

Crafting and Imperfection in Design and Beyond

Tobias Busch

Design Thinking and Making
KU Leuven, 2018

- The potential of crafting for designing HCIs

Frankjaer & Dalsgaard (2018). Proceedings of DIS 2018.

- Wabi-Sabi as a design philosophy

Tsaknaki & Fernaeus (2016). Proceedings of CHI'16.

- Crafting and Wabi-Sabi in Data Analysis?

Mazur (2016). Big Data & Society.

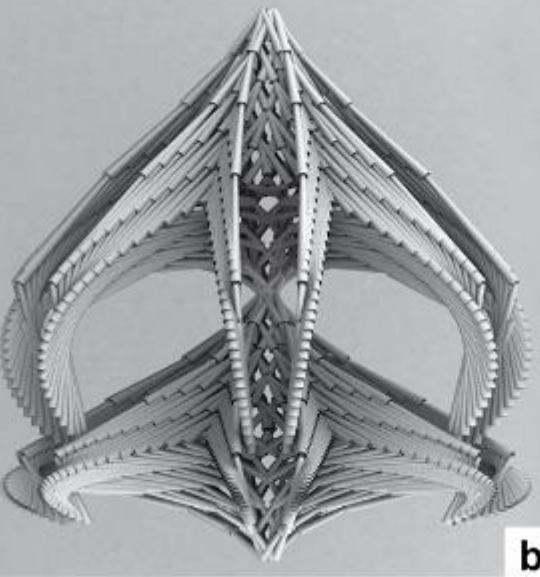
Crafting in HCI



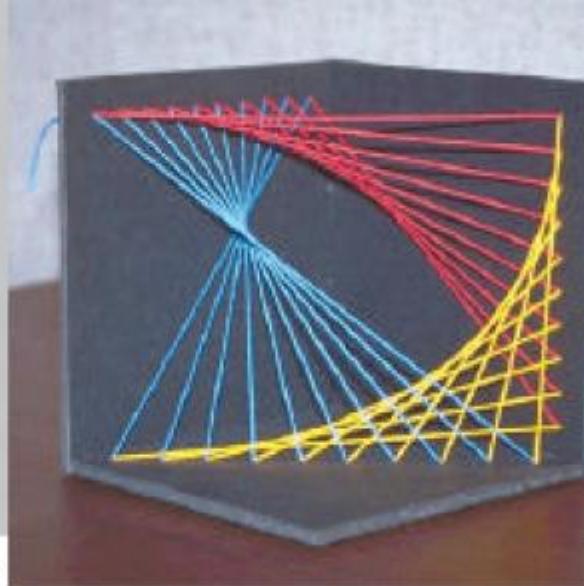
Craft-based approaches in HCI



a



b



c



d

Hybrid

Integrating electronics with low-tech craft.

Digital

Creating physical artifact using digital tools.

Computational

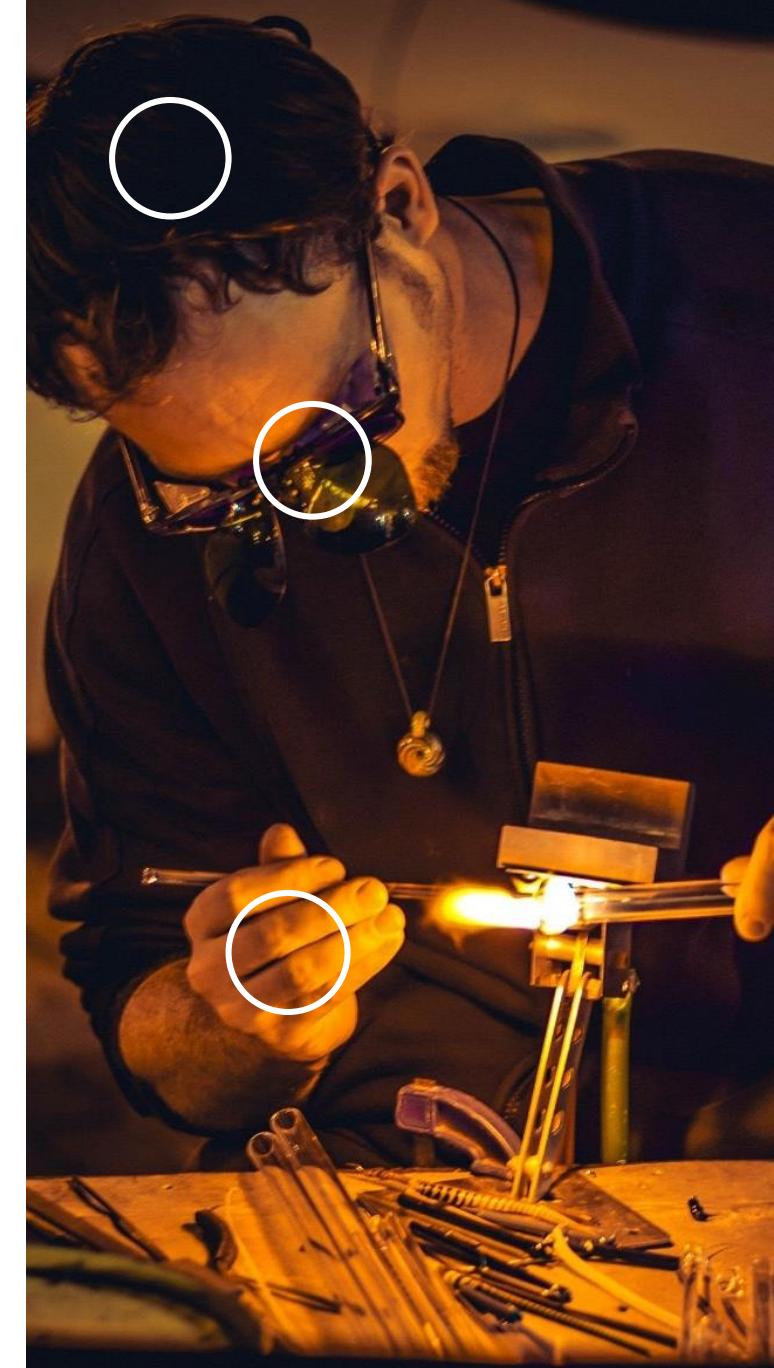
Using computer-generated patterns as the basis of traditional craft.

Technocraft

Crafting with technological objects.

Characteristics of Craft-based enquiry in HCI

- **Combining analog and digital techniques and processes**
 - Transcending the juxtaposition of computer technology and fabrics
 - Small-scale, undivided fabrication process
- **Creating highly refined objects**
 - Quality, individuality, attention to detail
 - “Handwerker Stolz” – desire to do the job well
 - Quality is a result of training
- **Creating knowledge through embodied engagement**
 - Somatic engagement, meditiveness, aesthetic awareness
 - Reflective conversation with the material and situation, materials interact with the maker’s artistic intelligence and shape ideas
 - Tacit knowledge of the material, obtained through thousands of hours of communicating with it. Materials and skill are the vocabulary of the crafting process.



The *unplanned* is the exciting part.

The process of crafting, according to R. Sennett

1. Localization

Identify where something important is happening, find the interesting focal point.

Crafter attunes to the material, uses tacit knowledge beyond language.

Embedding the digital in a material allows to interfere with its properties on a structural level.

Crafter continuously negotiates with the material, as opposed to planning before action.

2. Questioning

Question the digital and physical components.

Crafter suspends a resolution in order to probe.

Actions are constantly recalibrated in a rhythm of action-question-action.

3. Opening

Establish new and surprising connections.

Dare to make intuitive leaps.

Draw on hunches, serendipity remote associations, and combine disparate parts.

Enabled by diffuse, rather than focused, attention and awareness of the periphery.

Example:

Bamboo Whisper

Exploring wearable technology based on organic material.

“The project found its shape through an unfolding process of exploration of possible percussive expressions, achieved by running a vibrating motor attached to the emerging artifact during the crafting process.”

Localization: Trying different algorithms and weave structures.

Questioning: The most interesting effect resulted from an unintended glitch in the code that made the author question the desired qualities.

Opening: The glitch became the shape around which the material was shaped.





The 2 Faces of Mass-Produced Technology

Finished, lasting, *perfect*.

Mass-produced, robust.

Promise of limitlessness and permanence by “the cloud”

breaking, difficult to repair, planned obsolescence.

e.g. disk space full, battery life short, buttons fall apart, files corrupted.

going out of fashion, constant development, shaped by changes in socio-technological context.

e.g. file formats and hardware no longer supported, interaction concepts being replaced.

Soft- and hardware connected in a cycle of mutual obsolescence

→ **Wabi-Sabi**, rather than trying to overcome imperfection and impermanence, acknowledges them as a reality, thereby speaking to our desire for authenticity and honesty.

Wabi Sabi – Nothing Lasts, Nothing is Finished, Nothing is Perfect

Wabi. The essence of simplification, cutting things down to the important.

Sabi. The passage of time, the fact that the core of something remains the same, even though the facade or surface may change over time.

These realities are embraced and engaged with.

Attention is directed towards traditional crafting
and resourceful use of authentic and organic materials.



The 3 themes of Wabi-Sabi in HCI

Nothing Lasts - Design for long-term interaction through conscious use of impermanent materials and media.

Impermanence of material is a design opportunity rather than an obstacle.

Explicit use of fragile material and material traces, accepting the need for “caretaking” over time.

Opportunity for constant development.

Conjure a sense of *liveness* – objects will age with time.

Impermanence engages users in a different way (e.g. Snapchat, ephemeral user interfaces).

Nothing is Finished - Approach perfection through explicitly unfinished designs.

All material entities undergo constant changes – be it slow or fast, subtle, or drastic.

The tension between desire for completion and constant flux, can be a resource.

Enable long lasting and constant progress through use of materials with potential for adaptation, repair, upgrade, extension, tweaking. Materials like leather, wood, paper also offer new types of interactive qualities.

Incompleteness helps users solve their own problems.

Nothing is Perfect - Engage with the richness of interactive expressions by embracing limitations in current technology.

Perfection is a moving target, changing with practice, fashion, technical development, intentions and skills of the designer.

Questioning the ideals of “perfection as uniformity”. Unique and imperfect outcomes of small-scale fabrication tools. Imperfection inherent in organic materials, handcrafted objects is unique, graceful.

Interaction design as crafting – “thinking through making things by hand”, design decisions taken on the spot. A dialog with the materials and available resources.

Embrace what is available. As opposed to chasing vision of the future.



Example

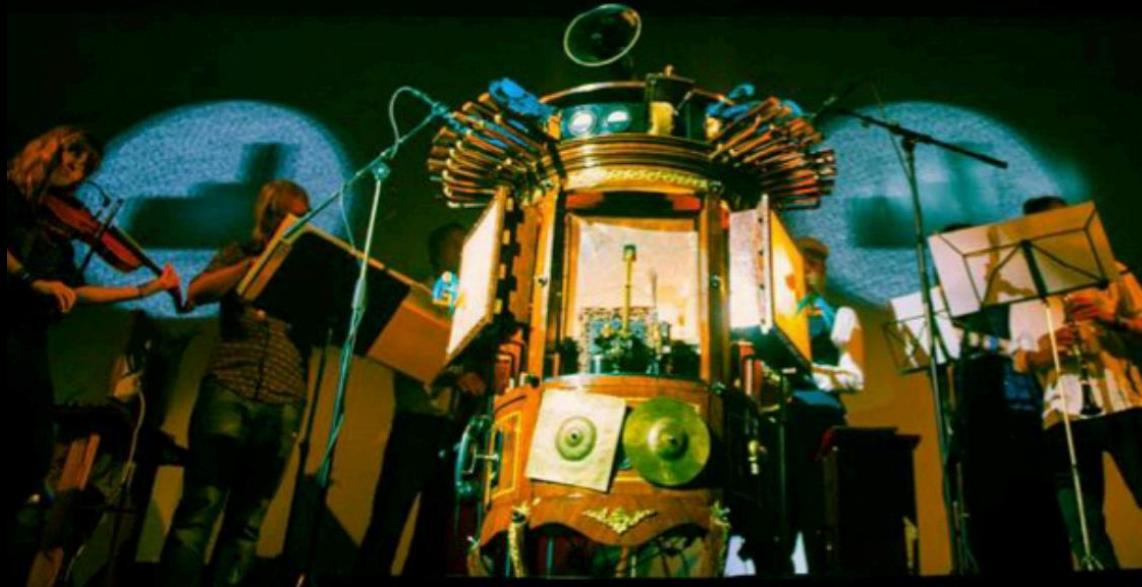
Ajna, the Musical Cabinet

“an obscure, musical bricolage, made from a heterogeneous collection of parts including electromechanical devices, old musical instruments, microcontrollers, wood, feathers, skin, motors, potentiometers—all hosted within the frame of a vintage rococo cabinet.”

Made from fragile organic matter and objects with a unique history for functional and aesthetic reasons.

Permanently “under construction” and being adapted to different situations.

Makes it seem organic, alive.



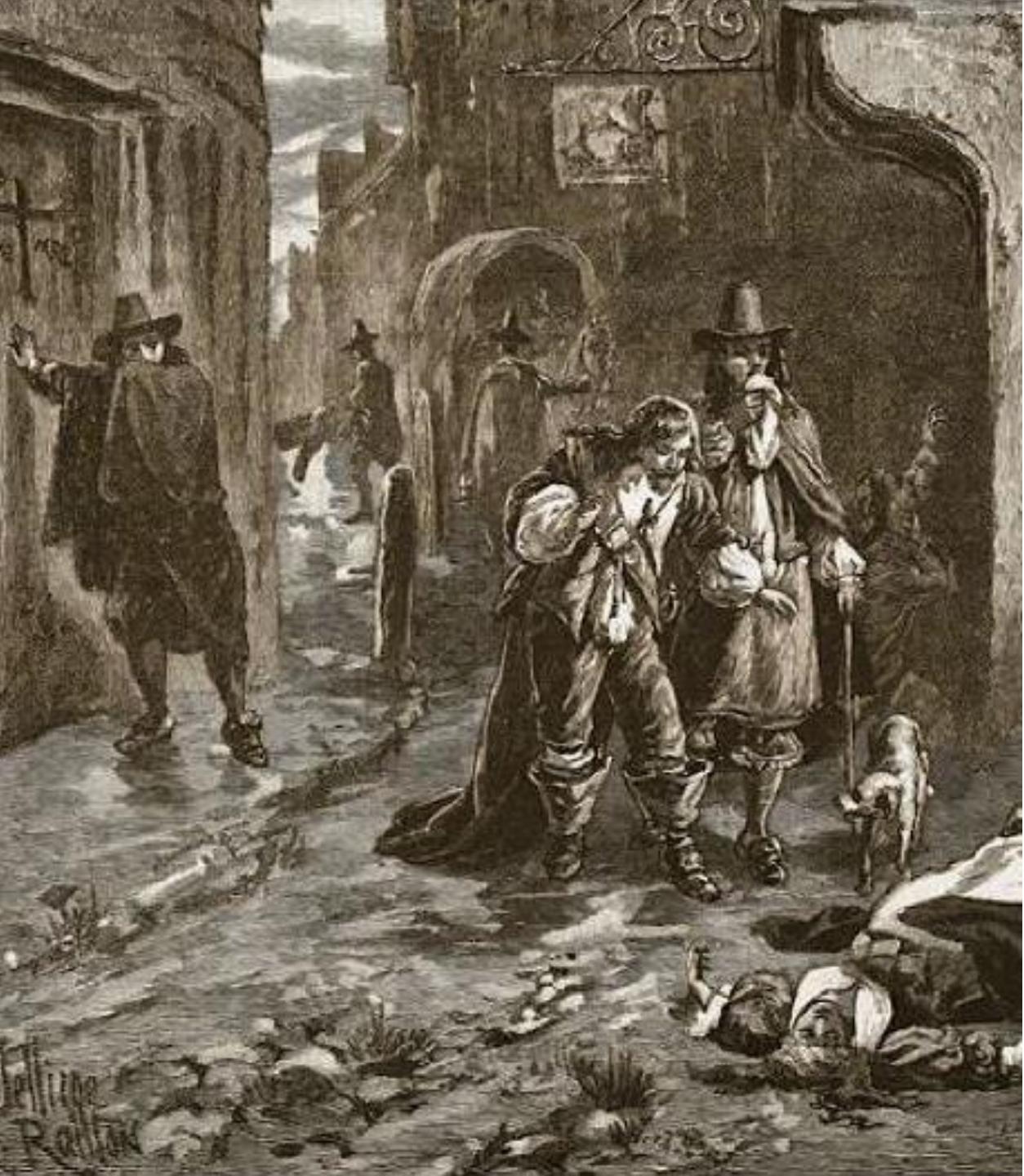
Analyzing Imperfect Big Data in the 1600s

John Graunt's (1620-1674) "*Natural and Political Observations Made Upon the Bills of Mortality*".

Hypothesis 1: Data Analysis is a Craft, in which data is the material used to create knowledge.

Hypothesis 2: Every data analysis is impermanent, unfinished, and imperfect.
Thus, Wabi-Sabi principles can be applied as an approach to data analysis.





How to die in 17th century London

1. The deceased kicks the bucket.*
2. A church bell is rang. (“never send to know for whom the bell tolls; it tolls for thee”)
3. A **Searcher of the Dead**, and sometimes a doctor, assesses the cause of death.
4. The parish clerk announces the death in the weekly **“Bill of Mortality”**.

“The Bills” were first published in 1592. The number of death by causes and sex was first included in 1629.

* Popular options include: plague and fever, consumption, convulsions, distracted, drowned, executed, found dead in the street, frightened, griping in the guts, hang'd and made away themselves, kill'd by several accidents, murdered and shot, overlaid and starved, plague, planet, rising of the lights, smallpox, spleen, spotted fever, stopping of the stomach, surfeit.

Natural and Political
OBSERVATIONS

Mentioned in a following INDEX,
and made upon the

Bills of Mortality.

BY

Capt. JOHN GRAUNT,
Fellow of the Royal Society.

With reference to the *Government, Religion, Trade, Growth, Air, Diseases,* and the several Changes of the said CITY.

— *Non me ut miretur Turba, labore,
Contentus paucis Leto ribus.* —

The Fifth Edition, much Enlarged.

LONDON,

Printed by John Martyn, Printer to the
Royal Society, at the Sign of the Bell in St. Paul's
Church-yard. MDCLXXVI.

BM

The Bills were imperfect, and neglected until they passed under the scrutiny of John Graunt.

Graunt's “Observations”

- A tabulation of diseases in London, and a life table.

Graunt's goals:

- Extracting information from “The Bills” for the use in society.
Helping the state understand itself and its resources.
- Learning how to make improvements of the existing data set.
- Specifying imperfections in order to improve the design of future data collection methods.

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Imperfections in “The Bills”

Failure to recognize and include variables.

- Age at time of death was only included in 1782.

Errors in data description.

- Wrong cause of death entered by the Searchers, who were not trained well.
- Unclear which criteria were used (e.g. what is an “Infant”).
- Plague initially often classified as “spotted fever”, perhaps even willfully to conceal the outbreak.

Inclusion of inappropriate date.

- Strong unquantified growth and fluctuation of London’s population during the period of data collection.

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Dealing with imperfection

- Informing the readers how points of error were treated.
- Pragmatism:
 - whether a child was abortive or stillborn or whether the aged person without any curious determinant could be categorized as dying “purely of age” were decisions that the Searchers could make on their own.
 - “If one died suddenly, the matter is not great, whether it be reported in The Bills, Suddenly, Apoplexie, or Planet-stricken.”
 - “it matters not to many of our purposes, whether the disease was exactly the same as physicians define it in their books.”
- Fictitious life tables, based on assumptions about age distribution.

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Imperfect, but impactful.

- First statistics-based estimation of the population of London.
- Influential in England, France, and Holland for the implementation of pension plans.
- Led to the adoption of “parish houses” in France by Louis XIV. Laplace later (in 1786) used the parish house data to calculate the population of France.
- Used as a warning system for the bubonic plague.
- Graunt was made a member of the Royal Society by Charles II.
- Methods provided a framework for modern demography.

Discussion:

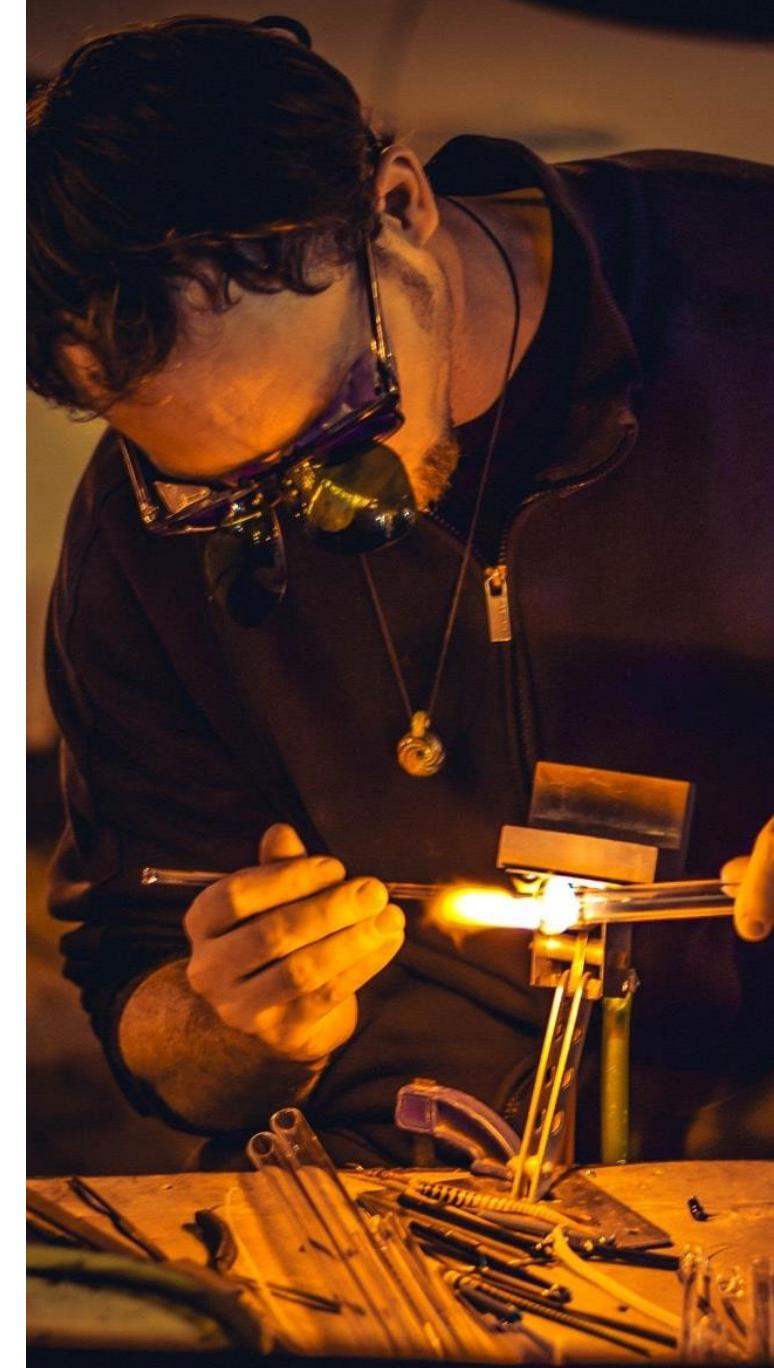
Is Data Analysis a Craft?

Characteristics of Craft-based enquiry in HCI

- Combining analog and digital techniques and processes, undivided fabrication process.
- Creating highly refined objects
- Creating knowledge through embodied engagement. Meditative, reflective conversation with the material

The process of crafting, according to R. Sennett

- **Localization** - Identify where something important is happening
- **Questioning** - Question the material. Suspend resolution, constantly recalibrate actions. Thinking through making.
- **Opening** - Establish new and surprising connections. Draw on hunches, serendipity.



Discussion:

Wabi-Sabi in Data Analysis

Nothing Lasts - Design for long-term interaction. Conjure a sense of *liveness*. Accept the need of caretaking over time as an opportunity for constant improvement.

Nothing is Finished - Approach perfection through explicitly unfinished designs. Enable long lasting and constant progress.

Nothing is Perfect – Embrace limitations. Work with what is available, rather than chasing visions. Perfection is a moving target, depending on skills, technology and context.

