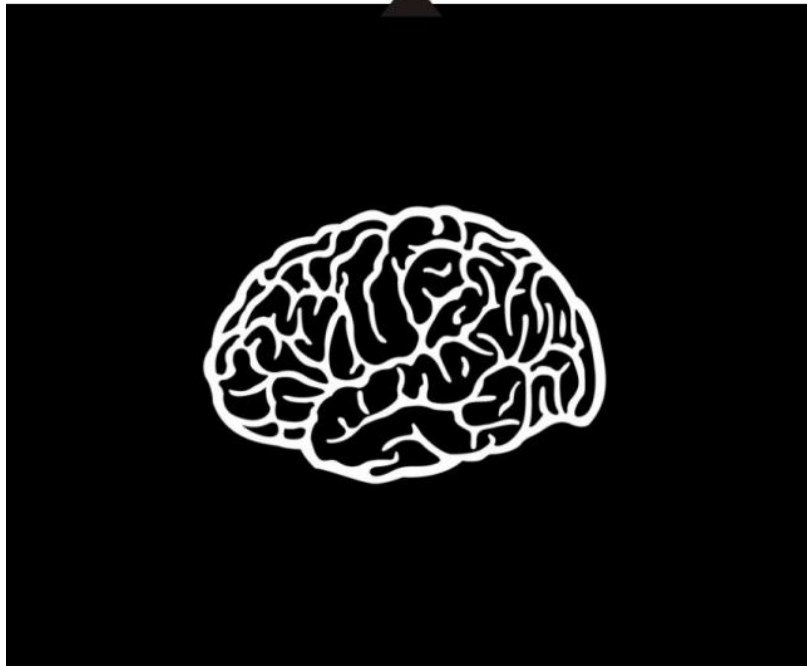




From Cartography to Mapping ...! ( Edward S. Casey)

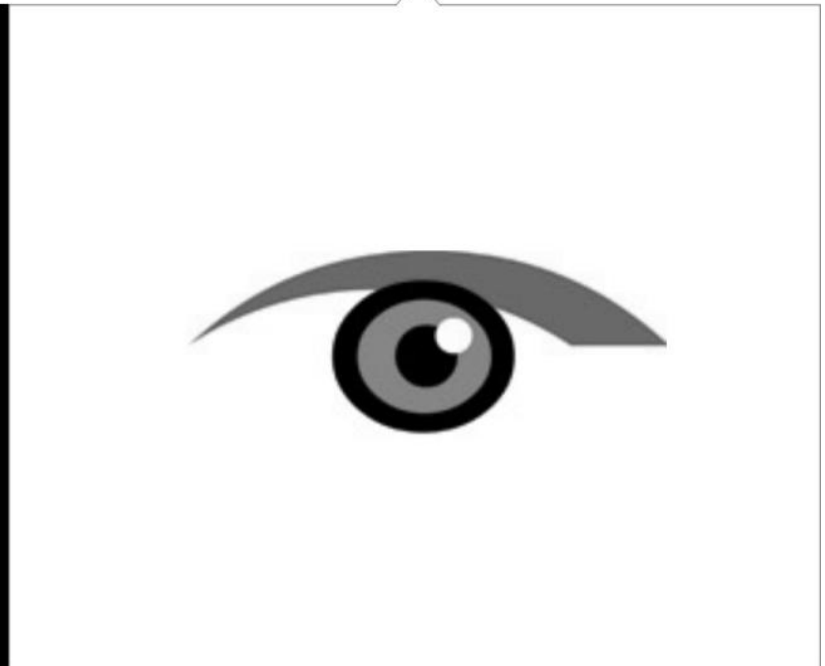


**Concept**



认知&思维&经验加工

**Data**



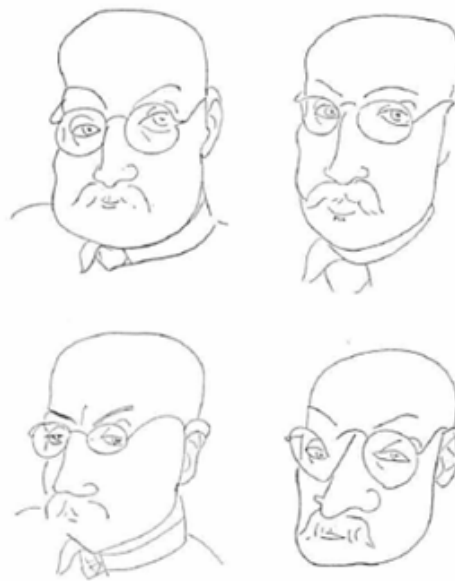
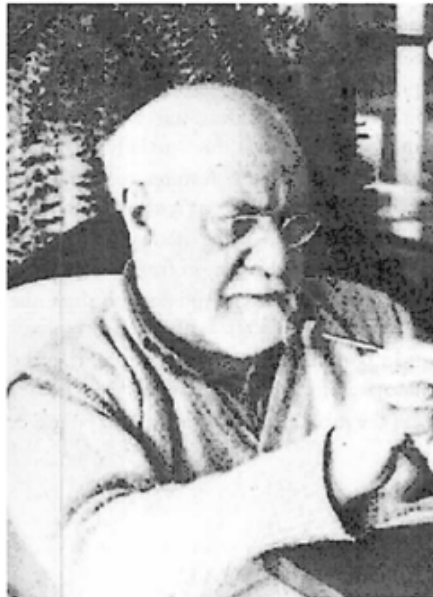
感官及其衍生装置测取

**Non-data driven conceptual expression**



Problems | **Paradigm** | Practices

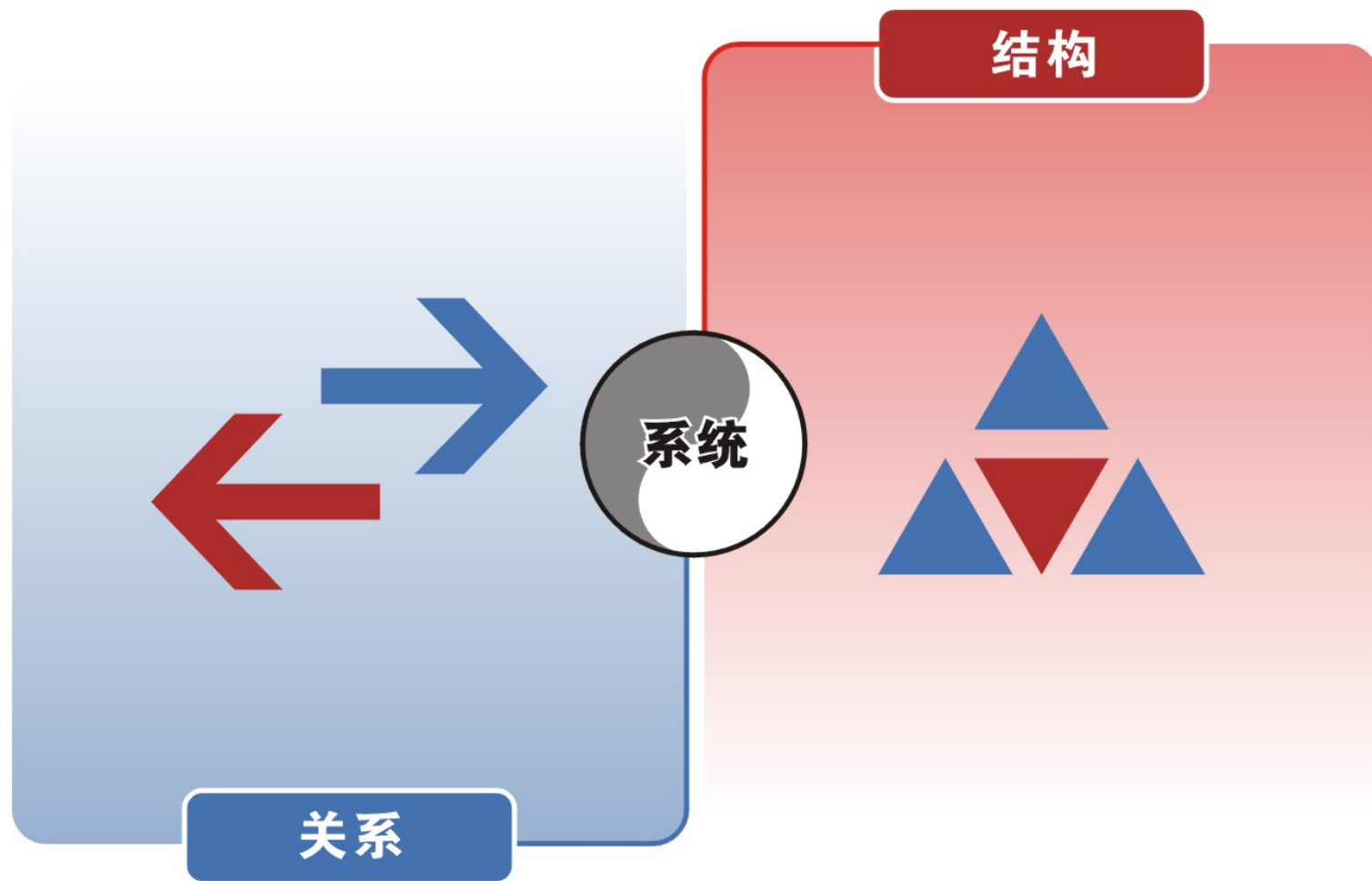
**Non-data driven  
conceptual expression**



Face-like vs Spirit-like  
Simplification and Abstraction

(Bin JIANG, 2018)





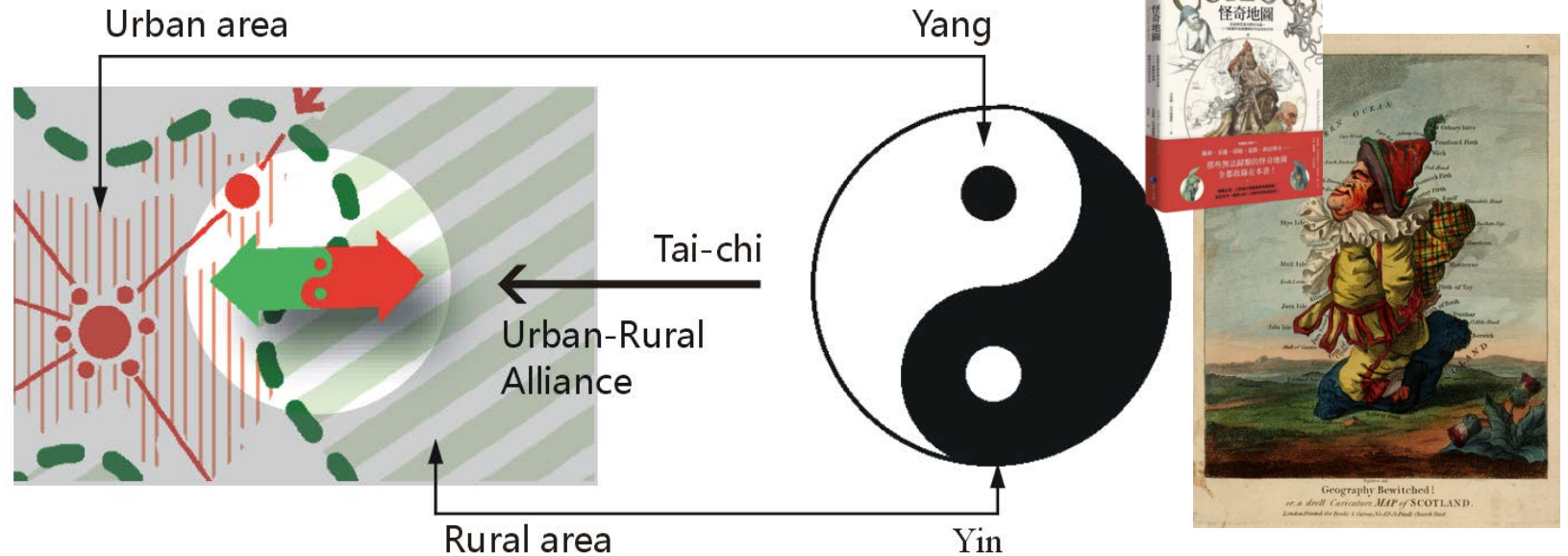
Structure and relationship topology mapping







## Spatial metaphor



精确/静态/确定性

模糊/动态/非确定性



严格界线

强硬色差

界线渗透

柔淡色差

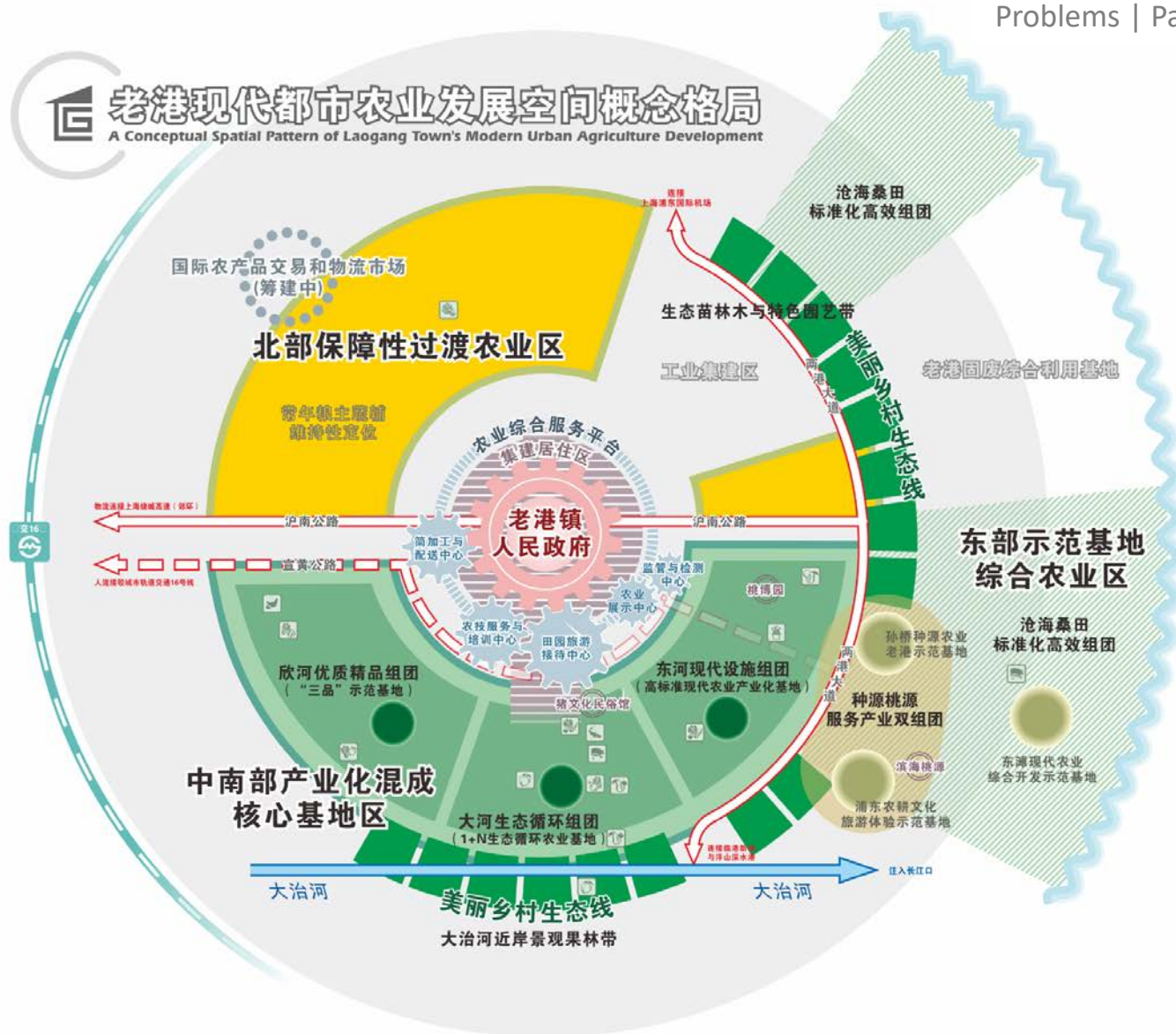
色彩渗透

连续融合过渡



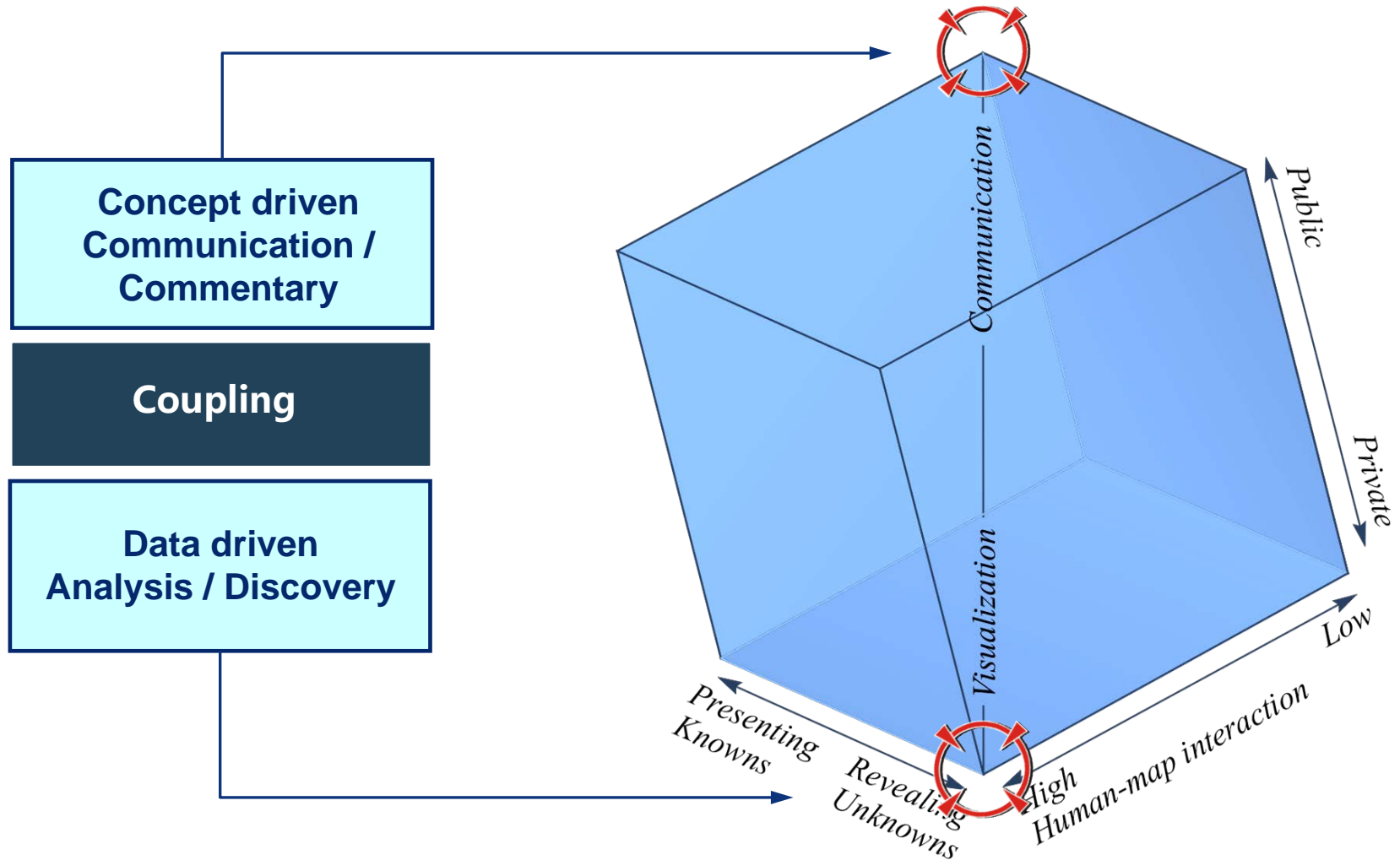








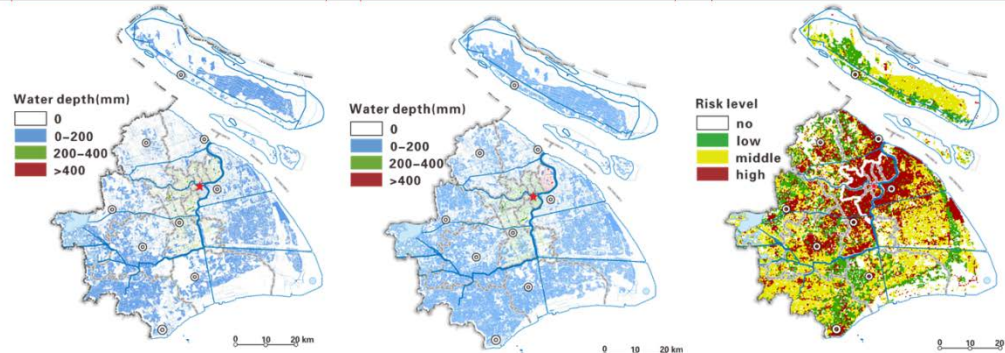
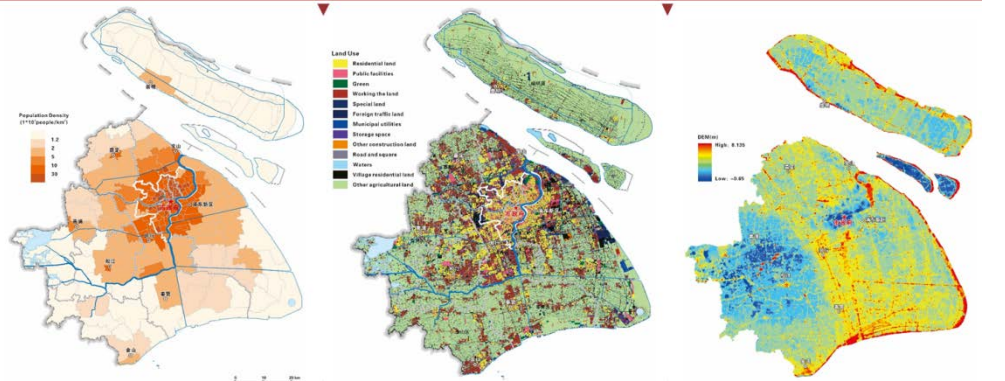
Problems | **Paradigm** | Practices



**Two-stage Coupling Mapping**



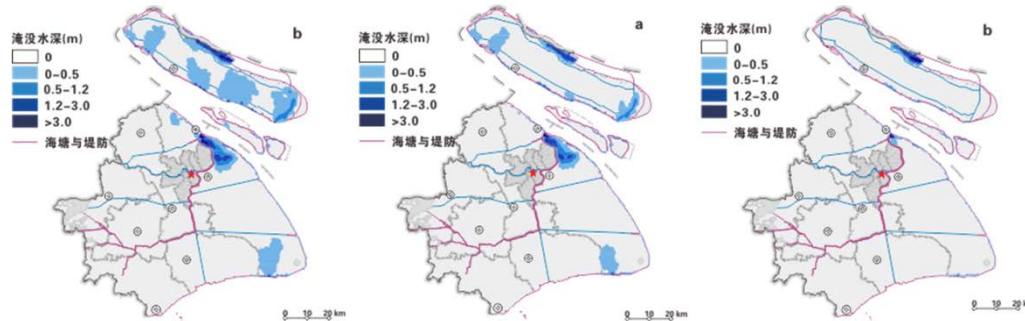
Problems | Paradigm | Practices



(a) for once in 50 years (90mm/h)

(b) for once in 100 years (90mm/h)

(c) risk division



First-stage Visualization









**Connotation**

**Architecture**

**Representation**

**Tonality**



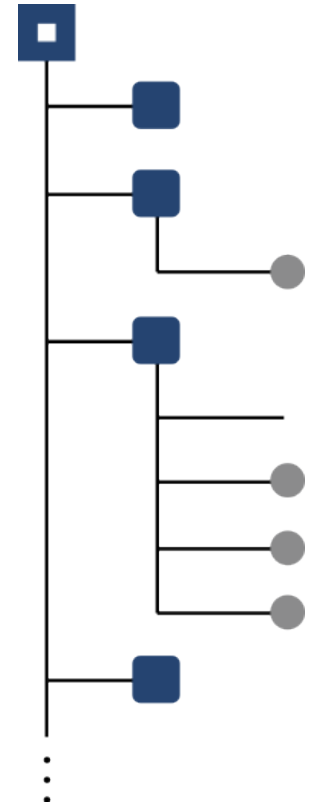
Problems | Paradigm | Practices



# Architecture in Map & Atlas Design



Problems | Paradigm | Practices



large-capacity information in a limited media environment



Story Maps ▾

应用程序 图库 资源 博客 我的故事

简体中文 ▾

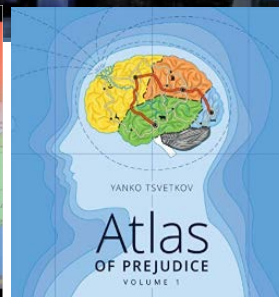
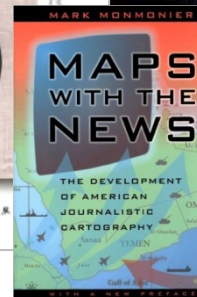
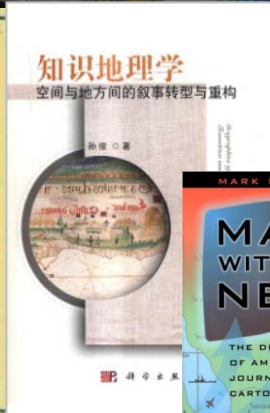
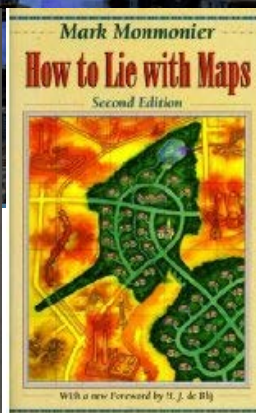
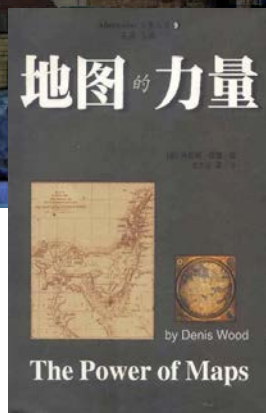


# Story Maps

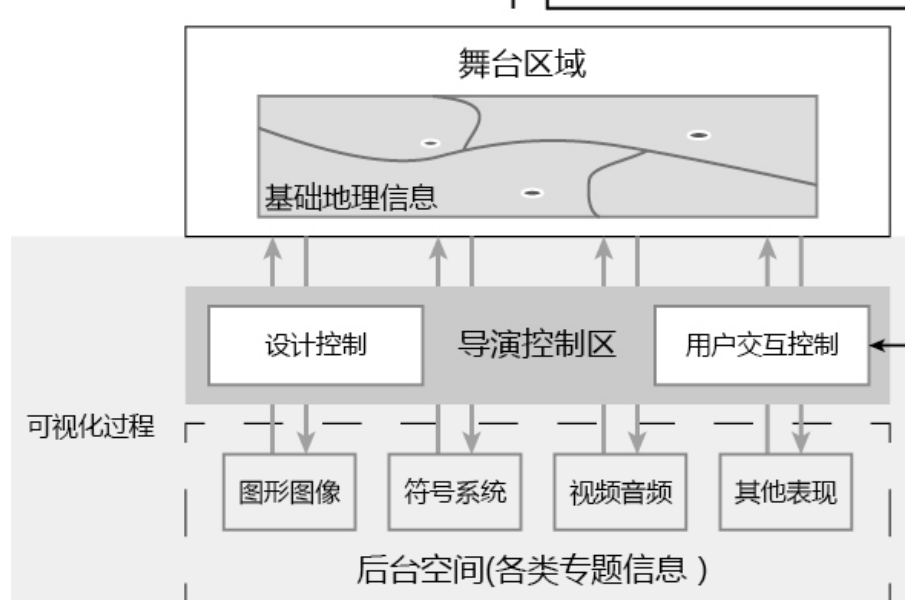
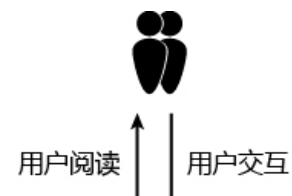
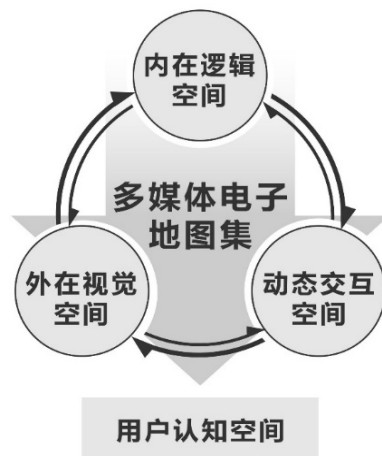
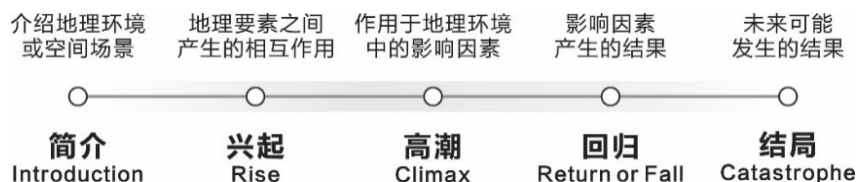
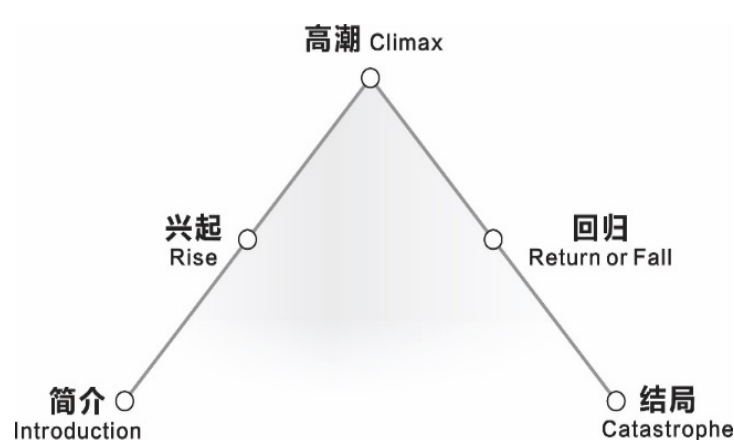
每个人都有要讲述的故事。  
利用地图的强大功能来讲述您的故事。

Photo: Lokankara/GC-BY-SA 3.0

## Spatial Narrative







## Spatial Narrative

( Theatrical Space & Stage Metaphor )

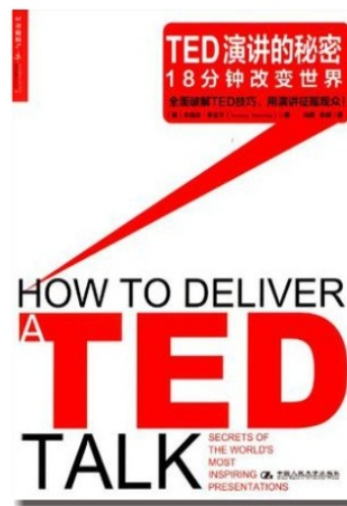


# 2007诺贝尔和平奖



# TED

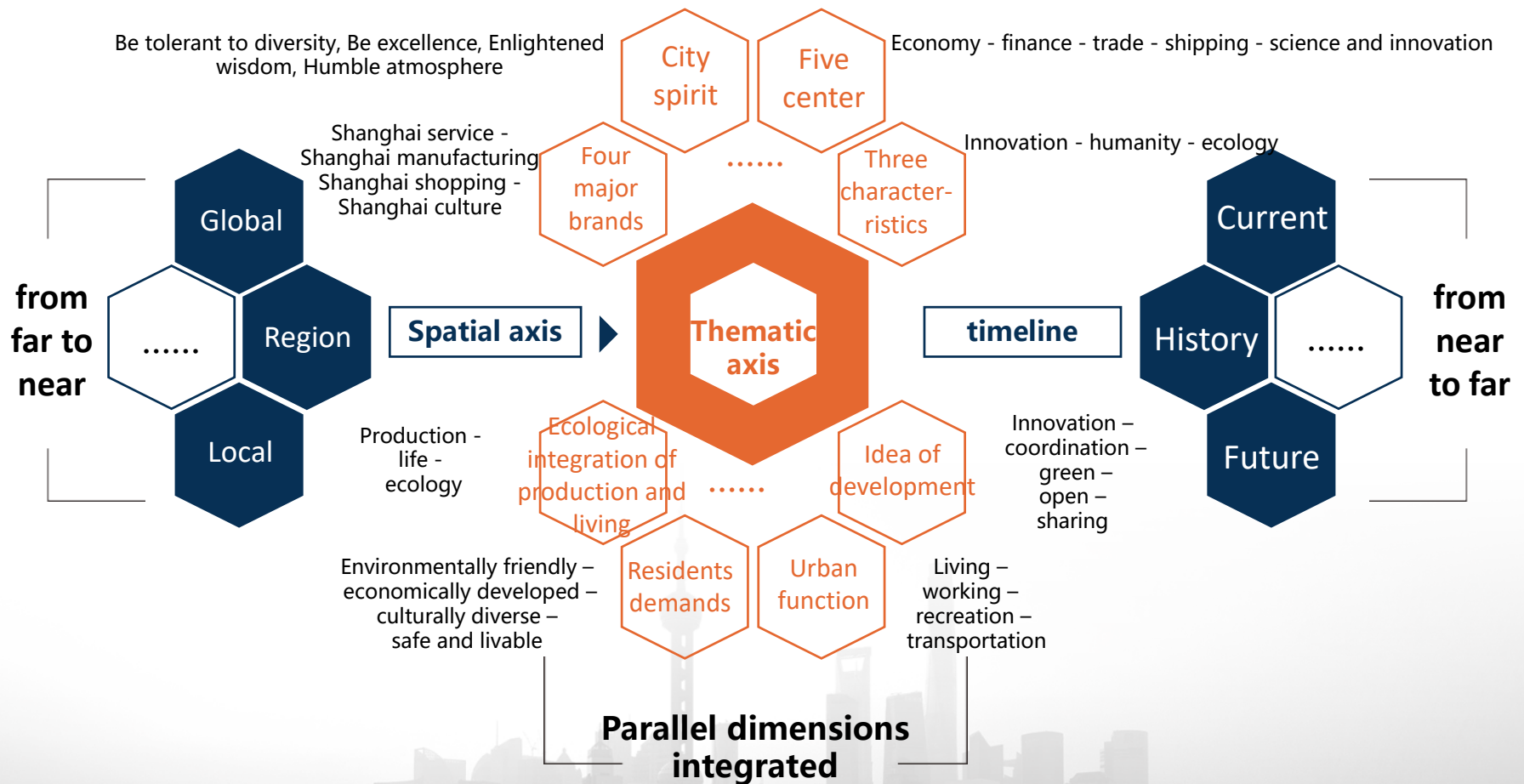
IDEAS WORTH SPREADING



Problems | Paradigm | Practices







"Three Axes" linkage (Narrative framework)

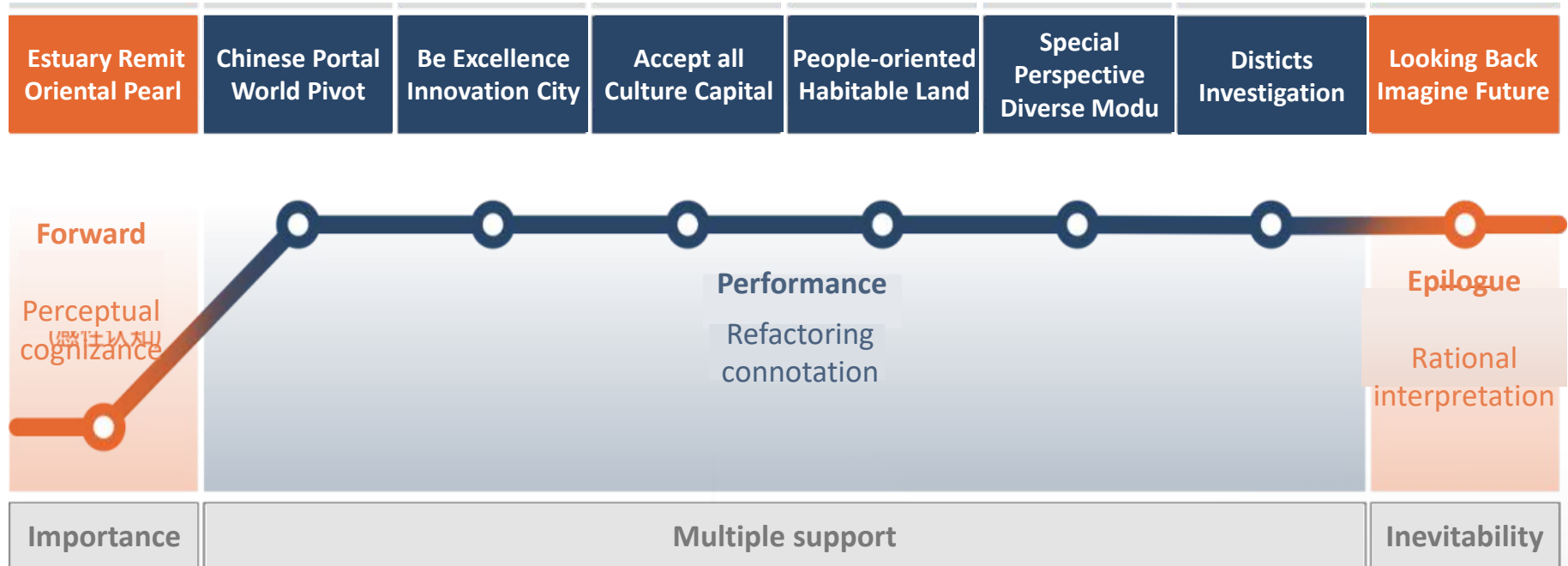




## 2

# Architecture of Map & Atlas Design

Problems | Paradigm | Practices



"Eight-movement Trio" (Narrative clue)







**Connotation**

**Architecture**

**Representation**

**Tonality**



Problems | Paradigm | Practices

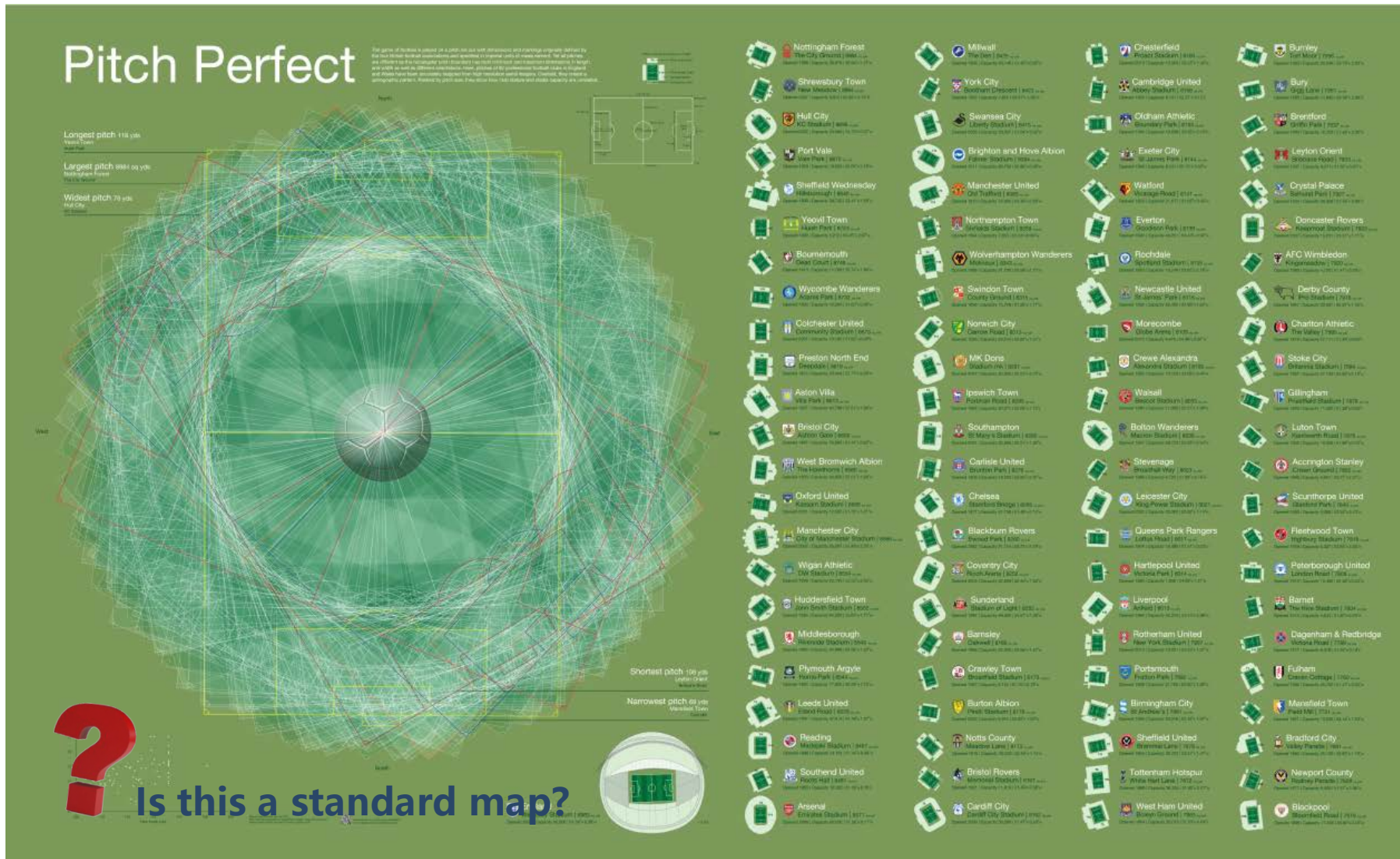


# Representation for Map & Atlas Design



The winning entry of the 2016 BCS Award, *Pitch perfect* by Kenneth Field

Problems | Paradigm | Practices

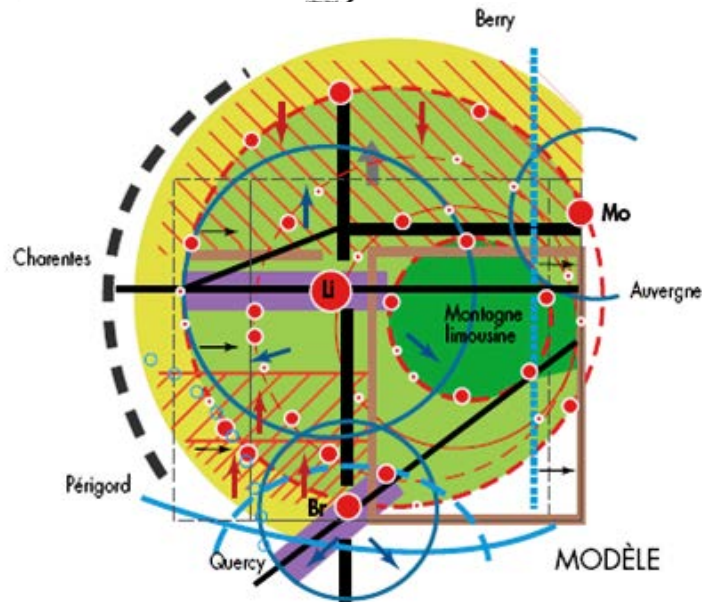
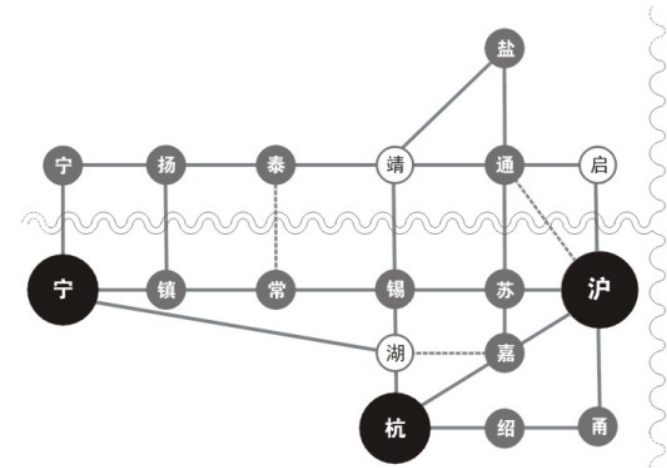






## Are these standard map? (quasi-maps)

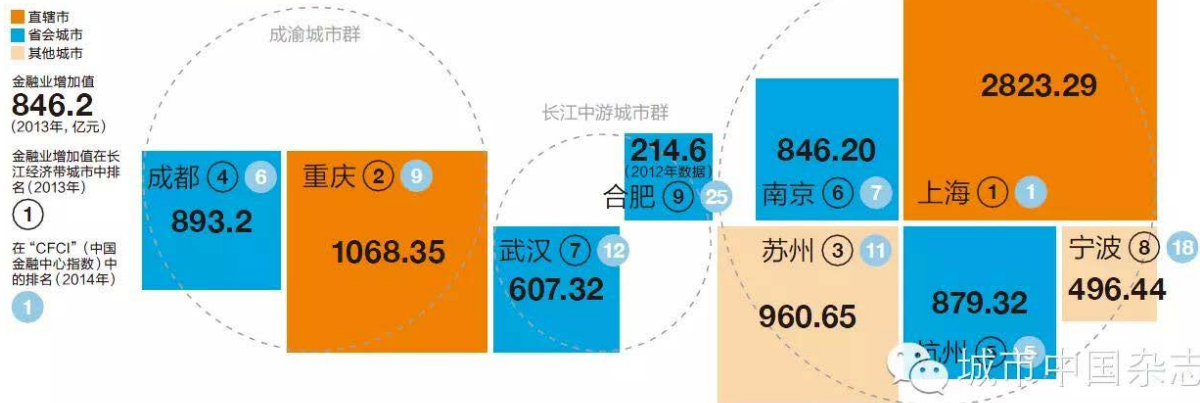
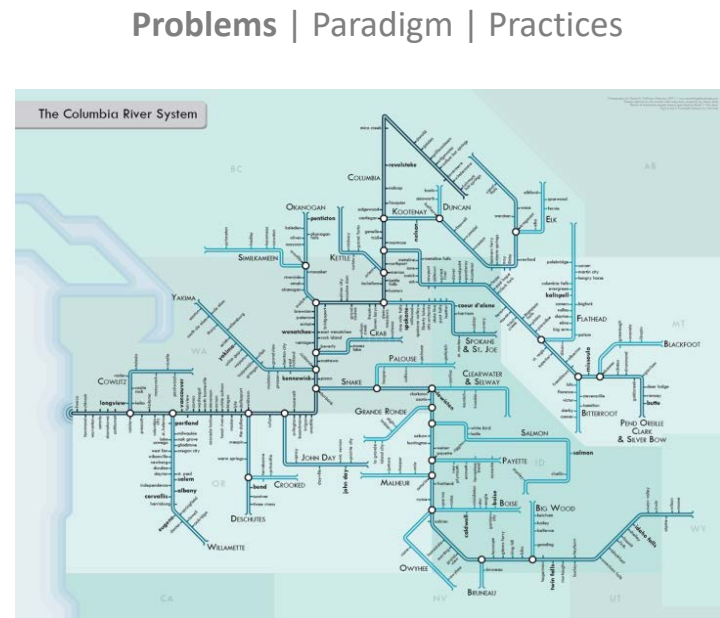
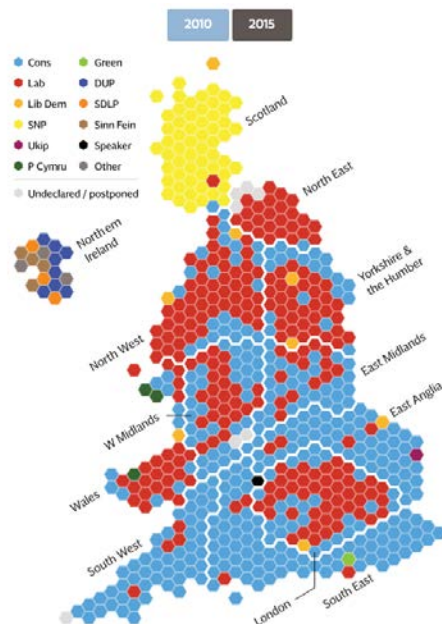
## Problems | Paradigm | Practices





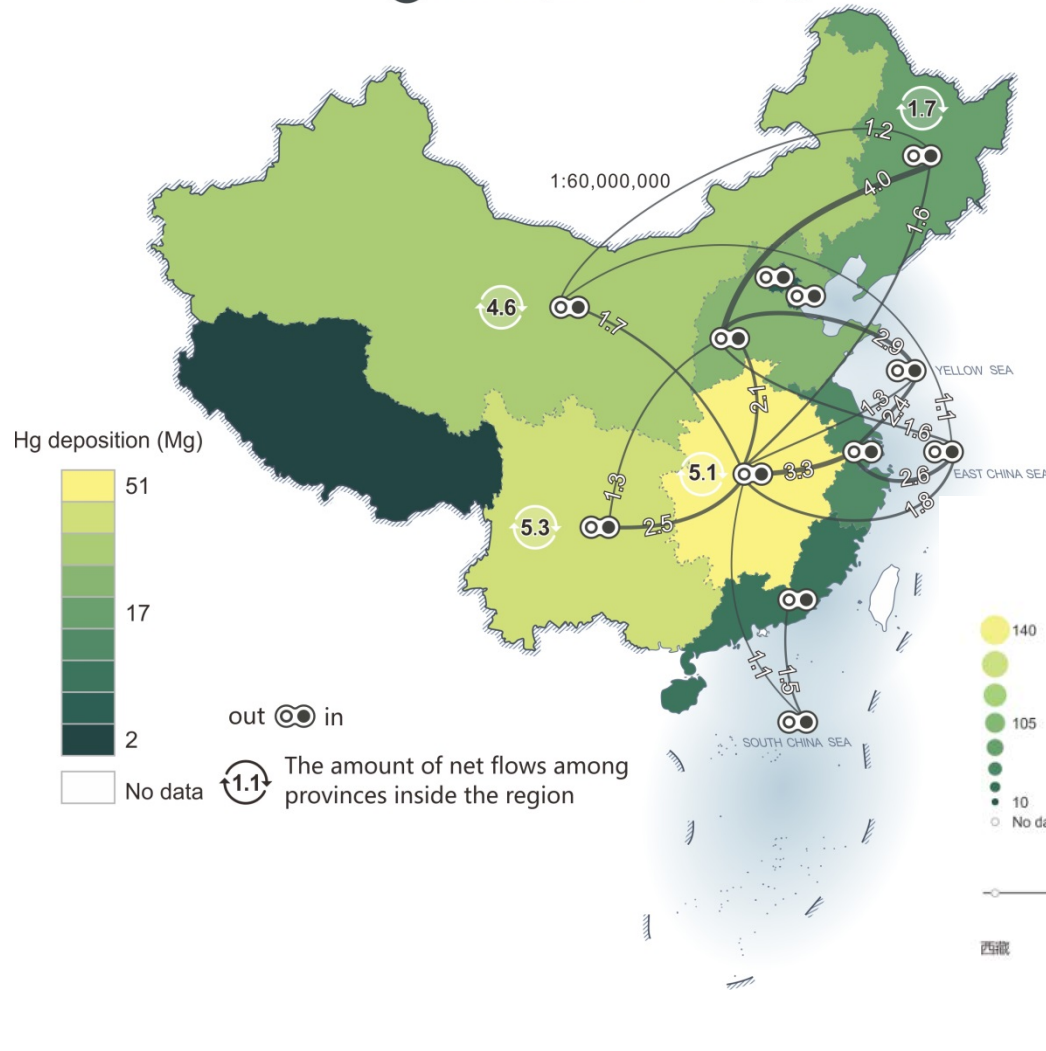


## Are these standard map? (quasi-maps)



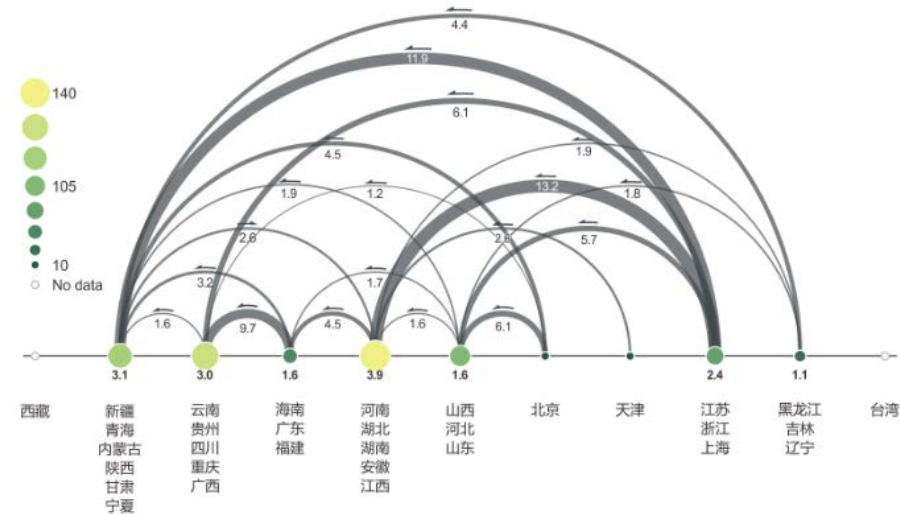


C Net deposition flow (Mg)



Problems | Paradigm | Practices

Should spatial issues  
only be visualized by  
Spatial diagram?

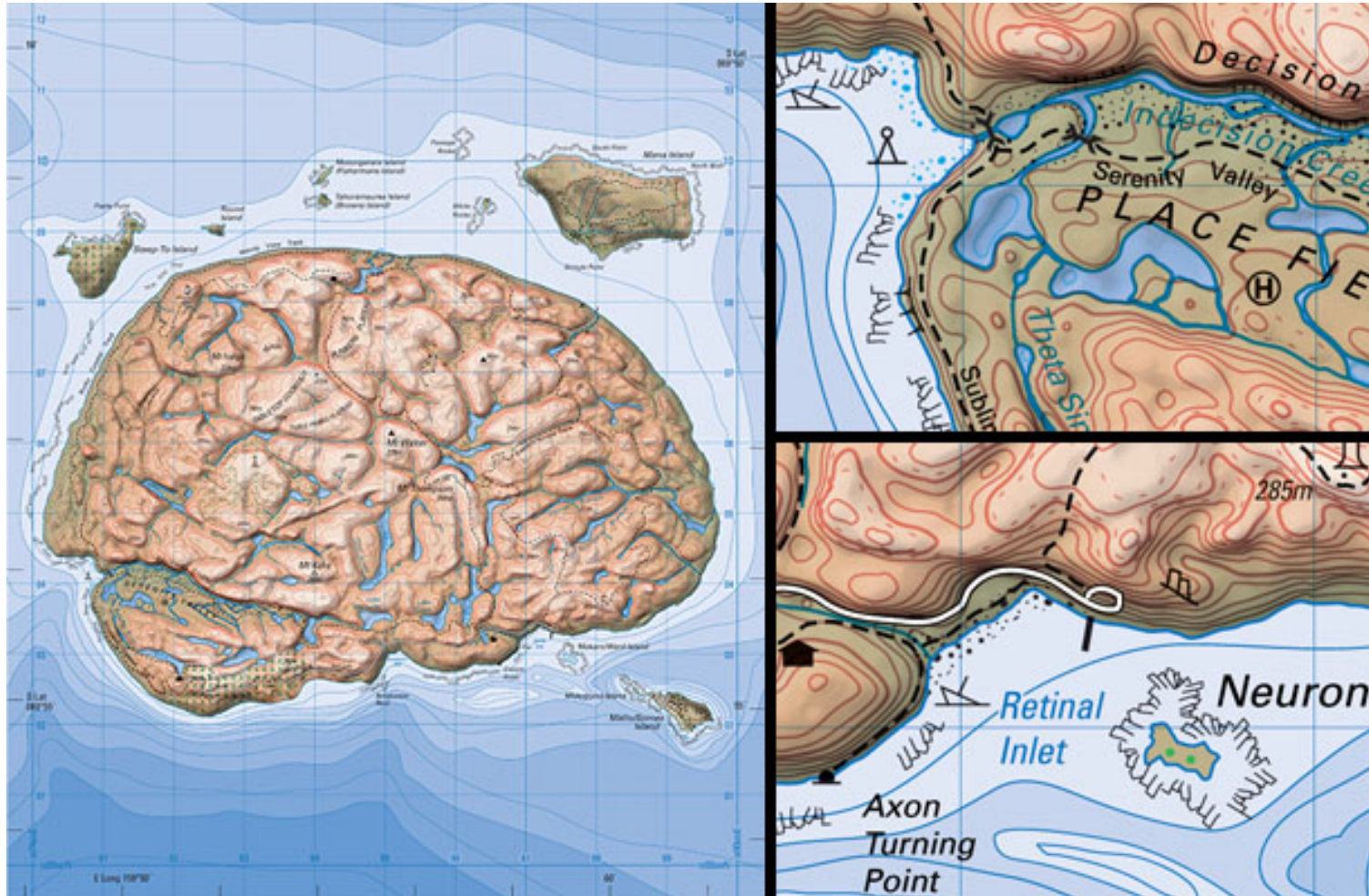






Should maps only be used to visualize spatial issues?

Problems | Paradigm | Practices

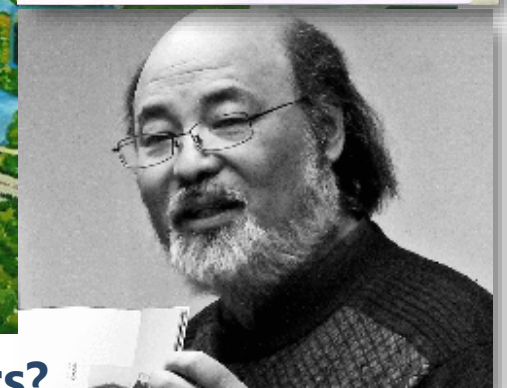
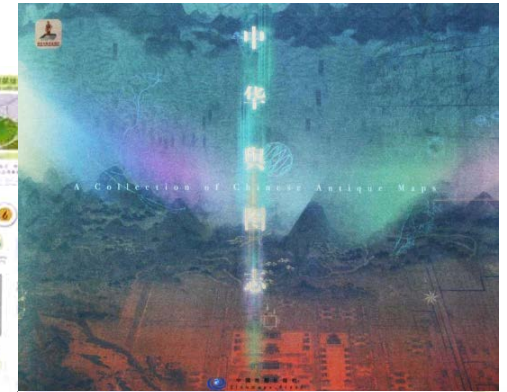




# Representation of Map & Atlas Design

Problems | Paradigm | Practices

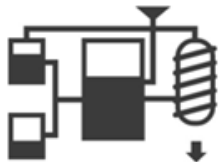
ICC 2009 golden award for urban map-Beijing Olympic games



Should maps be designed only by cartographers?



Problems | Paradigm | Practices



图解 (Diagram)

主要运用插图对事物进行说明



统计图 (Graph)

通过数值来表现变化趋势或进行比较



图表 (Chart)

运用图形、线条及插图等，阐明事物的相互关系



表格 (Table)

根据特定信息标准进行区分，设置纵轴与横轴



地图 (Map)

描述在特定区域和空间里的位置关系



图形符号 (Pictogram)

不使用文字，运用图画直接传达信息



Could the map definition be permanent?

What is a constructive relationship between map and others?



# Representation of Map & Atlas Design



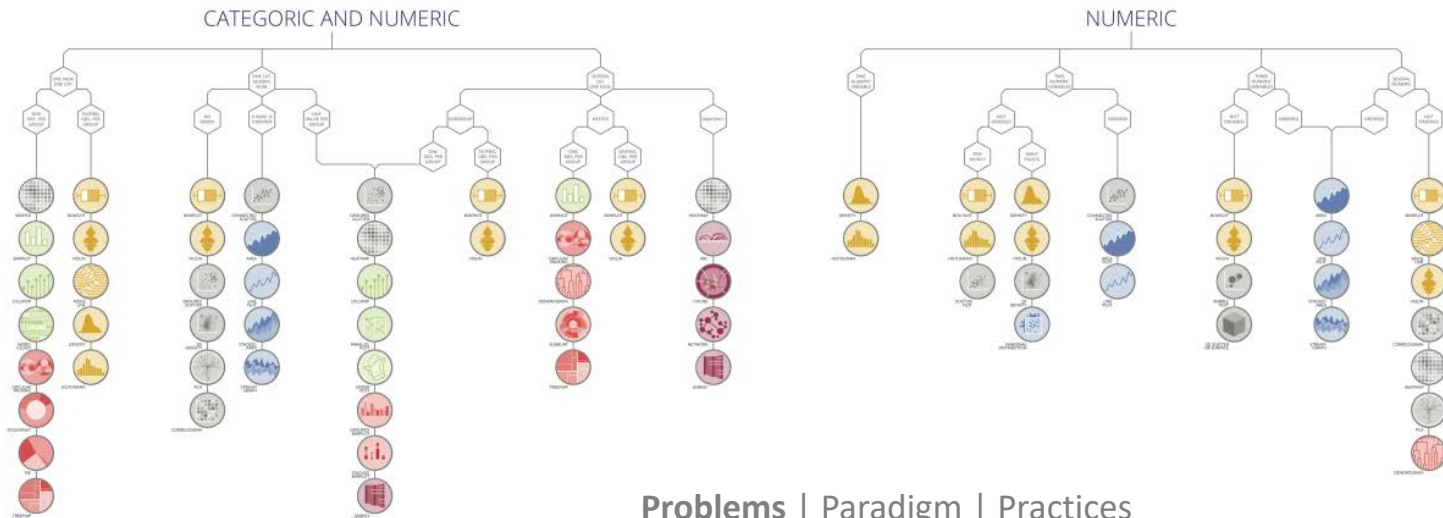
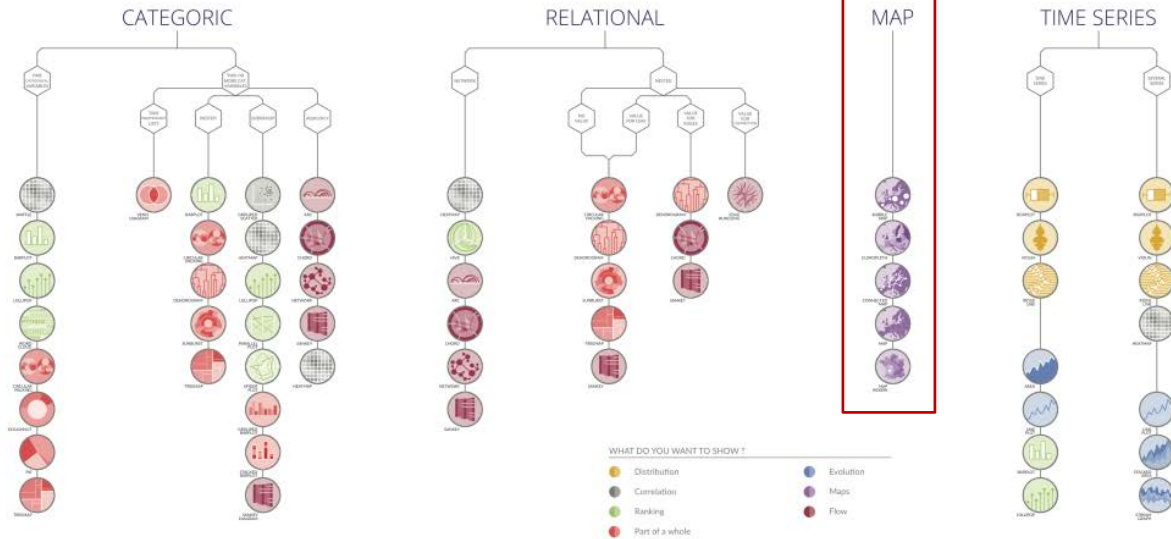
from Data  
to Viz

'From Data to Viz' is a classification of chart types based on input data format. It will help you find the perfect chart in three simple steps:

- 1 Identify what type of data you have.
- 2 Go to the corresponding decision tree and follow it down to a set of possible charts.
- 3 Choose the chart from the set that will suit your data and your needs best.

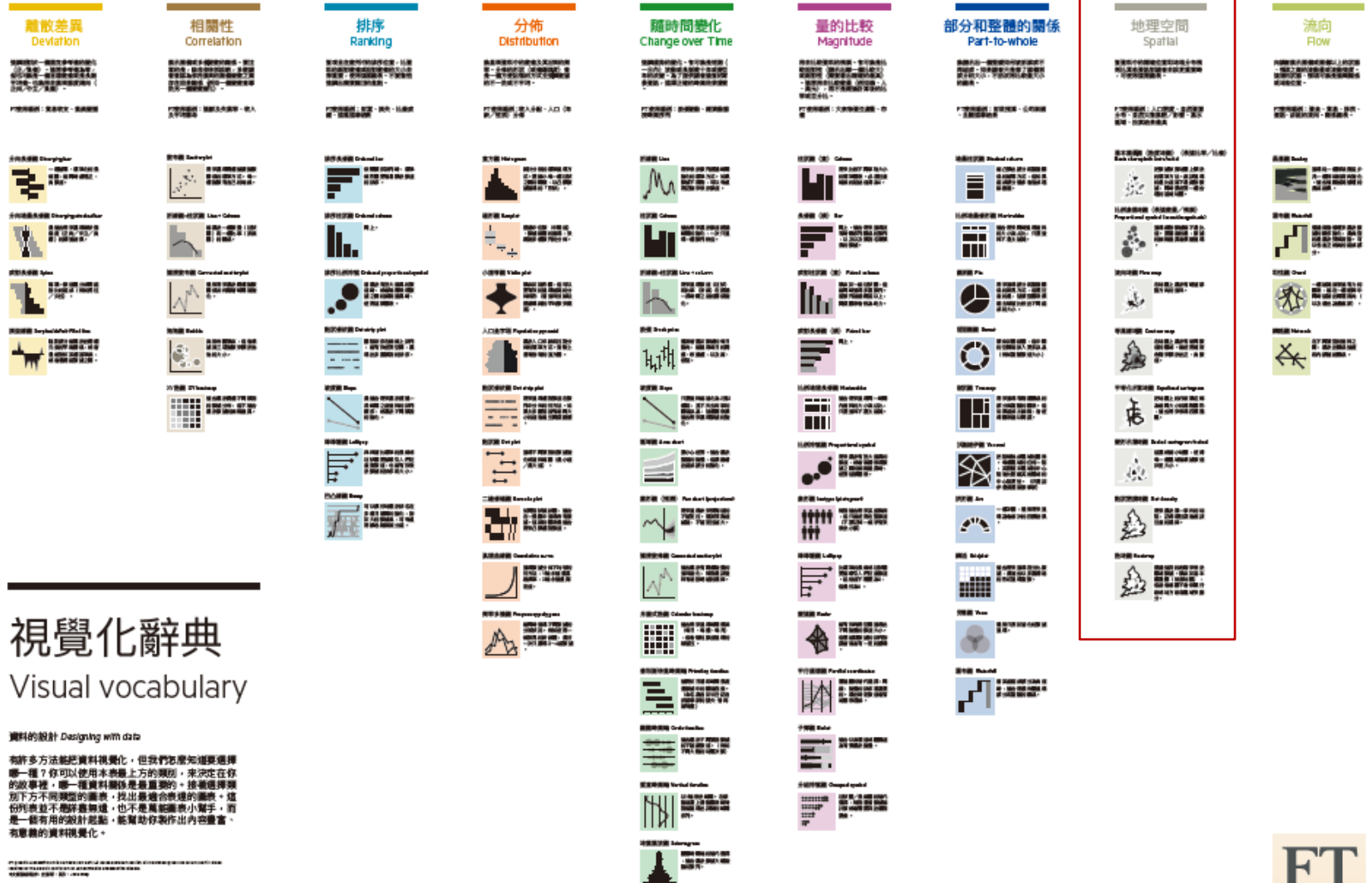
DataViz is a world with endless possibilities and this project does not claim to be exhaustive. However it should provide you with a good starting point. For an interactive version and much more, visit:

[data-to-viz.com](http://data-to-viz.com)



Problems | Paradigm | Practices





## 視覺化辭典

### Visual vocabulary

資料的設計 Designing with data

有許多方法能將資料視覺化，但我們怎麼知道選擇哪一種？你可以使用本表最上方的類別，來決定在你的故事裡，哪一種資料關係是最重要的。接著選擇類下方不同類型的圖表，找出最適合敘述的圖表。這份列表並不是好無價值，也不是萬能圖表小幫手，而是一系列有用的設計起點，能幫助你製作出內容豐富、有意義的資料視覺化。

FT 的視覺化辭典是根據 2014 年 10 月 1 日以前在 FT 的數據視覺化設計指南中提出的建議而編寫的。它旨在提供一個全面的視覺化設計指南，以幫助設計師在設計數據可視化時做出明智的選擇。

[ft.com/vocabulary](http://ft.com/vocabulary)

Problems | Paradigm | Practices



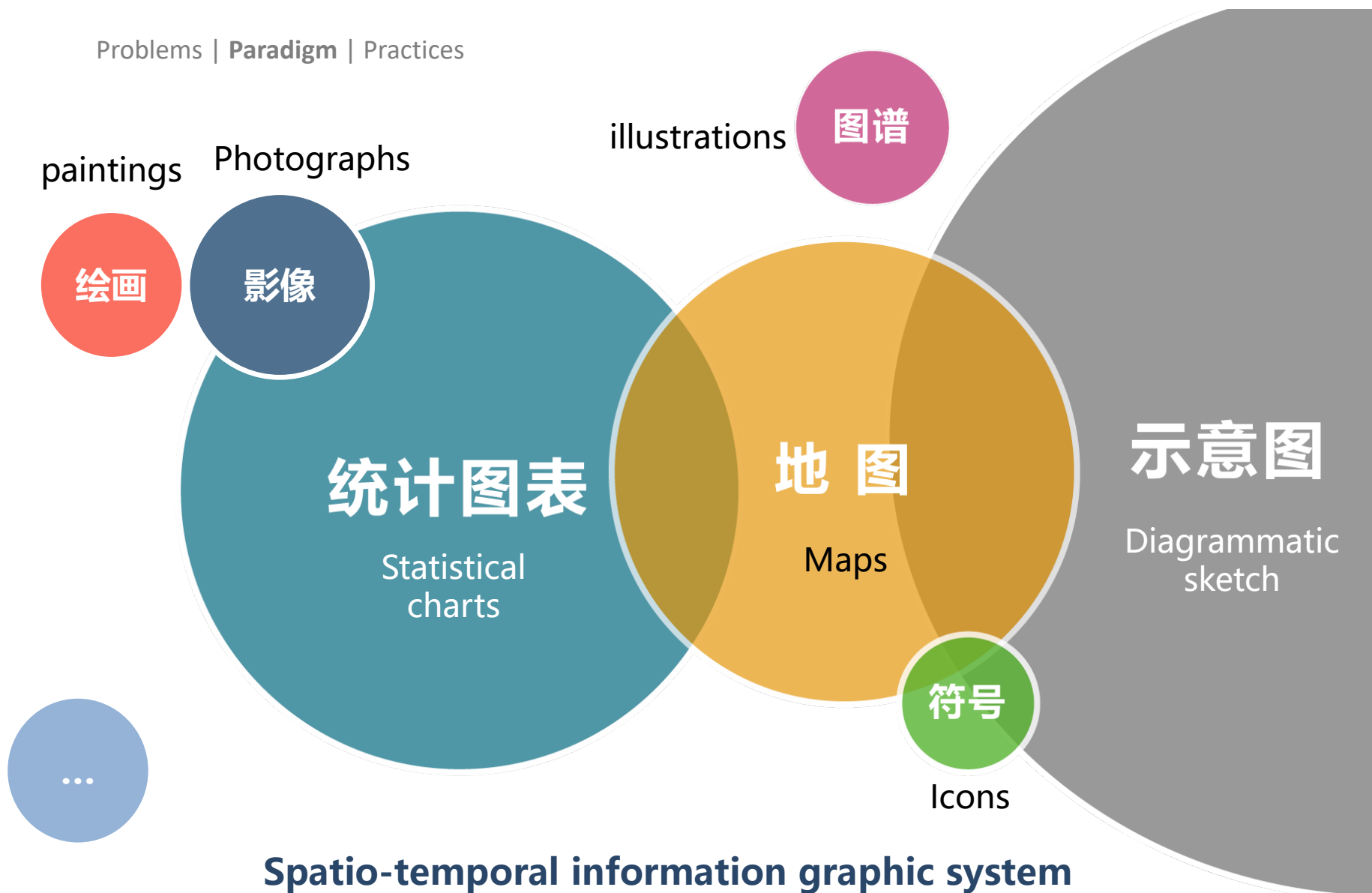




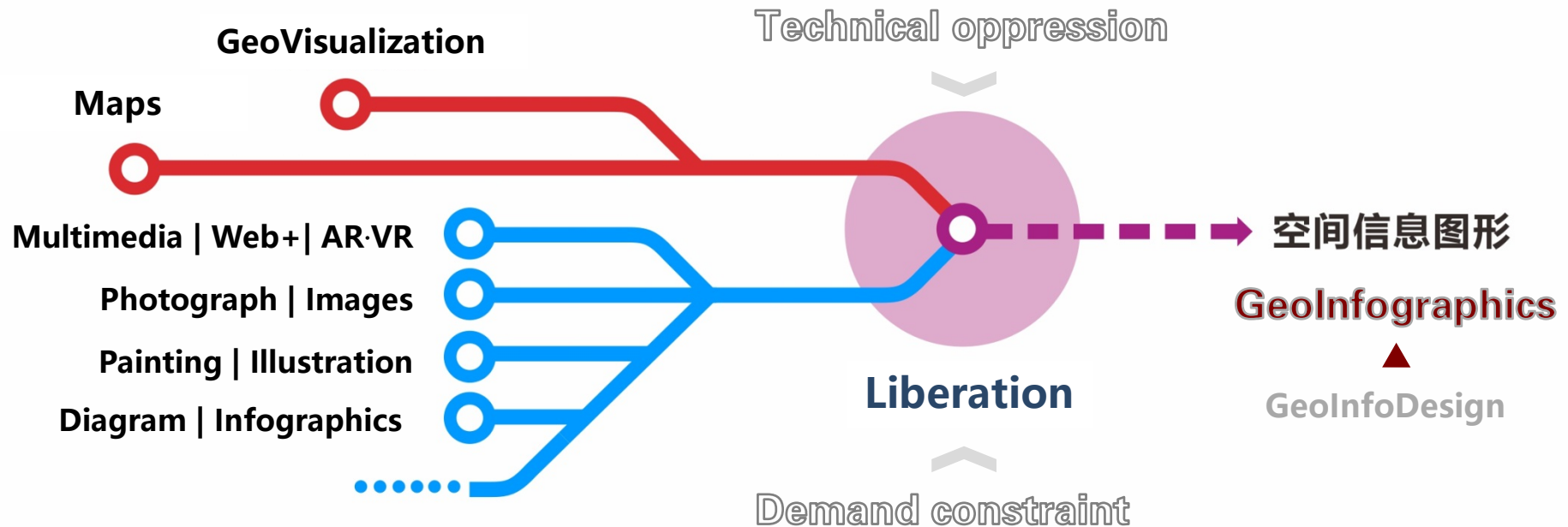






Problems | **Paradigm** | Practices

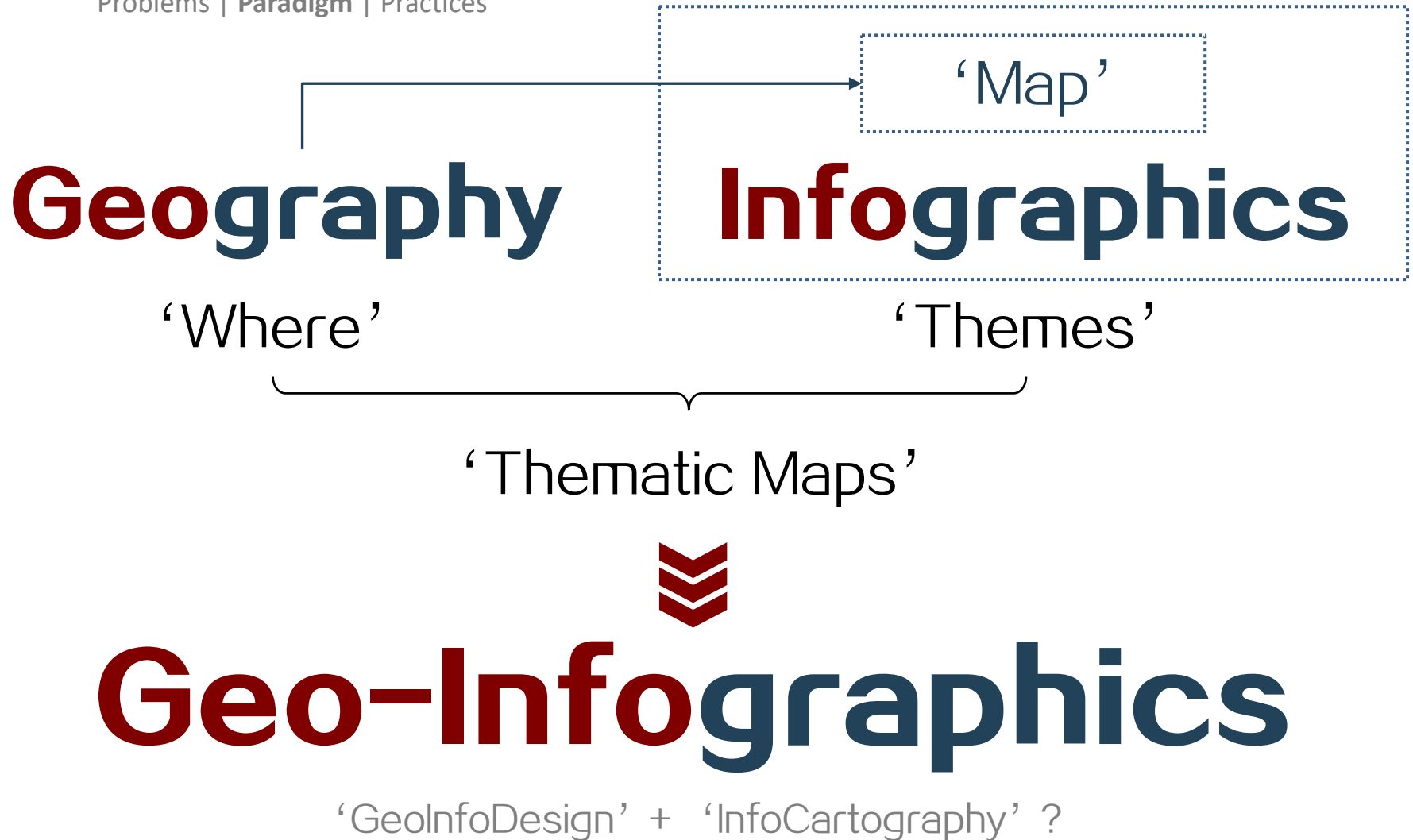




To motivate the liberation from Cartography, Mapping to Geoinfographics !



Problems | Paradigm | Practices



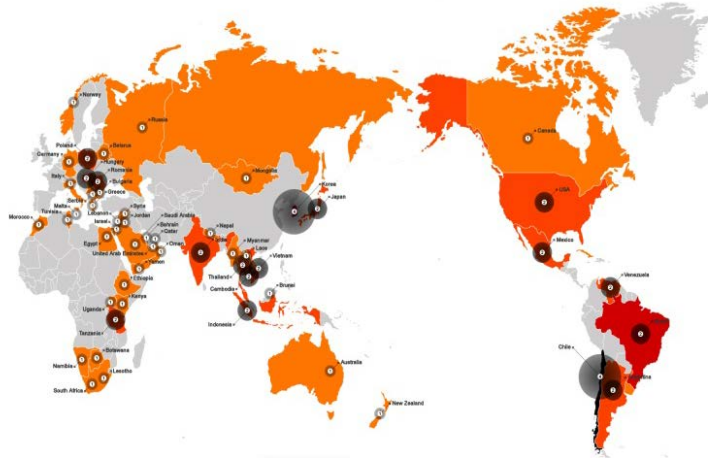
To motivate the liberation from Cartography, Mapping to GeoInfographics !



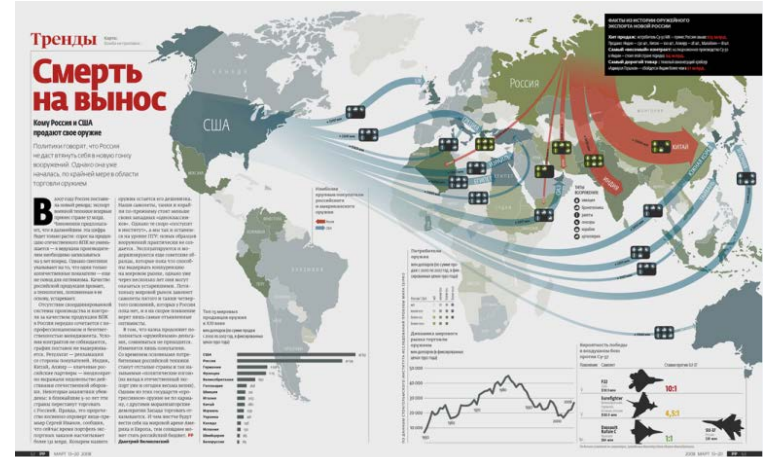
# Representation of Map & Atlas Design

Problems | Paradigm | Practices

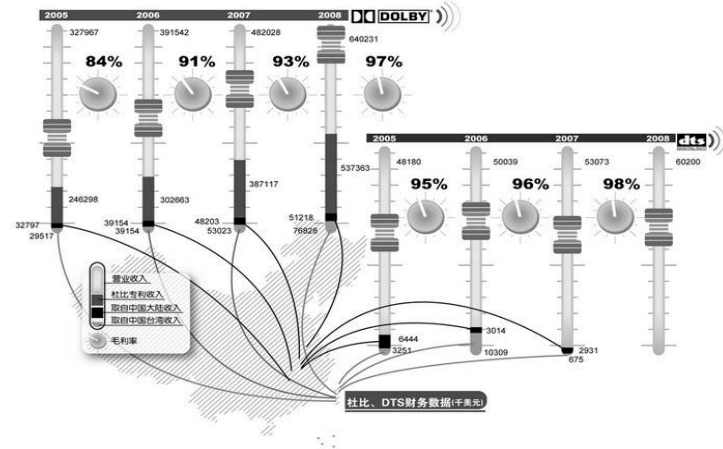
Configuration categories:  
The role of the map



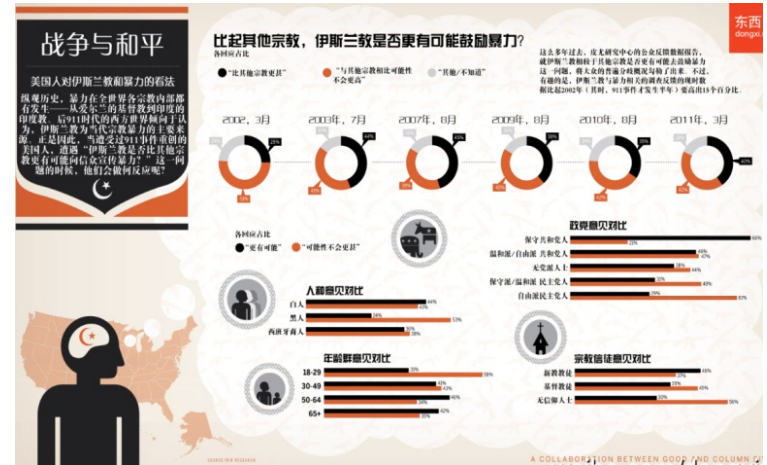
▲ Spatial Base



▲ Top Priority

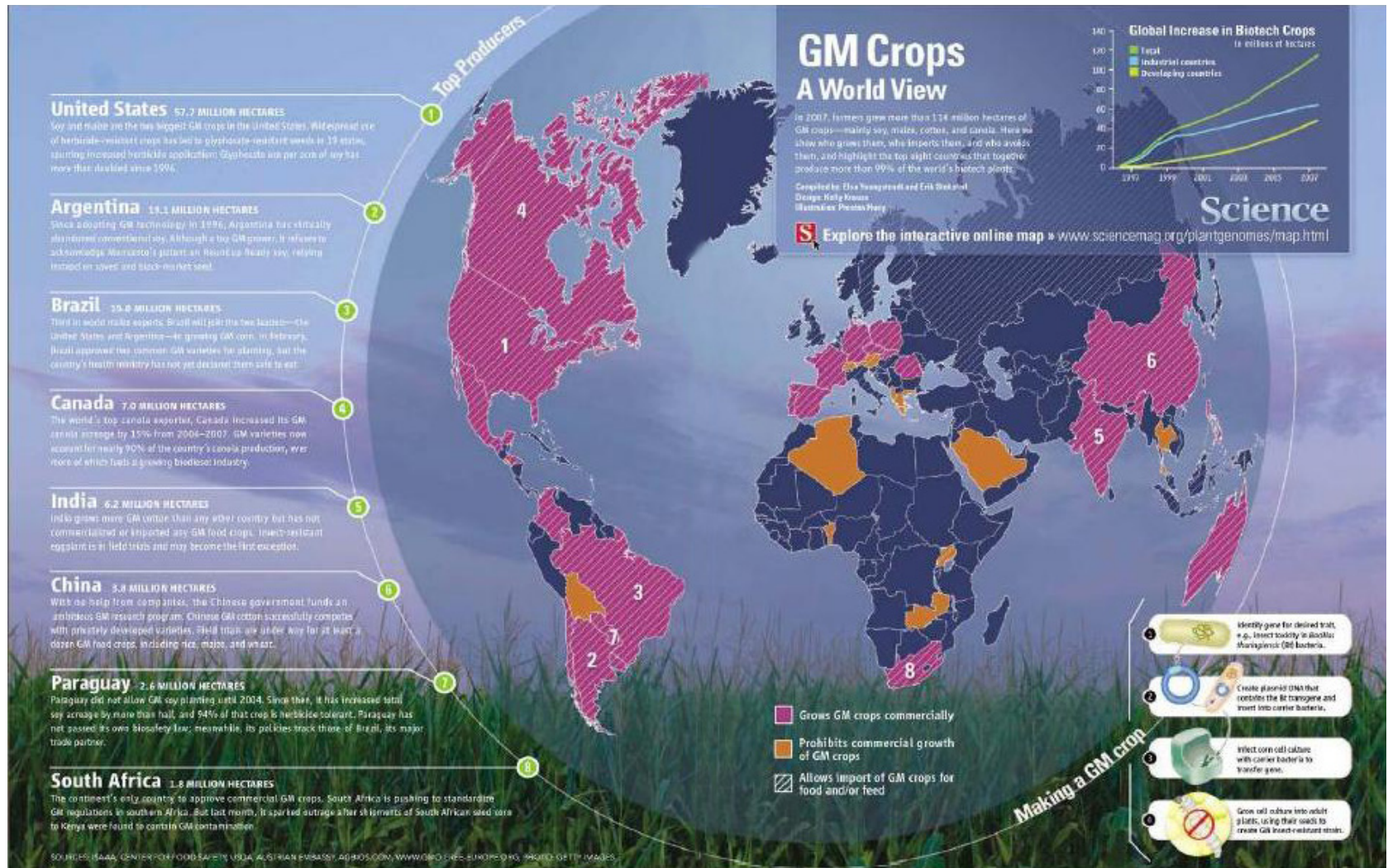


▲ Supporting Costar



▲ Decoration \ Non-spatial role

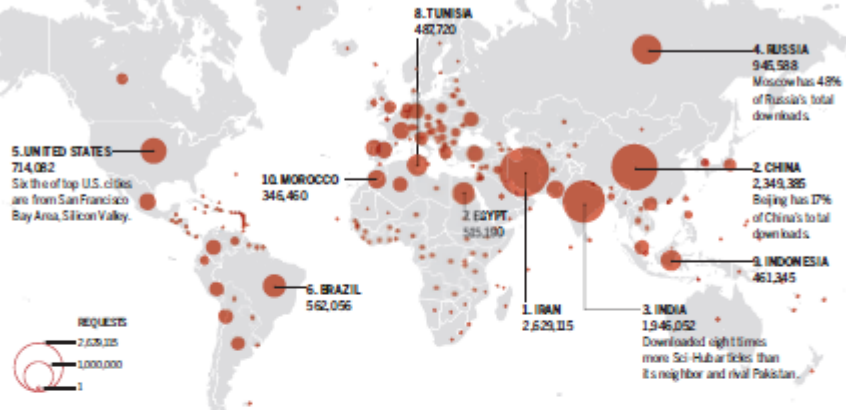




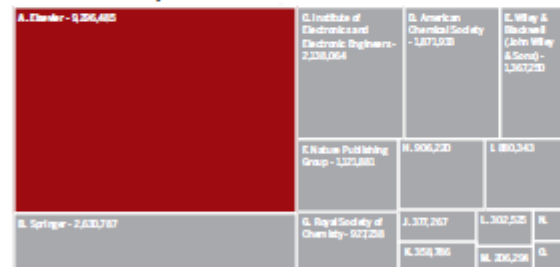


## IT'S A SCI-HUB WORLD

Server log data for the website Sci-Hub from September 2015 through February point a revealing portrait of its users and their diverse interests. Sci-Hub had 28 million download requests, from all regions of the world and covering most scientific disciplines. An interactive version of this map is available at [bit.ly/Sci-Hub](http://bit.ly/Sci-Hub).

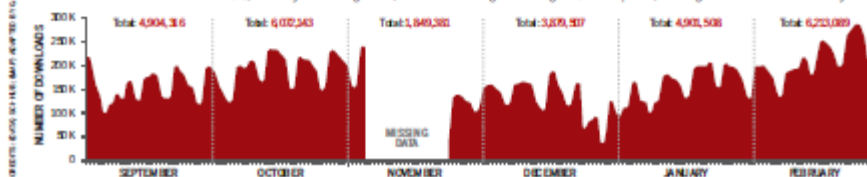


## 15 most downloaded publishers



## Sci-Hub activity over 6 months

Sci-Hub's domain switch in November 2015, forced by a lawsuit against it, led to some missing data during the 6-month period, but usage hit record levels in February.



SCIENCE: sciencemag.org

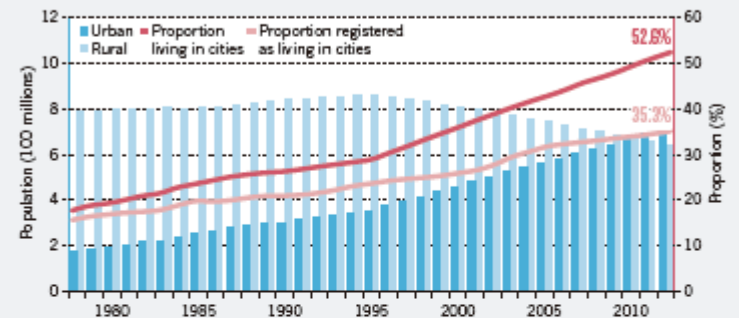
Published by AAAS

29 APRIL 2016 • VOL 343 ISSUE 6285

## URBAN EXPANSION

The proportion of China's population living in cities has risen steadily since the 1970s (1). Workers moving from rural areas to cities are prevented from integrating, however, by a household registration system that restricts them from officially changing their permanent residence. Urban populations concentrate in the eastern part of the mainland (2).

## 1 Relocation trends

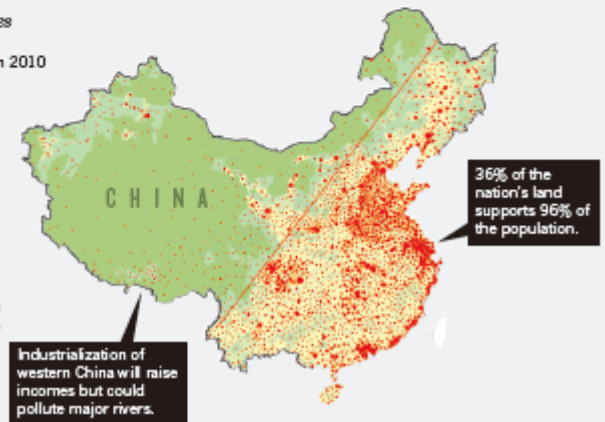


## 2 Mainland cities

Population density in 2010 (people per km<sup>2</sup>)

- Below 10
- 10–50
- 50–100
- 100–500
- 500–1,000
- Above 1,000

- Urban population
- Below 200,000
  - 200,000–500,000
  - 500,000–1 million
  - 1 million–2 million
  - 2 million–5 million
  - Above 5 million



《CHINA URBAN EXPANSION》.  
*Nature*, 2014, 509(6285)

《IT'S A SCI-HUB WORLD》.  
*Science*, 2016, 352(6285)













**Connotation**

**Architecture**

**Representation**

**Tonality**

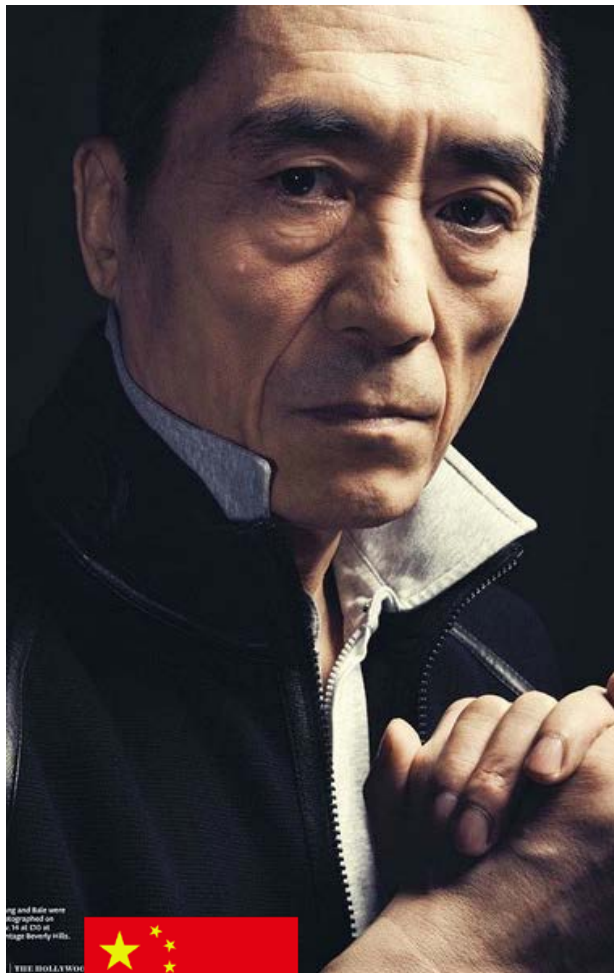


Problems | Paradigm | Practices



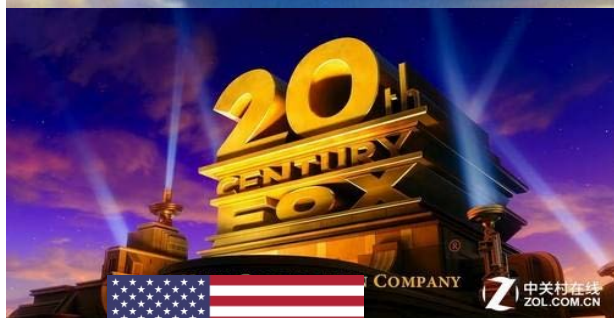
**Tonality** with  
**Map & Atlas Design**





张艺谋的影视“景观”





美国科幻大片的影视“炫技”



Problems | Paradigm | Practices



**音乐调性：**调（包括主音高度和调式类别）本身所具有的特质。



Problems | Paradigm | Practices



新古典主义



欧洲浪漫主义



法国现实主义



印象主义



立体主义



超现实主义



工笔



写意



泼墨

**绘画调性：**具有风格学的意义，因风格特点，同绘画技法上的规律结合，产生出各种不同的流派。




Problems | Paradigm | Practices



巴洛克



摩登现代



百年英伦



瑰丽



轻商务




简约舒适



户外探险



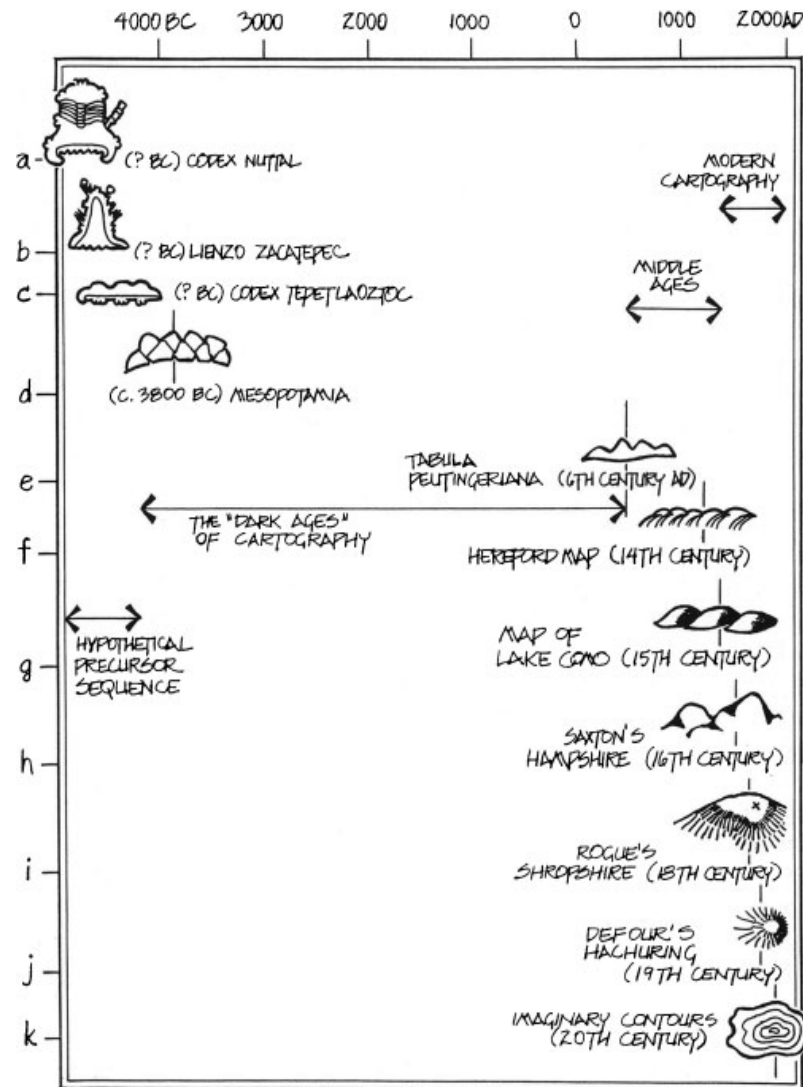
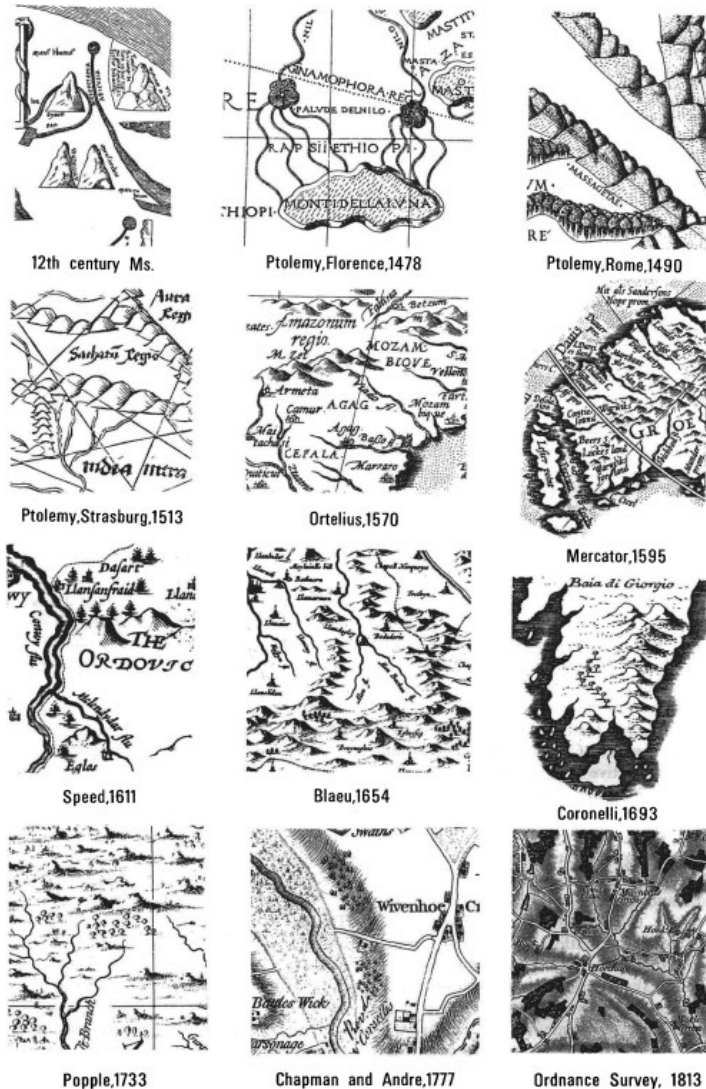
运动休闲



中式

**品牌调性：**基于品牌的外在表现而形成的市场印象，可等同于人的性格；是品牌在市场中所运用的独有的语言识别。包括品牌核心价值定义阐释、品牌价值诉求、品牌标识语、品牌故事以及品牌主广告语等。





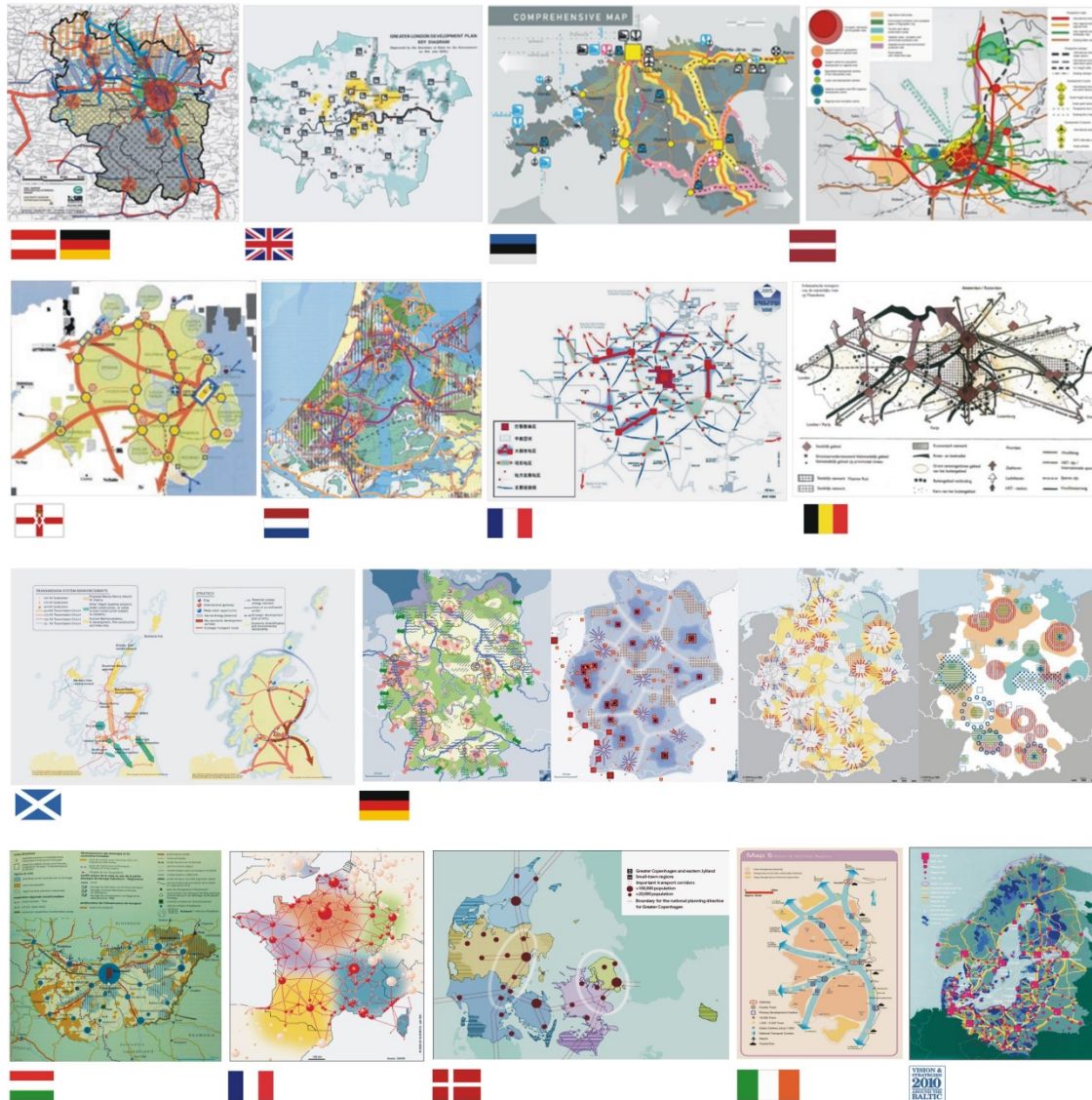
A. J. Kent, P. Vujakovic. Cartographic Language: Towards a New Paradigm for Understanding Stylistic Diversity in Topographic Maps, 2011, 48(1): 21–40.



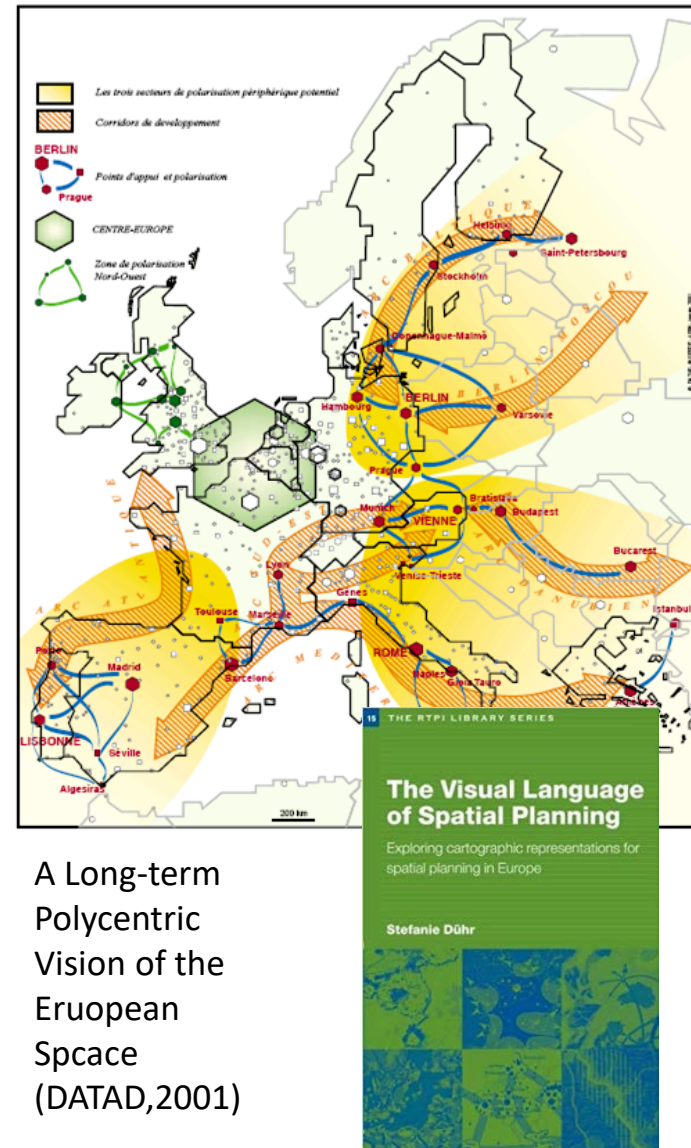


A. J. Kent, P. Vujakovic. Stylistic Diversity in European State 1:50000 Topographic Maps. Cartographic Journal, 2009, 46(3): 179–213.





Spatial Visions of Some European Countries and Region



A Long-term  
Polycentric  
Vision of the  
European  
Space  
(DATAD,2001)

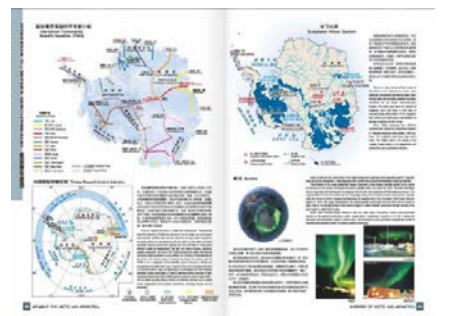
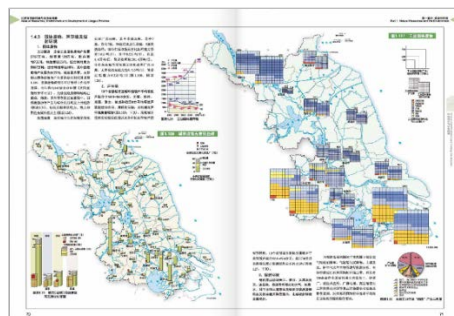
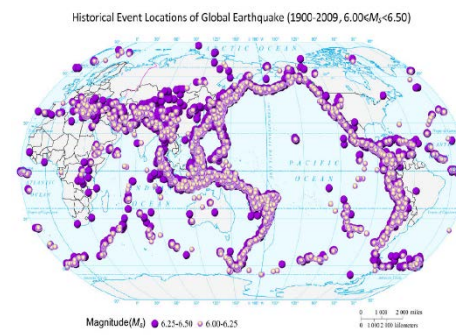
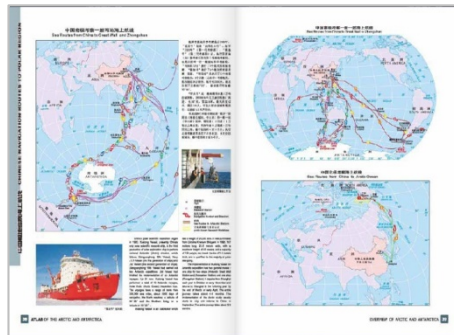
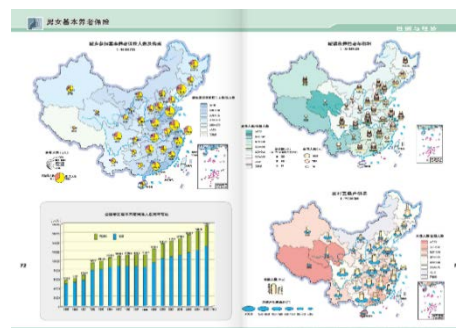
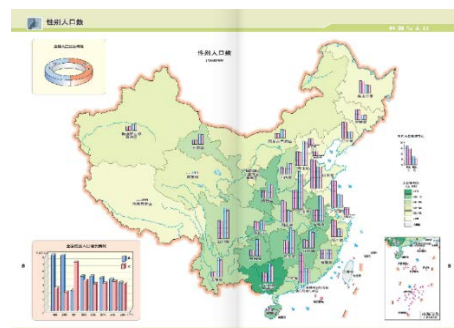


## 4

## Tonality of Map &amp; Atlas Design

Blurred personality, unknown generation

Problems | Paradigm | Practices



国家工程

裴秀奖金奖

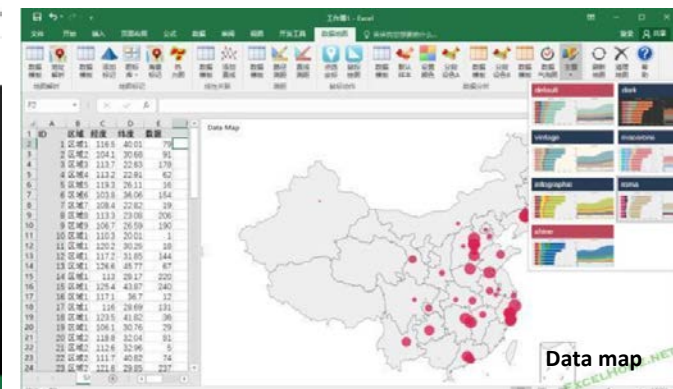
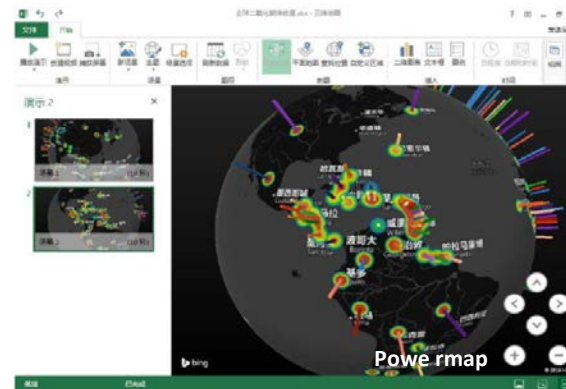
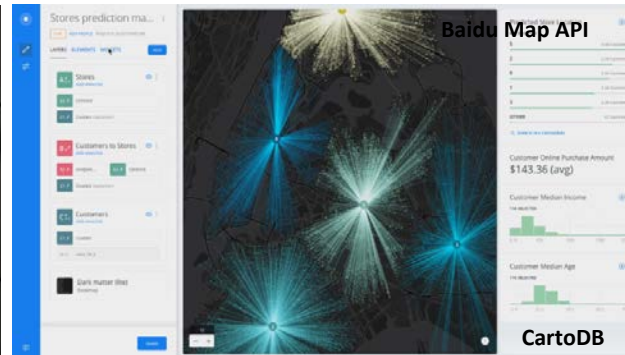


## 4

## Tonality of Map &amp; Atlas Design

Problems | Paradigm | Practices

Creativeness faded, thousand maps with one face



**Software dependency:** Universal template interface \ standardized process \ one-click mapping platform... (Everyone could a qualified mapper?)



## Lack of certain and specific tonality

Problems | Paradigm | Practices



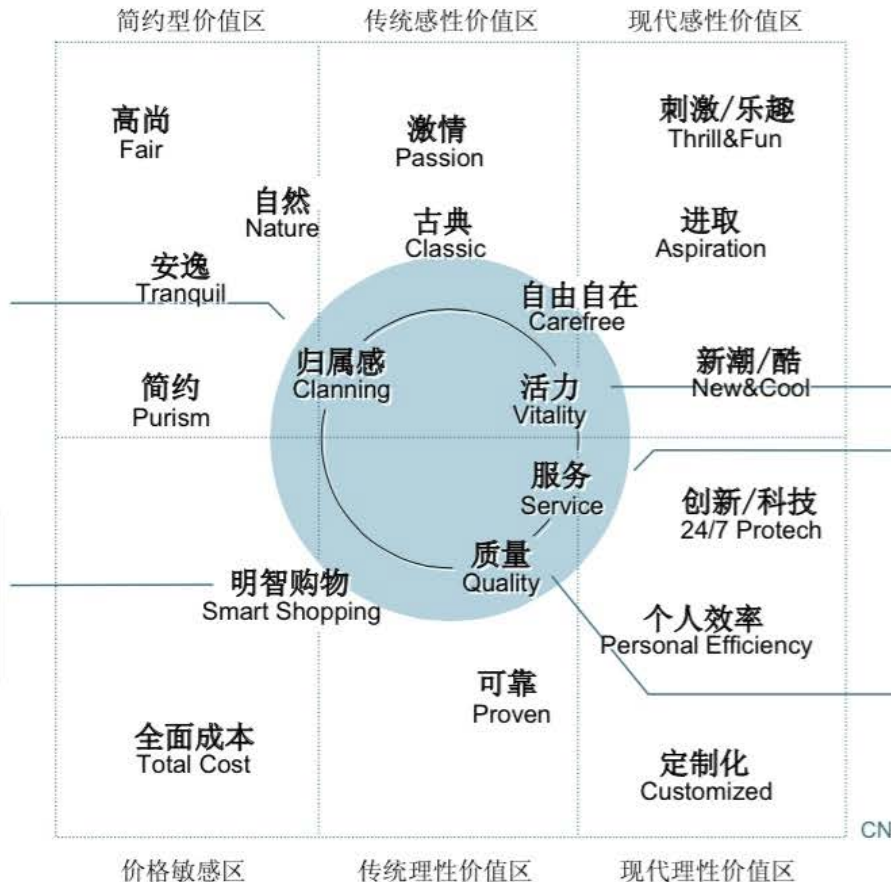
Imitation without originality and innovation



- 团对精神
- 彼此关爱
- 志趣相投



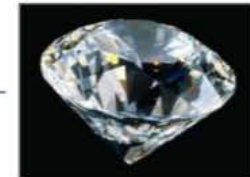
- 精明
- 货比三家
- 热衷于讨价还价



- 活力
- 动感多变
- 积极乐观
- 身心健康



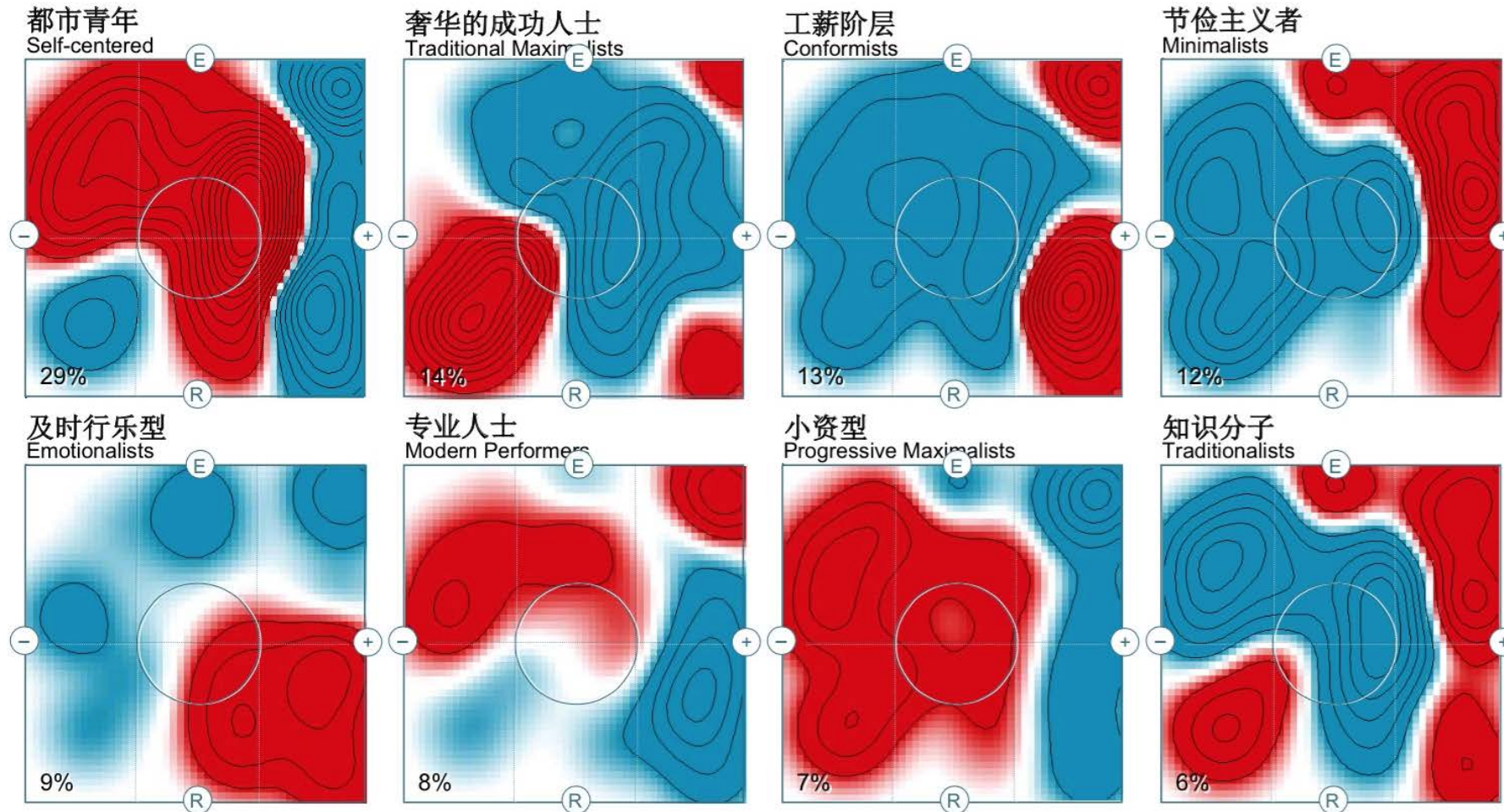
- 亲切热情
- 中肯周到
- 诚挚的
- 想客户所想



- 精准严谨
- 井井有条
- 质量稳定
- 一丝不苟

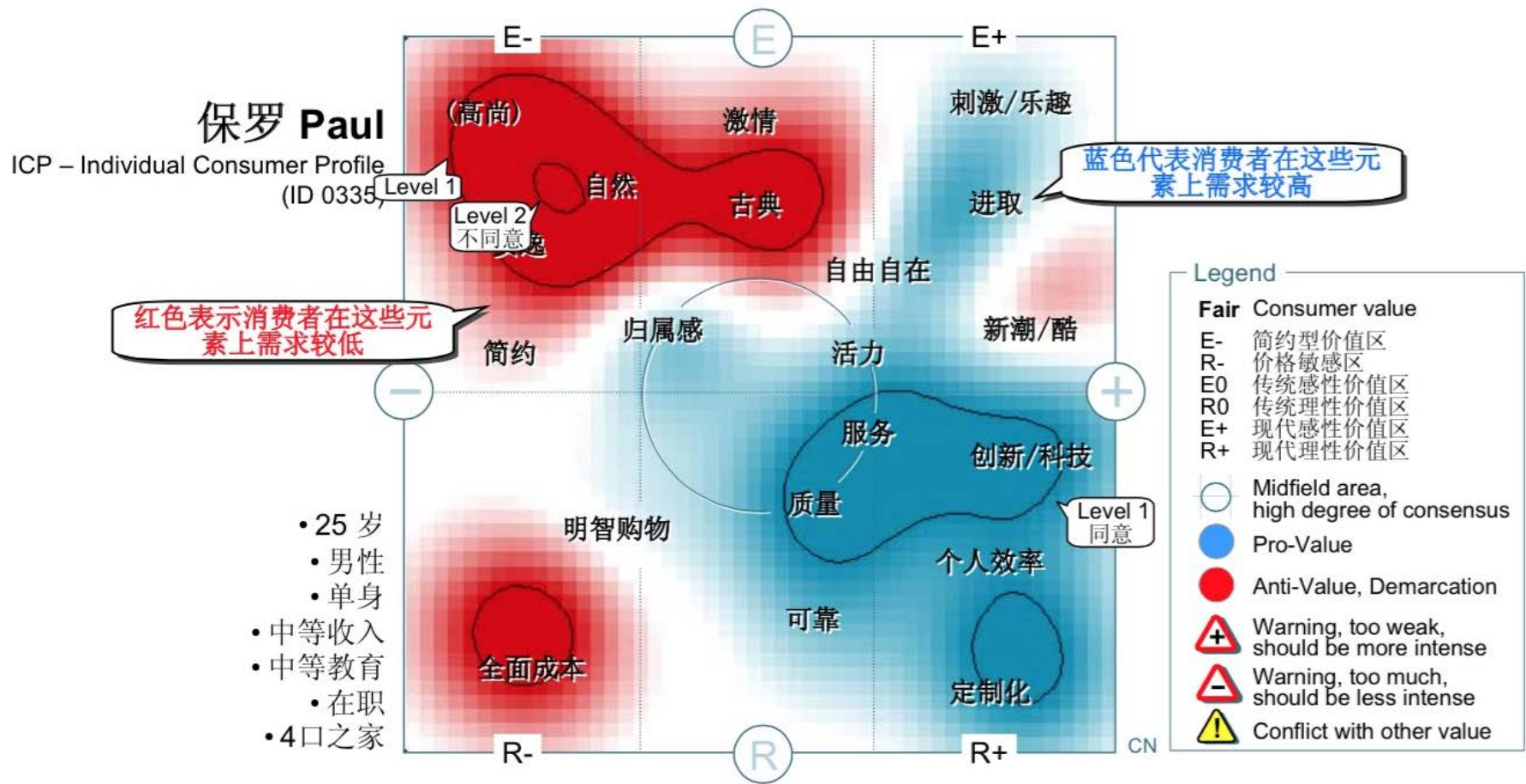
A universal tonal positioning tool for 19 value elements established by Roland Berger





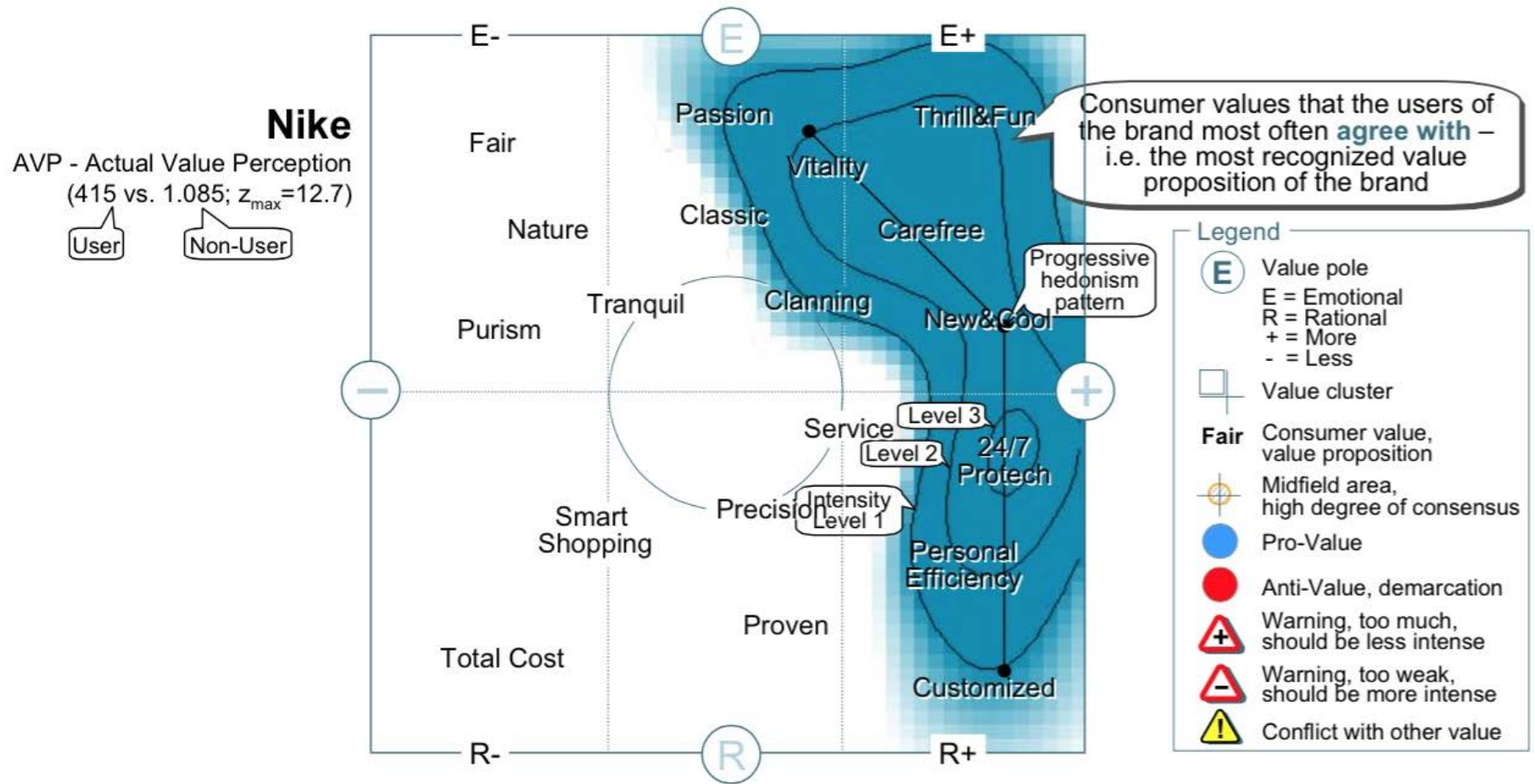
Source: Roland Berger - Strategic Brand Development Group (China, Dec.2003, n=3.500, Population Tier 1-2 Cities 14-70 yrs., CATI)





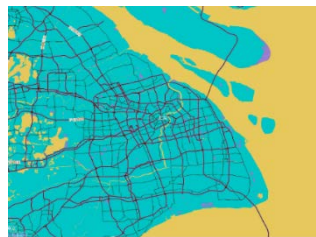
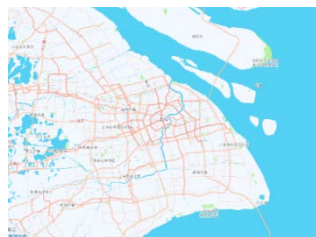
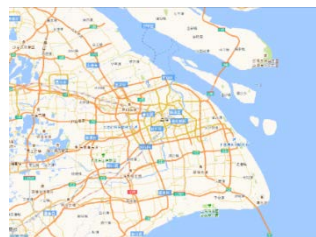
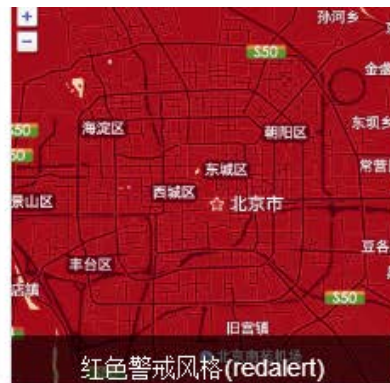
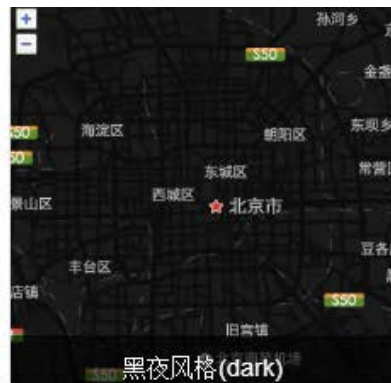
Accurately Target your users and pinpoint their preferences





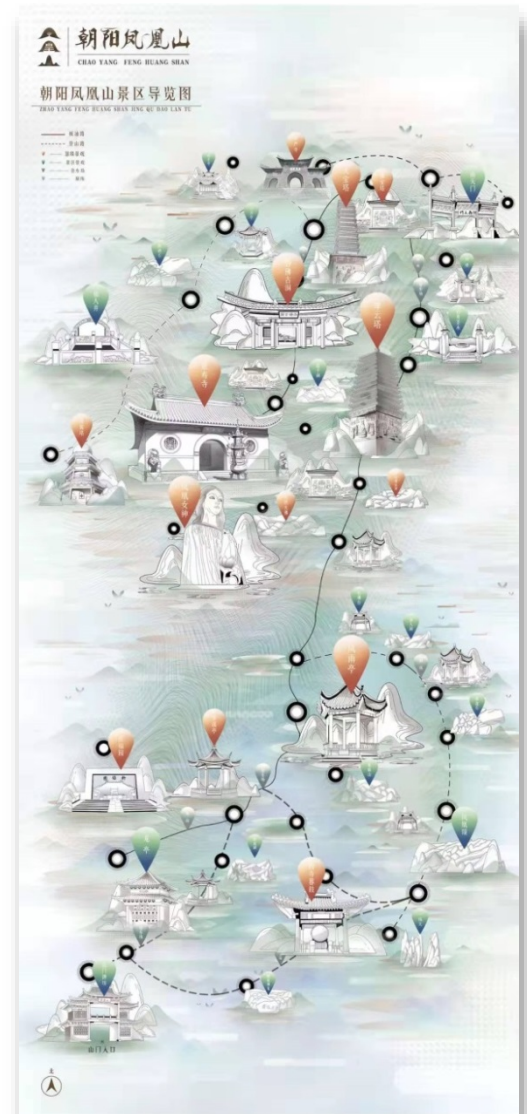
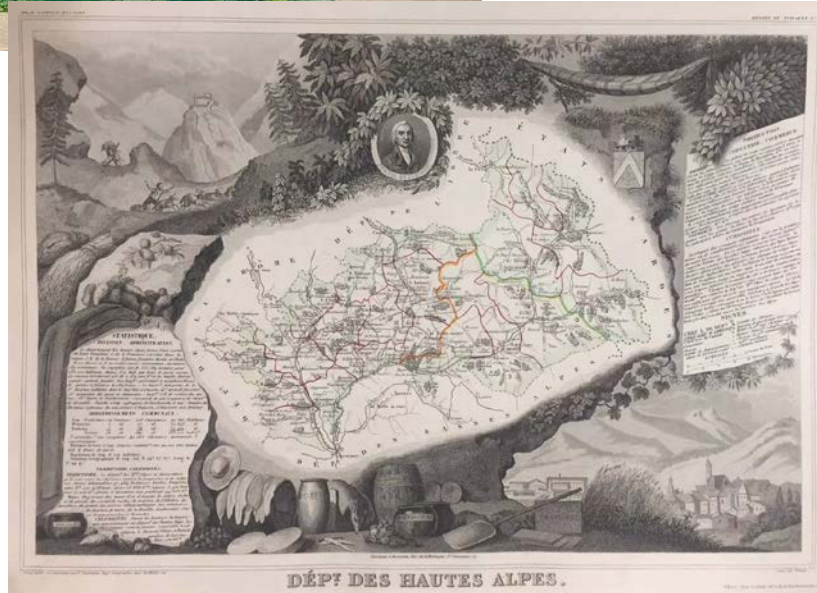
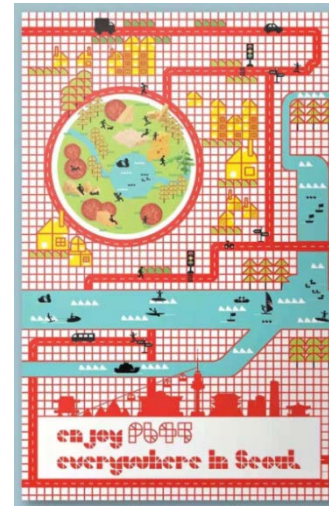
Brand tonality Matching design







Problems | Paradigm | Practices

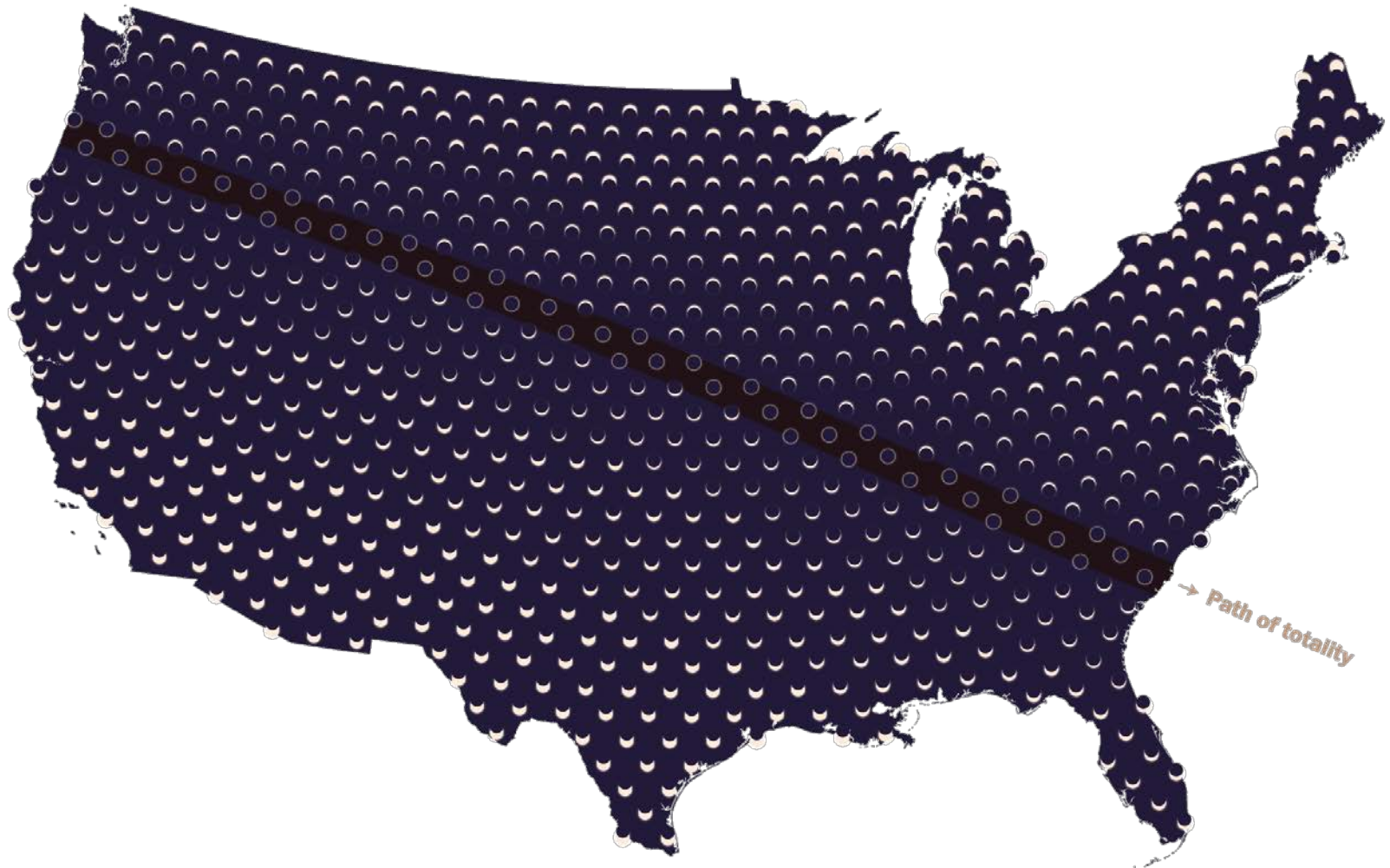






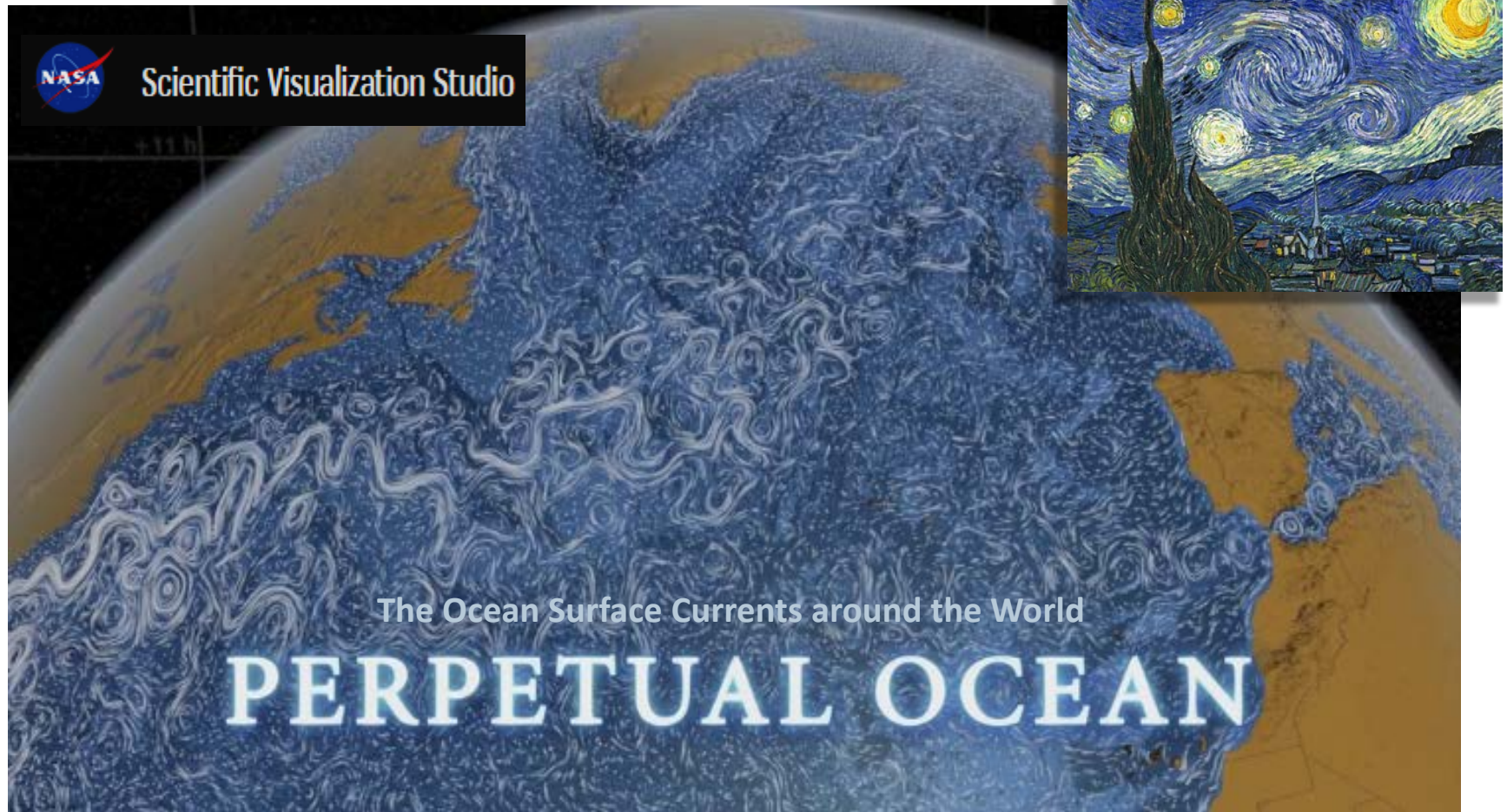
" Mapping The Drowned World " ——Tracey Clement



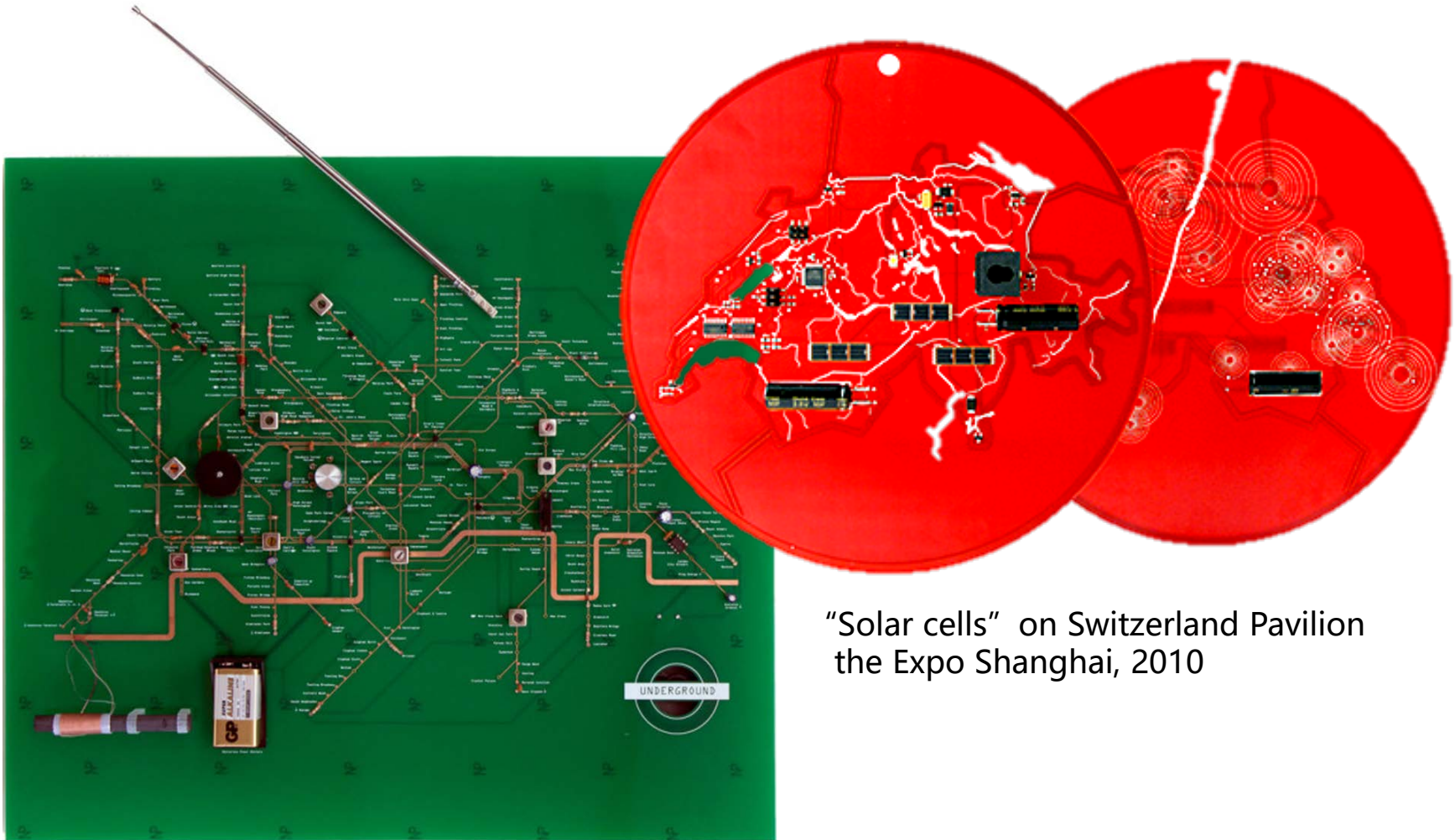


The path of the eclipse in August 2017 stretches from coast to coast of the United States







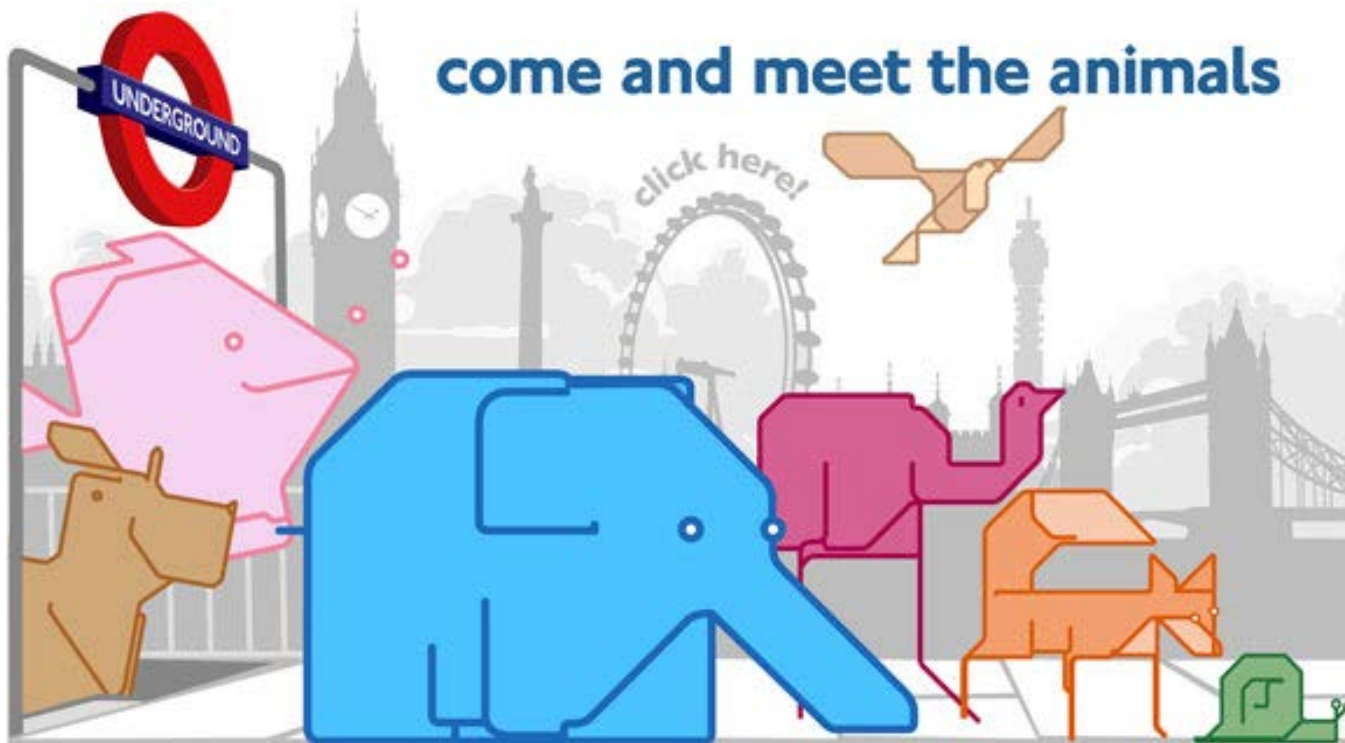


"Solar cells" on Switzerland Pavilion  
the Expo Shanghai, 2010

London Underground Circuit Map Radio for  
**Harry Beck**, the genius behind London's  
iconic subway map — by *Yuri Suzuki*, 2012

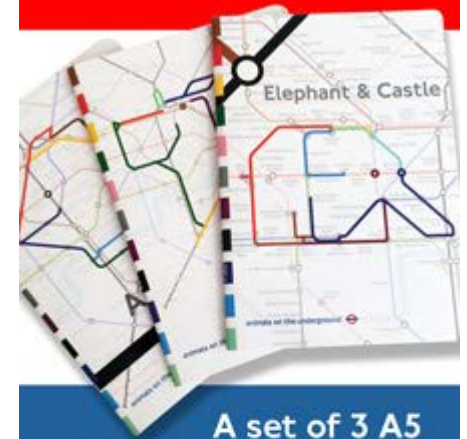


Problems | Paradigm | Practices

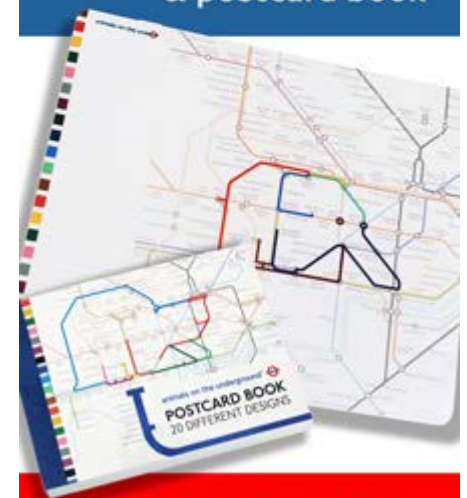


Paul Middlewick, 1988

**Now Available!**



A set of 3 A5  
notebooks, desk jotter  
& postcard book



Order yours today  
**visit the shop**

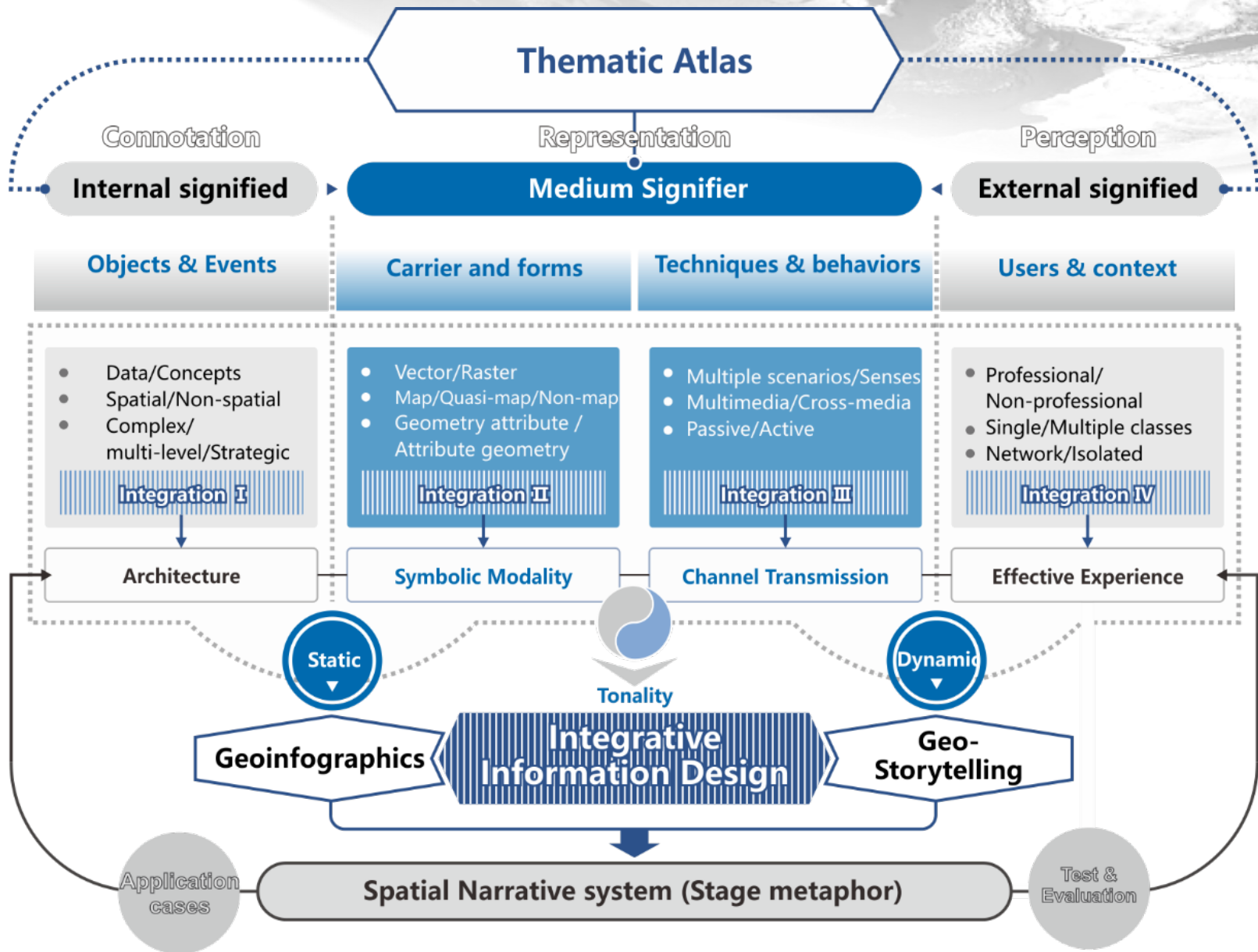




# Conclusion & Perspectives



# Conclusion & Perspectives







HOPE | 期望

Mapping our future

Just Mapping for  
WHERE !





# THANKS

Welcome your constructive feedbacks.

