

"Mapping What I Feel":

Understanding Affective Geovisualization Design Through the Lens of People-Place Relationships



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Context = (Data visualization + Geography) x Emotion

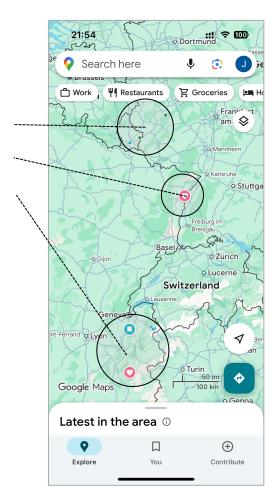


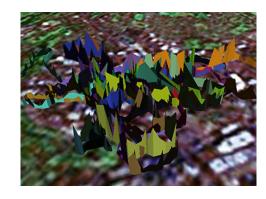
= Map!

= Map with Emotion!

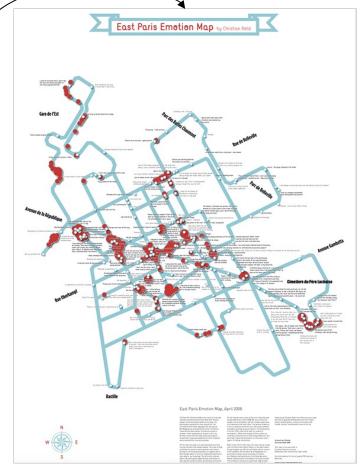
On this Google map, there are marks showing my footprints. But what memories are left at these places? How can I record my personal experiences,

emotions or feelings?





We use bio-sensor to automatically record our bio emotional intensity, then look back and annotate what happened.



A map can be more than just "a map".

Minney & Da

Context = (Data visualization + Geography) x Emotion



I post my emotion with location online using Snap Map.

We write down our stories in the city and pin the notes onto the map.

I wrap the map of my home country with gauze, symbolizing my wish for its wounds to heal.

I post my travel photos digitally onto the map, turning them into my visual mementos.

A map can be more than just "a map".

Minus & 2



I record with pictures and my personal nickname for the places, such as "monkey park".

I record the smells using colors and shapes along the way while walking.

We use bio-sensor to automatically record our bio emotional intensity, then look back and annotate what happened.

I collect leaves and flowers while wandering in a park.

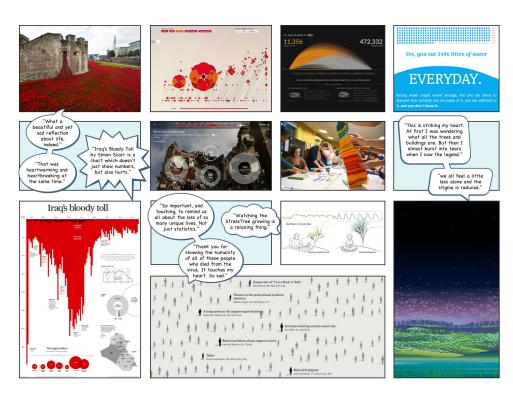
We mark the positive places in our city with sewing.

Context = (Data visualization + Geography) x Emotion

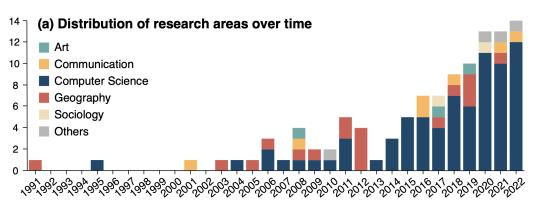


In recent years, more and more researchers have reflected on the undervaluation of emotion in data visualization and highlighted the importance of considering human emotion in visualization design.

Affective Visualization Design - data visualizations designed to communicate and influence emotion



Lan, X., Wu, Y., & Cao, N. (2023). Affective visualization design: Leveraging the emotional impact of data. IEEE Transactions on Visualization and Computer Graphics, 30(1), 1-11.



Emotional Geography

"To neglect the emotions is to exclude a key set of relations through which lives are lived and societies made."

Anderson, K., & Smith, S. J. (2001). Emotional geographies. Transactions of the Institute of British geographers, 26(1), 7-10.

Methodologies = Scoping review + Corpus filtering + Coding







Corpus Filtering

First-round Keywords

Emotional Cartography Emotional Geography Affective Geovisualization



Personal Geovisualization Psychogeography Humanistic Geography Phenomenological Geography Feminist Geography

Third-round Keywords

Affective Visualization Design Geographic Data Storytelling

January of 2

First Criteria

The paper must include geographic data visualization(s).

Second Criteria

If geovisualization does exist, it should be geographically data-driven. Not totally imaginary!

Third Criteria

There should be explicit descriptions indicating that the geovisualization was intentionally designed to communicate or influence emotion. Not purely for analysis!

Fourth Criteria

The visualization should be grounded in empirical spatial experiences, with real human agents. Not solely ideologically rhetorical!







Unveiling the Visual Rhetoric of Persuasive Cartography: A Case Study of the Design of Octopus Maps



containing real geographic data,

embodying authentic peopleplace relationships.

and being affective.

Methodologies = Scoping review + Corpus filtering + Coding



Modeling and Corpus Coding

Geography is not just about objective coordinates, but about how people form bonds with places through certain process like experience.

PPP (Person-Process-Place) model in humanistic geography

Aim: To explain people-place attachment.

Person: who is experiencing the connection with places

Place: the traits of geographic space

Process: how the person forms a connection with the place

→ PF

PPP model in our work

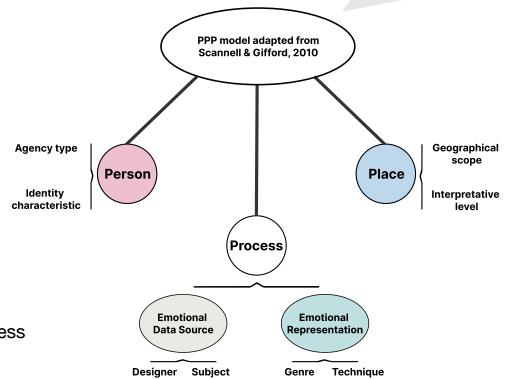
Aim: To characterize affective geovisualization design features.

Person: who is experiencing the connection with places

Place: the traits of geographic space

Process: how affective geovisualization design functions as a special process

that helps construct or empower people-place relationships





Person - Who has emotional connection with places?

WHO

Agency type

- Individual -----
- Group

data and the organic materials that touched her emotionally during a walk, and then froze them into ice cubes.

The designer documented her movement

Identity characteristics

- Residential
- Special statuses
- Travelers
- Cultural/racial
- Gender
- Age
- Class
- Not specified or anyone

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Person - Who has emotional connection with places?

WHO

Agency type

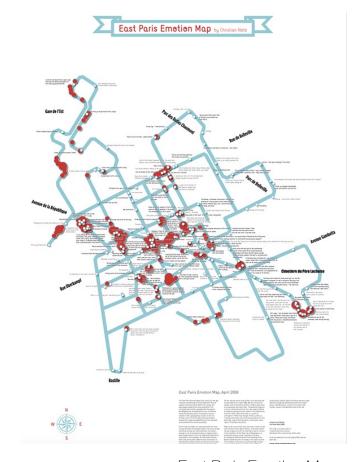
- Individual
- Group -----

Identity characteristics

- Residential
- Special statuses
- Travelers
- Cultural/racial
- Gender
- Age
- Class
- Not specified or anyone

January Ja

The East Paris Emotion Map project invited a group of volunteers to walk around Paris together while wearing sensors, and visualized their emotional data collectively on a map.



East Paris Emotion Map



Person - Who has emotional connection with places?

WHO

Agency type

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- Group

Identity characteristics

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January J. 2

The City Formerly Known as Cambridge invited people to rename the sites in Cambridge based on their personal understanding and memories.



The City Formerly Known as Cambridge



Person - Who has emotional connection with places?

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Agency type

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January I 2

The Mapping Journey Project invited eight exiles to trace their secret journeys on map to narrate their story.



The Mapping Journey Project



Person - Who has emotional connection with places?

WHO

Agency type

- Individual
- Group

Identity characteristics

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January J. 2

----- The figure showed a participatory event where an indigenous community in Peru collaboratively created a map of their land, marking cultural heritages with symbols.



The Spatial Politics of Affect and Emotion in Participatory GIS



Place - Where emotional connections are situated?



Geographical scopes

- City -----
- Country
- Architectures/sites
- Non-urban/rural places
- World

Urban Fabric invited participants to stitch symbols onto a handembroidered city map, marking places that held positive and negative significance for them.

Interpretative levels

- Physical place
- Memorized place
- Psychological place



Urban Fabric



Place - Where emotional connections are situated?

WHERE

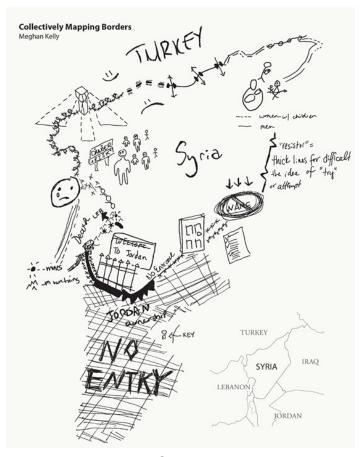
Geographical scopes

- City
- Country
- Architectures/sites
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- World

Collectively Mapping Borders is a collective effort to redraw Syria's borders based on interviews with refugees, investigating their subjective experiences towards the country and its bordering areas.

Interpretative levels

- Physical place
- Memorized place
- Psychological place



Collectively Mapping Borders



Place - Where emotional connections are situated?



Geographical scopes

- City
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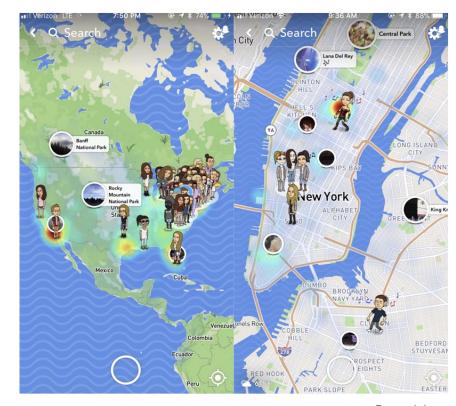
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Jenny J. 2

Physical place is routed in real world. It encompasses embodied experiences rooted in physical co-presence, ranging from immediate affective responses to accumulated affective imprints from long-term inhabitation.

Applications such as Snap Map allow users to share their locations and associated emotions based on GPS.



Snap Map



Place - Where emotional connections are situated?



Geographical scopes

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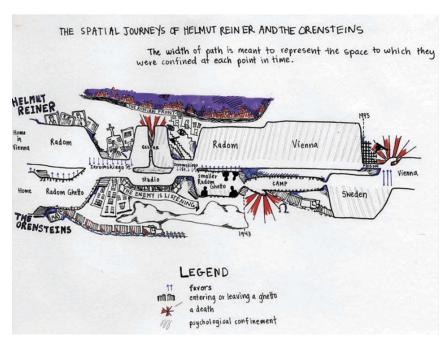
Memorized places emerge through reconstruction of geographic information recalled by the involved subjects.

Interpretative levels

- Physical place
- Memorized place
- Psychological place

January J. 2

The map was drawn based on the testimony of Holocaust survivor. The testimony gave a vary vague space and time narration, and all the space structure is based on personal memories.



Inductive Visualization: A Humanistic Alternative to GIS



Place - Where emotional connections are situated?



Geographical scopes

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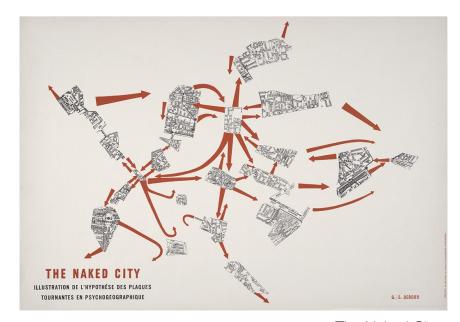
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January Ja

The psycological place is the most subjective level. The maps can be symbolic expression, such as metaphorical geometries or speculative interfaces that deviate from scientific spatial logic.

The Naked City collaged 19 separate landmarks in Paris, connected with red arrows regardless of real location. The author aimed to advocate exploring cities through aimless dérive (drifting) and discovering subjectively meaningful urban experiences.



The Naked City



Process - Emotional data sources - How emotion can be infused into data?

HOW

Originate from designers

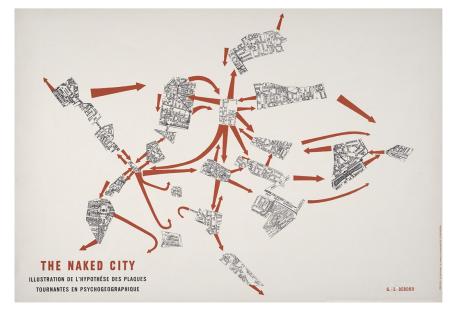
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Originate from other people

- Collaborative activity
- Embodied movement
- Interview
- Drawing/sketching
- Fieldwork and ethnography
- Video recording/taking pictures
- Posting sticky notes
- Prepared toolkit
- Hardware
- Historical material mining
- System/platform development
- Questionnaire and survey

January J. 2

The Naked City selected 19 separate landmarks in the city of Paris. They were collaged and connected with red arrows, to advocate exploring cities through aimless dérive (drifting) and discovering subjectively meaningful urban experiences. Thus challenging the economic-driven urban planning and conventional understanding of urban space.



The Naked City



Process - Emotional data sources - How emotion can be infused into data?

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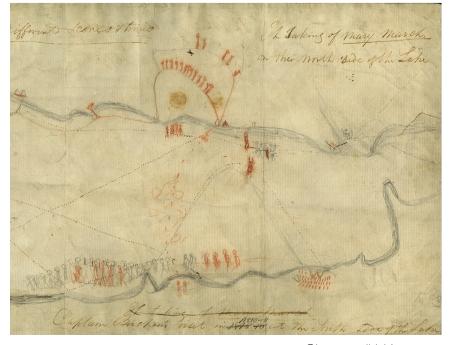
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January J.

Shawnadithit's map was drawn by the last member of the Beothuk, a group of indigenous people of Canada. The map conveys the pain and bodily interaction with space, documenting the Beothuk's experience of facing oppression and conflict in their homeland.



Shawnadithit's map



Process - Emotional data sources - How emotion can be infused into data?

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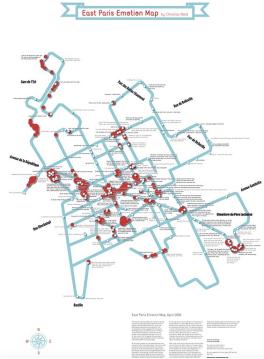
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Jenny J. 2

To organize activities that involve social interaction. In this process, people are given the chance to experience or express their emotions by actively participating in events such as workshops and codesign.







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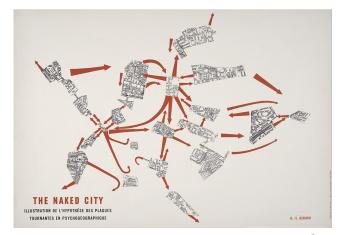
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January J. 2

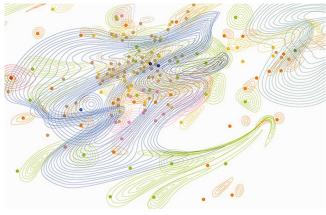
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Practices related to urban drifting, encourage people to explore spaces and places with their own bodies.

In Smell Maps projects, participants wander through the city to perceive and document scents.



The Naked City



Smell Maps



Process - Emotional data sources - How emotion can be infused into data?

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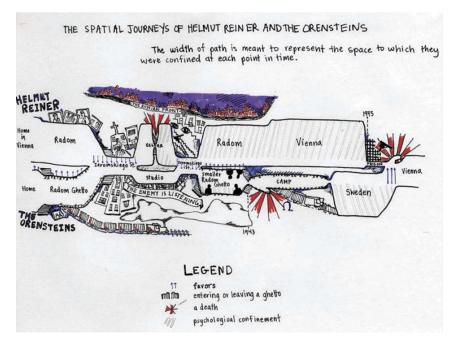
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A common method for starting conversations with others and understanding interviewees' emotional experiences and opinions.

In the figure, interviews were conducted with Holocaust survivors.



Inductive Visualization: A Humanistic Alternative to GIS



Process - Emotional data sources - How emotion can be infused into data?

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Timened of 2

The act of drawing and sketching is an effective method and is often used in psychology for emotional expression and self-mining.

In the figure, by drawing the map of their land and culture, the locals fostered a sense of pride.



The Spatial Politics of Affect and Emotion in Participatory GIS



Process - Emotional data sources - How emotion can be infused into data?

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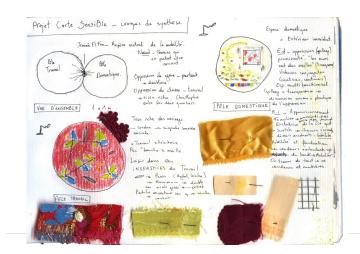
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January of 2

Some researcher approach the emotion of subjects by getting involved in their lives.

To create Sensitive Cartography, the designer spent several months living with the women of a disadvantaged neighborhood in Marrakech, following them in their daily lives, both in their domestic spaces and as they moved through the city. Through this approach, the feelings and perceptions of the studied women were able to be sensed by the author and expressed through creation.





Sensitive Cartography



Process - Emotional data sources - How emotion can be infused into data?

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Jenny J. 2

This method often involves using smartphones or cameras to capture content that holds emotional significance.

An author used photography to document the textures and architectural details of El Chorrillo, Panama City, capturing resident's perspectives of spaces, as well as her own experience with encountering the neighborhood.



Zooming in on El Chorrillo



Process - Emotional data sources - How emotion can be infused into data?

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January J. 2

To externalize their emotions through writing on or posting sticky notes.

Memory Maps invited citizens to share their stories of the city. They were asked to write these stories down and then pin them to a map.



Memory Maps



Process - Emotional data sources - How emotion can be infused into data?

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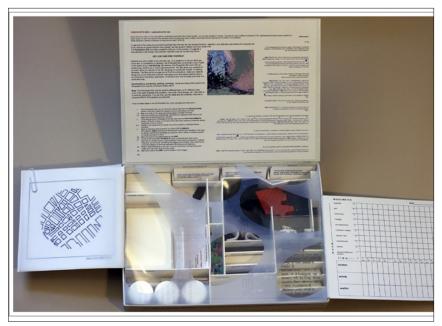
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January J. 2

Some projects provided participants with prepared toolkits, which often include cards, stickers, or papers, to facilitate creative expression while exploring places and constructing maps.

In the figure, users were given a

Peripatetic Box to document their
journeys facilitated by writing on
cards, drawing maps, and collecting
materials. This process allows them to
add a personal, emotional layer to
their experiences of cities.



Peripatetic Box



Process - Emotional data sources - How emotion can be infused into data?

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Devices such as biosensors can be used to capture, record or elicit emotional responses across spatial contexts.

Bio Mapping is a technique that integrates biometric sensors with geolocation tracking to quantify participants' affective states as they navigate urban environments.



East Paris Emotion Map



Process - Emotional data sources - How emotion can be infused into data?

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Jenney J. 2

To extract emotion from historical data, such as poems and fictions.

The emotional expressions from Champlain's travel diaries were mapped to allow readers to engage with his journey not just as a spatial record but as an emotional and experiential account.



Mapping Champlain's Travels



Process - Emotional data sources - How emotion can be infused into data?

HOW

Originate from designers

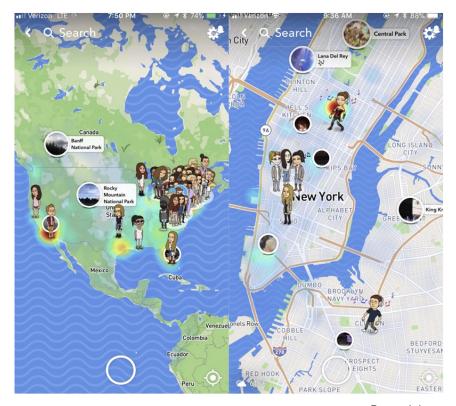
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January of 2

This method is more functionoriented, enabling users to share emotions and experiences in real time by combining quantitative data processing (e.g., GPS) with qualitative inputs (e.g., comments).



Snap Map



Process - Emotional data sources - How emotion can be infused into data?

HOW

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- Inherent emotional attitude
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January of 2

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- Hardware
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This method can be used to collect various types of data, ranging from quantitative ratings to qualitative insights, such as feelings.



The City Formerly Known as Cambridge



Process - Emotional representations - How emotions can be expressed and presented in visualizations?

HOW

Sensation

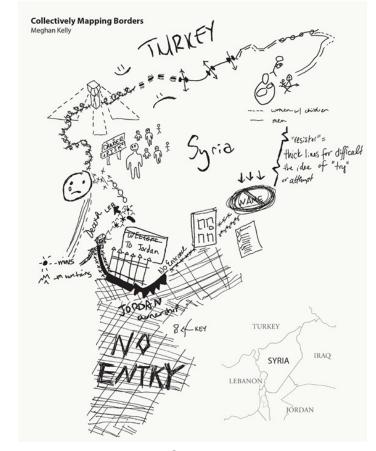
- Color
- Images/photos
- Symbol/metaphor -----
- Tangible materials
- Layout
- Shape
- Sound
- Style
- Animation/simulation
- Typeface

Narrative

- Annotated content/associated stories
- Collage
- Body language
- Wording/phrasing
- Personalized visual

Jummes of 2

The figure uses symbolic representations such as emojis and arrows to illustrate the complexities of border crossings.



Collectively Mapping Borders



Process - Emotional representations - How emotions can be expressed and presented in visualizations?

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Sensation

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In Imaginary Italies, participants sketched their personal versions of Italy based on their impressions. Each layout diverged from the real geographic locations of the country, reflecting individual feelings.



Imaginary Italies



Process - Emotional representations - How emotions can be expressed and presented in visualizations?

HOW

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January J. 2

In Shredded Land, the author shredded the map of Jerusalem and reassembled it, illustrating the disappearance of borders and the fading of political geography's symbolic meaning.



Shredded Land

Difference with General Affective Visualization Design



Lan, X., Wu, Y., & Cao, N. (2023). Affective visualization design: Leveraging the emotional impact of data.

Minus Isola

	WHERE TO APPLY WHAT TASK											Н	IOV	V T	O DESIGN																						
cology	3					genre			;	sens	satio	n				ı	narr	ativ	Э	be	hav	/ior	cor	ntext													
environmental sciences & ecol	al issues	health & well-being	news & media	daily life	business	urban studies	history	mixed topics / not specified	inform	engage	explore/experiment	provoke	advocate	socialize	heal	empower	commemorate	archive	design genre	realistic/metaphorical imagery	color	kinetic movement	punos	tangible material/texture	smell	shape	taste	typeface	personalized setting	anthropomorphism	narrative structure	wording/phrasing	manipulate/operate	create/build	walk/wander	situated place	immersive environment

Focusing more on context - who experiences the emotion and where the emotion is situated.

Highlighting the origin of data itself.

Using metaphors and symbols.

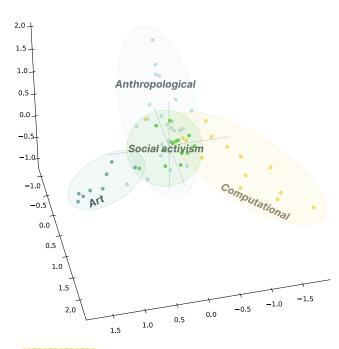
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Type			Cł	naract	teristi	ic				Geog	graph	nical	i	Inter	preta	ative					Em	notio	nal D	ata S	ource	е				-								Emo	otion	al Rep	prese	ntatio	on								
Individual	dnon	Residential Not specified or anyone	Special status	Traveler	Cultural/racial	Gender	Age	Class	World	Country	City	Non-urban/rural	Architecture/site	Physical	Memorized	Psychological	Inherent emotional attitude	Personal experience	Collaborative activity	Embodied movement	Interview	Drawing/sketching	Fieldwork and ethnography	Video recording/taking pictures	Posting sticky notes	Prepared toolkit	Hardware	Historical material mining	System/platform development	Questionnaire and survey	Static image/painting	Event	Interactive interface	Artifact	Video	Installation	Color	Image/photo	Symbol/metaphor	Tangible material/texture	Shape	Sound	Style	Animation/simulation	Layout	Typeface	Annotated content/associated stories	Collage	body language	Wording/phrasing	Personalized visual

Lan, X., Yang, Y., & Wang, Y. (2025). "Mapping What I Feel": Understanding Affective Geovisualization Design Through the Lens of People-Place Relationships.

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We identified four different design paradigms, distinguished by their methodology, target users, author roles, and visualization functions.



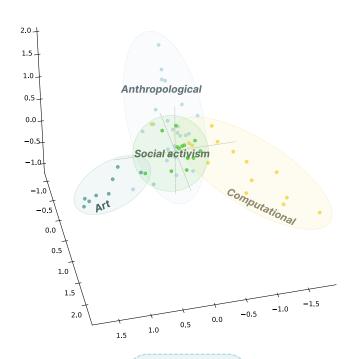
Paradigms	Computational	Anthropological	Social activism	Art
Subject	Anyone	Specific/special group	Specific group	Self
Author	Developer	Documenter	Coordinator	Experiencer
Method	Tool development	Fieldwork, interview	Activity, event	Artistic expression
Role of VIS	Medium	Amplifier	Catalyst	Poetry
		·	•	· ·

Computational



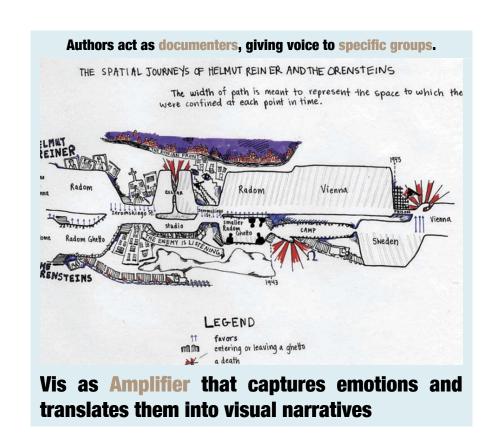


We identified four different design paradigms, distinguished by their methodology, target users, author roles, and visualization functions.



Paradigms	Computational	Anthropological	Social activism	Art
Subject	Anyone	Specific/special group	Specific group	Self
Author	Developer	Documenter	Coordinator	Experiencer
Method	Tool development	Fieldwork, interview	Activity, event	Artistic expression
Role of VIS	Medium	Amplifier	Catalyst	Poetry

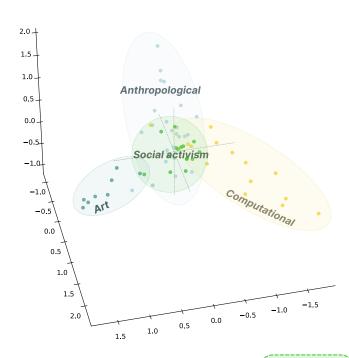
Anthropological



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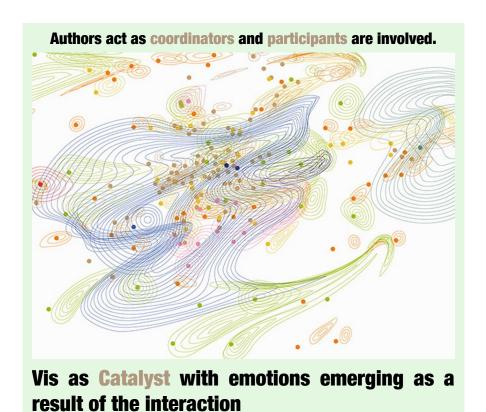


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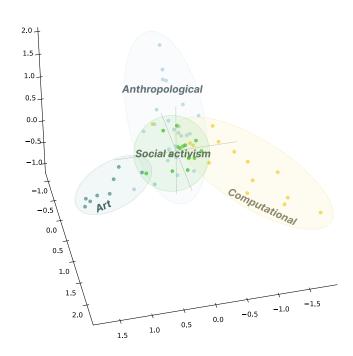
Social activism



Manual I Dal



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Vis as Poetry expressing sympathy, care, hope or other emotion in an aesthetical way.

Discussion



Visualization can be very powerful in empathetic task, empowering the expression and communication of emotions, feelings or subjectivities with real humanistic data.

The derived design space reveals a dual mechanism of emotional data and affective representation. By leveraging this duality, visualization can transcend its traditional role as an objective tool and instead serve as a medium of communication, an amplifier of voices, a catalyst for evoking emotion, or a form of poetic expression.

Designing for fine-grained contexts.

Our analysis of the person and place dimensions shows that in affective geovisualization design, there is a particularly strong focus on concrete rather than abstract individuals. These individuals have diverse identities, group sizes, and living spaces, and geographic applications serving them can vary in functions and features.

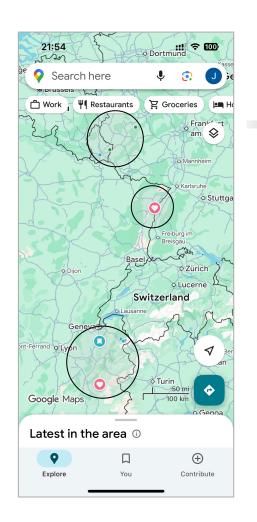
The value of qualitative and mixed methods.

In exploring the interdisciplinary field, we identified multiple methods in generating emotional data. Qualitative methods, in particular, dominate this field. For example, the embodied approach makes individuals an active part of visualization, allowing them to experience the environment physically. These methods can be referred to produce warm data thus humanistic visualization.

Our Ongoing Application

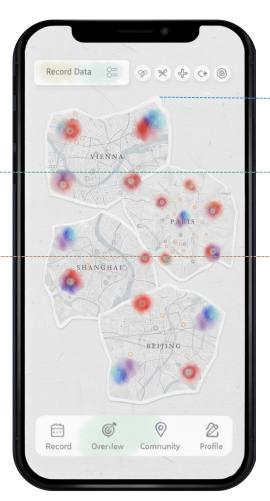
Affective GeoVisualization Design in Practice





Denning Is





- 3. Rearrange your nodes and places to organize your psychological map.
- 2. Each record will become a visual node to construct your personal emotional map.
- 1. Record your emotional experiences based on location, through emojis, photos, text, or colors.





Join us at Discord

Or contact us at <u>flora20@sjtu.edu.cn</u>

Mapping What I Feel



"MAPPING WHAT I FEEL": UNDERSTADING AFFECITVE GEOVISUALIZATION DESIGN THROUGH THE LENS OF PEOPLE-PLACE RELATIONSHIPS

Xingyu Lan*, Yutong Yang*, Yifan Wang

Thank You!

Visit our website: https://affectivegeovis.github.io/



