

Vital Signs of a Workplace



Cristina G. Banks, PhD
University of California, Berkeley

The Premise

- *Just as medical personnel check a person's vital signs for health and well-being, so can experts check the vital signs of a workplace.*
- *The human body's vital signs (e.g., temperature, blood pressure) signal how a body is functioning in key aspects of life.*
- *The workplace's vital signs (e.g., connectivity, flexibility) signal how the physical environment is functioning in key aspects of work.*

The Goal

To identify the set of key elements of a workplace that can differentiate between a “healthy workplace” and a workplace that possesses serious threats to its “healthiness” for occupants.

We want occupants to thrive.

Vital Signs of Health



- Height
- Weight
- Body temperature
- Blood pressure
- Heart rate
- Lung sounds
- Heart sounds
- Reflexes
- Digestive sounds
- Blood sugar
- Cholesterol
- Liver
- Bladder



Vital Signs of Health Indicate Pathways to Improvement

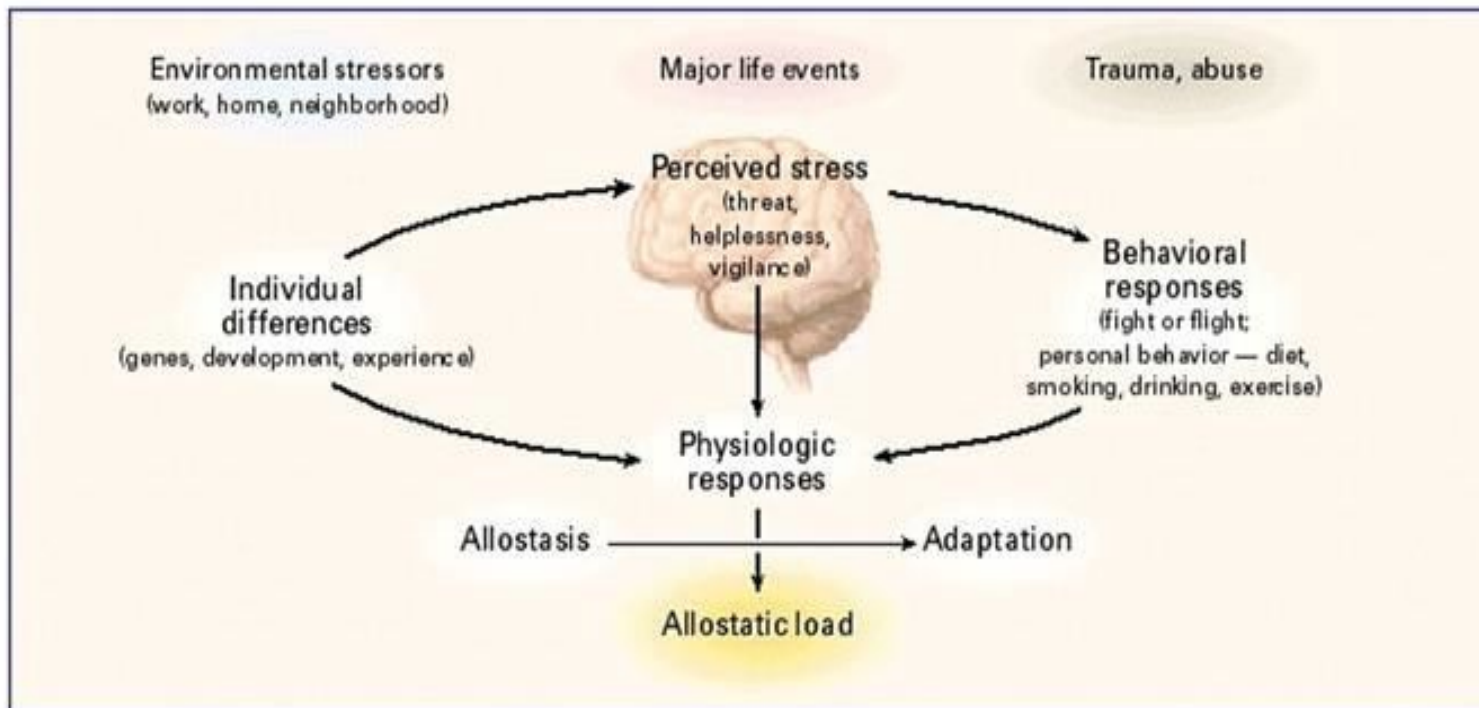
- Follow-up assessments
- Diagnosis
- Intervention plans
 - Behavior change
 - Pharmaceuticals
 - Treatments



*What is the link between the
physical environment and
occupant behavior and emotions?*

The Brain and Allostasis

Allostasis



NEJM 238: 171, 1998

What's going on inside the body?

| Outcome | Regulatory Factors | Target |
|---|---|--|
| Sleep | Light hitting receptors on the retina, releasing glutamate in the brain | Melatonin |
| Sensorimotor & cognitive processing | Stimulation of sensorimotor and cognitive areas of the cortex | Acetylcholine |
| Pleasure, desire, social engagement | Experience of positive valence factors which stimulate rewarding and reinforcing behaviors | Dopamine |
| Memory, judgment, decision-making | Stimulation of the hippocampus, amygdala, neocortex, and prefrontal cortex | Acetylcholine, Glutamate, Epinephrine, Opioid peptides |
| Affiliation, attachment, & communication | Stimulation of the hypothalamus which increases eye contact, trust, social support, and interpretation of facial expressions | Oxytocin |
| <i>Fear, anxiety, frustration, & loss</i> | <i>Experience of negative valence factors which trigger sympathetic nervous system resulting in stress responses, mood disorders, immune dysfunction, dementia risk</i> | <i>Cortisol Epinephrine</i> |

We know there is a connection between people's physical & psychological health and well-being, and their workplace experience.




healthyworkplaces[^]
AN INTERDISCIPLINARY CENTER

Berkeley
UNIVERSITY OF CALIFORNIA

Implications

- Build workplaces that introduce health-promoting qualities to stimulate “good” physiologic responses
- Avoid building workplaces or remove qualities that introduce threats to workplace “healthiness”
- When we do, we get more releases of desired biochemicals and physiologic adaptation toward greater health and well-being



What physical and psychological states are important for triggering positive psychologic responses?

Satisfaction of Basic Human Needs

7 Basic Human Needs Active in the Workplace



- Autonomy
- Belonging
- Competence/Mastery
- Fairness
- Meaningful Work
- Safety
- Positive Emotions

Needs are satisfied through the *design qualities* of the work, working conditions, and work context.



- High quality = Opportunity for need satisfaction
- Need satisfaction = physical & mental health, well-being, job performance

What set of workplace design qualities create the opportunity for need satisfaction?



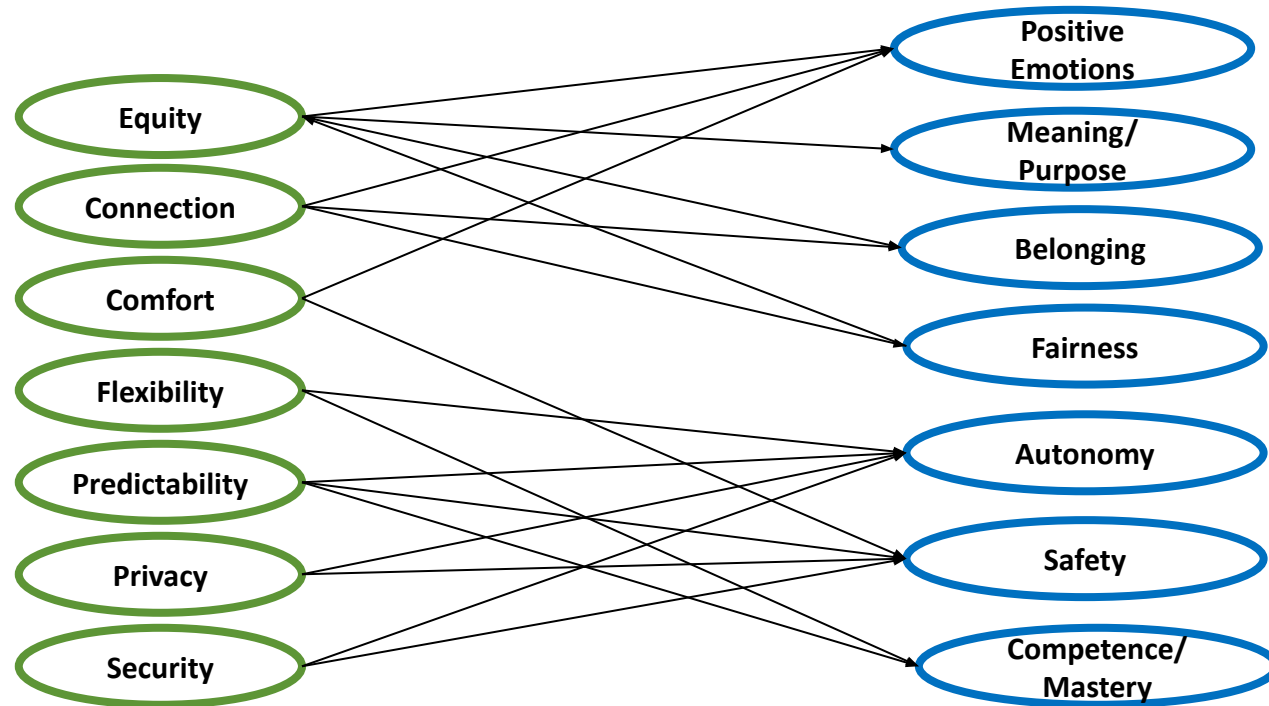
Selected Workplace Design Qualities

- Connection
- Comfort
- Equity
- Flexibility
- Predictability
- Security
- Privacy

Selected Design Qualities Defined

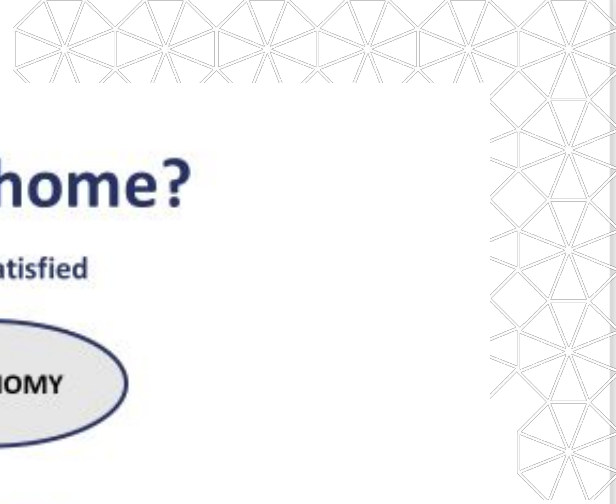
| Design Quality | Definition |
|----------------|---|
| Connection | An emotional bond with others in the workplace and a feeling of belonging in the organization. |
| Comfort | Feeling physically and psychologically at ease and have a sense of control over the environment to meet personal needs |
| Equity | Has access to resources and spaces in a manner that generates a feeling of respect and fair treatment |
| Flexibility | Can make choices with respect to how, what, where, when, and with whom one works, and space allows for a wide range of work arrangements to match personal requirements |
| Predictability | Has reliable and consistent access to resources, equipment, spaces, and people as needed |
| Security | Feeling physically and psychologically free from threats, hazards, harassment, and other forms of harm |
| Privacy | Can perform confidential, private and personal activities in a space without observation, and has control over unwanted interruptions or distractions |

What are selected ways we can design for need satisfaction?

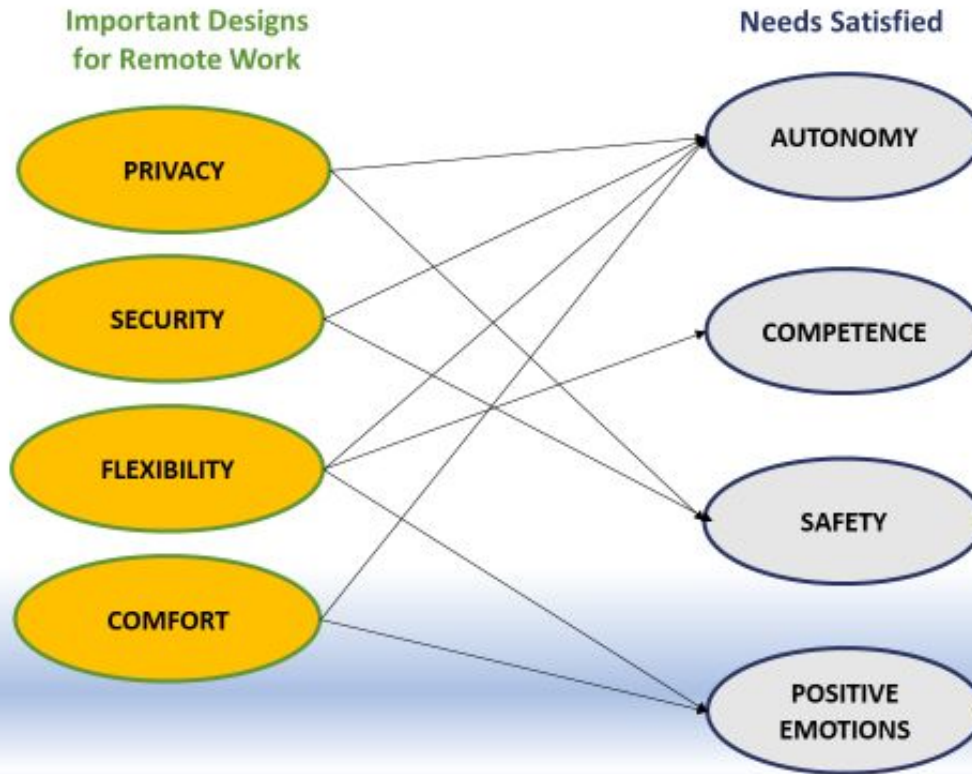


What are selected needs that can be satisfied from home?

healthyworkplaces[^]
AN INTERDISCIPLINARY CENTER

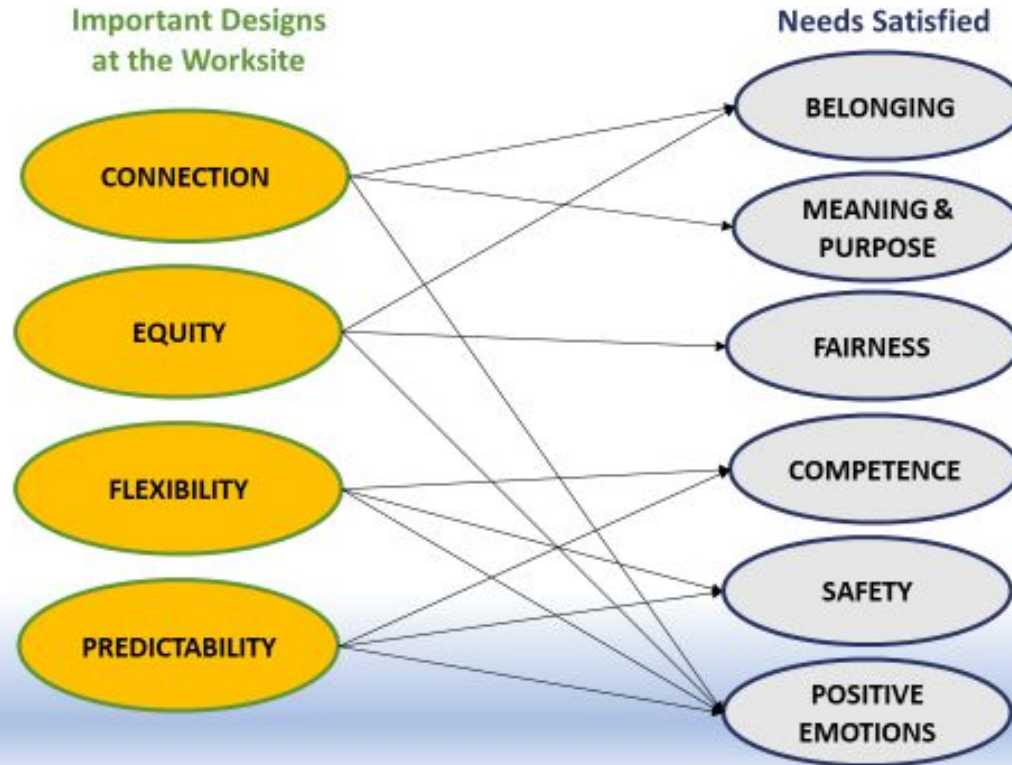


What needs are satisfied working from home?



What are selected needs that can be satisfied at corporate offices?

What needs are satisfied at the office?



Examples

- If we want more ***Autonomy***, we build in, for example, more *Flexibility* and *Predictability*
- If we want more ***Belonging***, we build in, for instance, more *Connection* and *Equity*
- If we want more ***Competence/Mastery***, we build in, for example, more *Flexibility*, *Predictability*, and *Connection*.

Applying Design Qualities

- Focus Groups of 4–6 people, 37 participants
- Assigned a Design Quality to define and discuss
- Generated a drawing of a workplace where the Design Quality was implemented
- A few examples presented for illustration

Study Overview

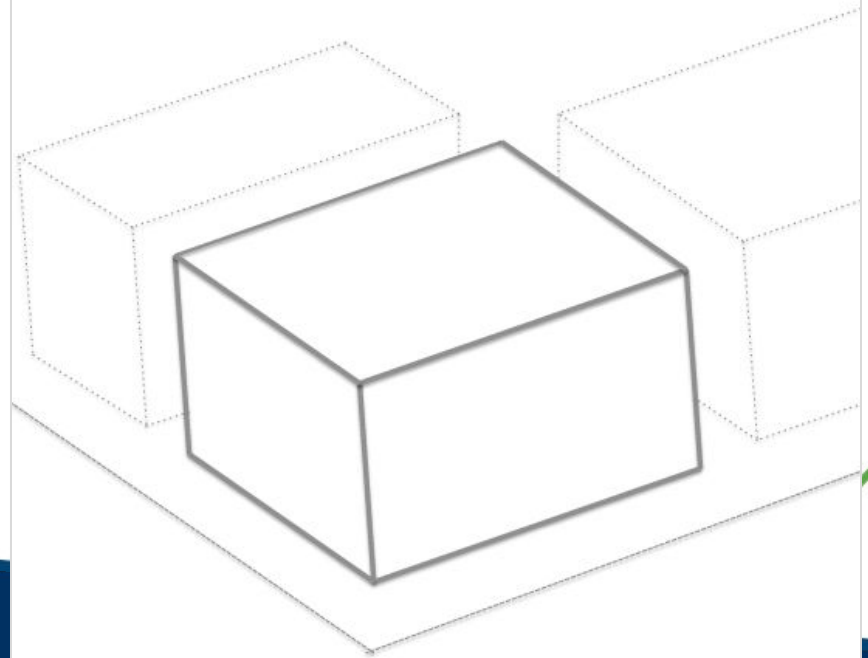
- Focus Group Methodology
- Individual and Group Process
 1. “Think about what connection means to you. What would make a space feel more connected? Using words and images, take 5–7 minutes to record your ideas.”
 2. Prompt 2: The Box (spatial elements and qualities)

Source: DeClercq, C. Psychology of Architecture Conference, Austin TX, 2018

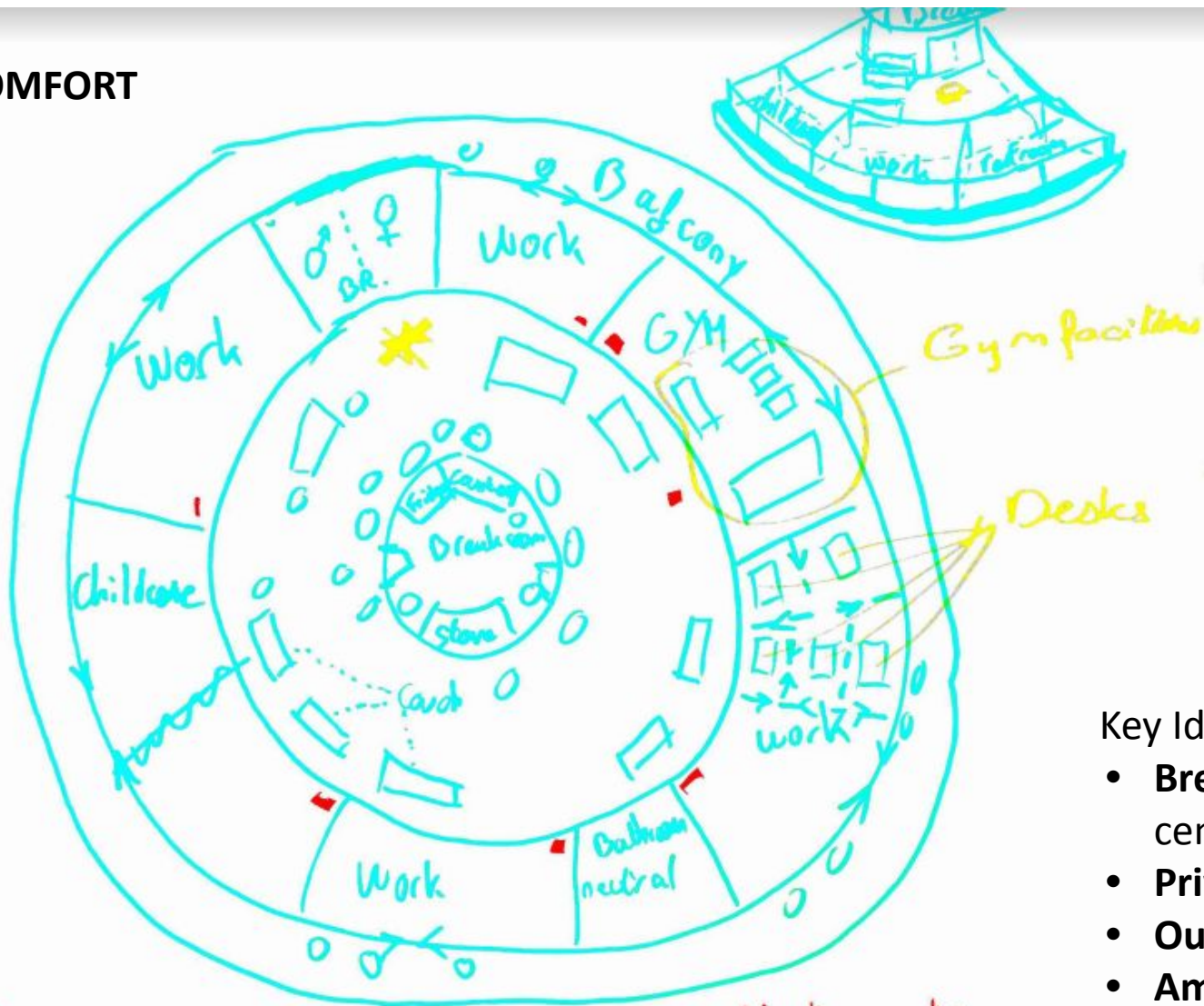
Prompt #2:

Now that you’ve had a chance to hear from everyone in your group, we invite you to reflect on the gray box we showed you at the beginning of the focus group session.

Imagine that this gray box will become an office workplace. Tell us how it should be changed to become a healthy workspace that promotes your assigned driver (e.g., connection). Your proposals can be for any scale of design (desk, entryway, wall colors, shared spaces, inside, outside, etc.)



COMFORT



○ chair
□ couch
↔ sliding to wall/window

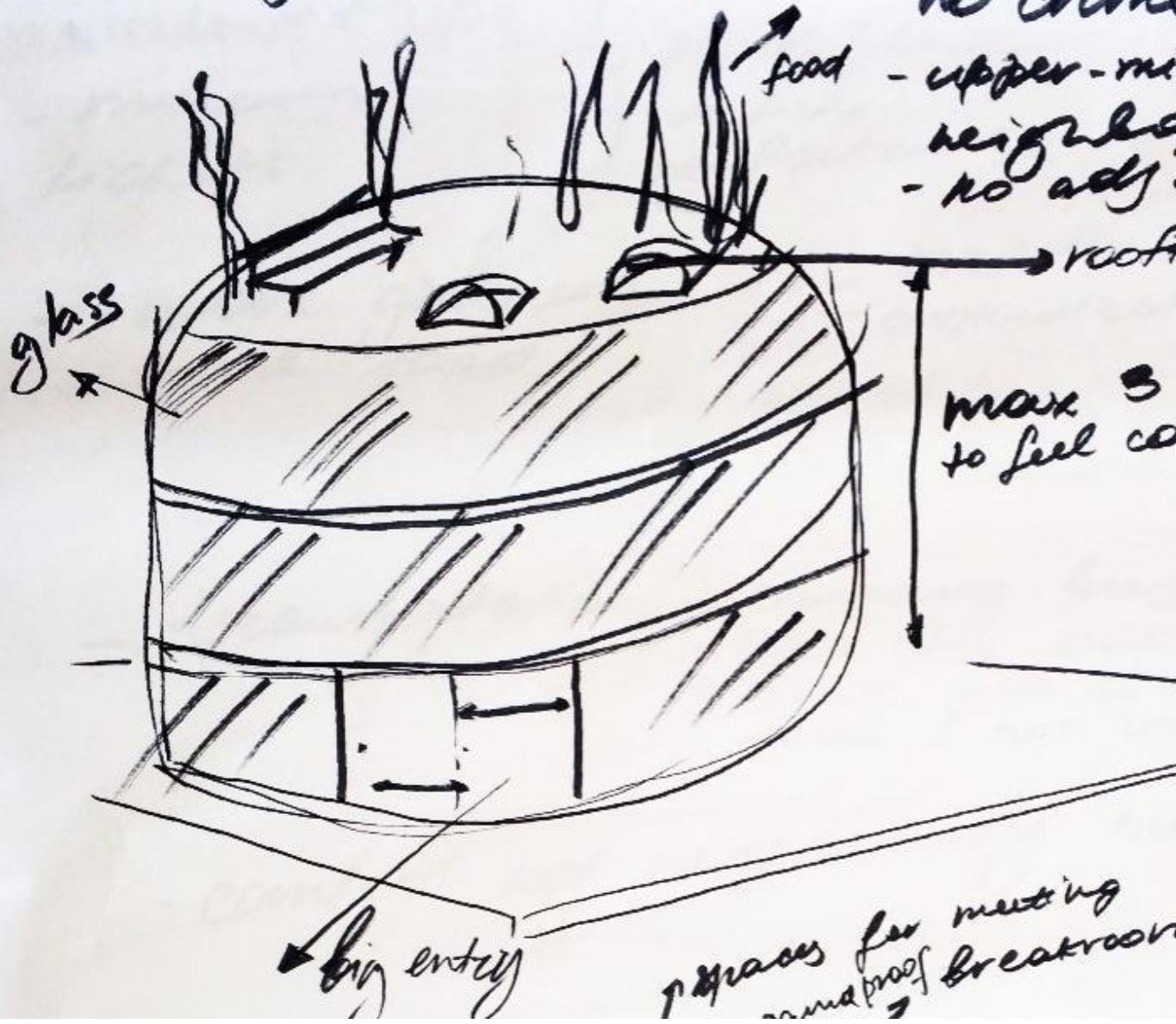
- adaptable temperature
→ Common space

Key Ideas

- **Breaks:** break room in center; gymnasium
- **Private spaces**
- **Outside/beyond office**
- **Amenities:** in center; childcare; gym
- **User-generated:** adaptable temperature; sliding doors
- Circular building

neighborhood : - safe *Comfort*

- no crime
- upper-middle class neighborhood
- no adjacent bldg.



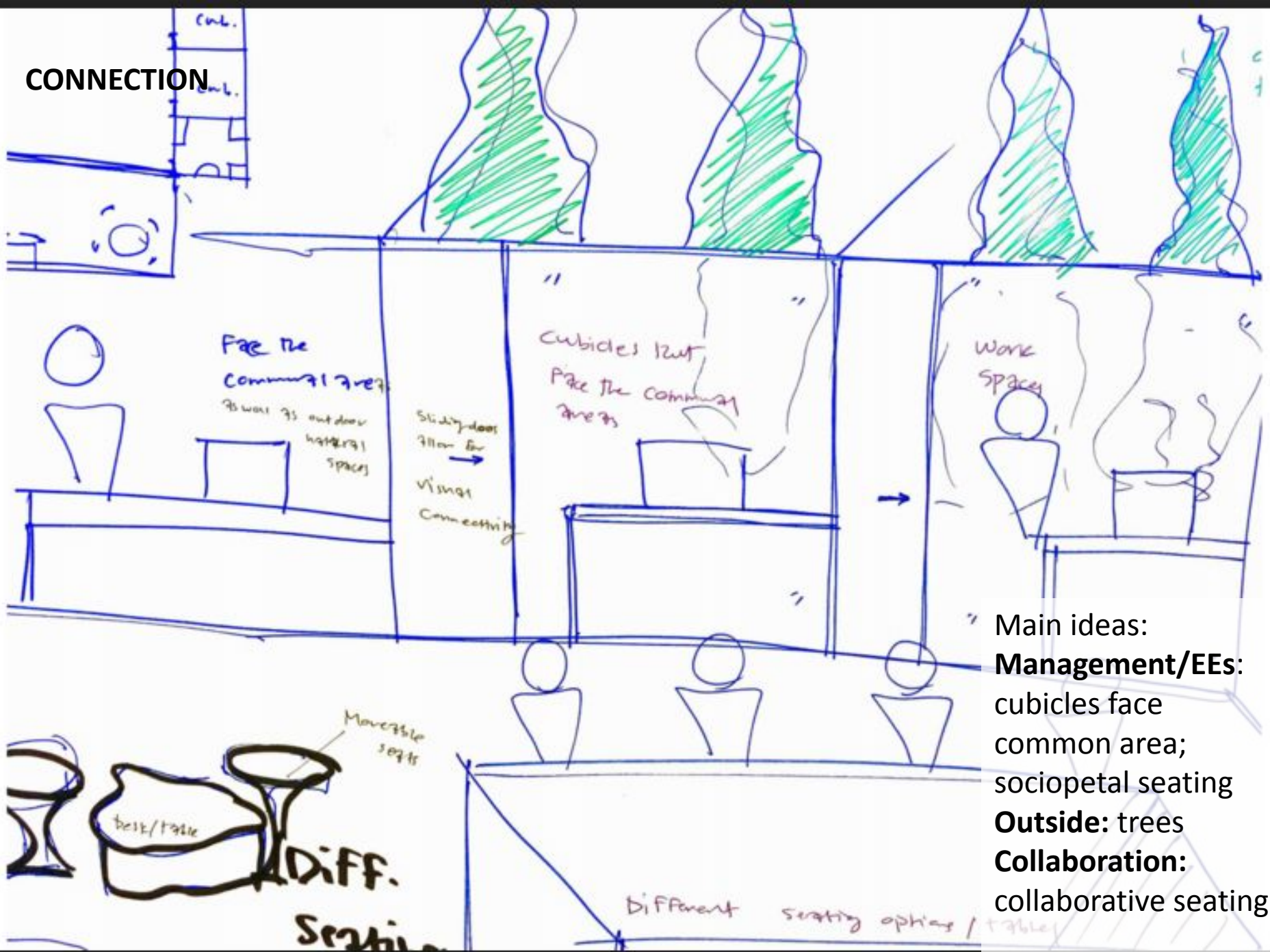
rooftop garden

max 3 stories to feel comfortable

Key Ideas

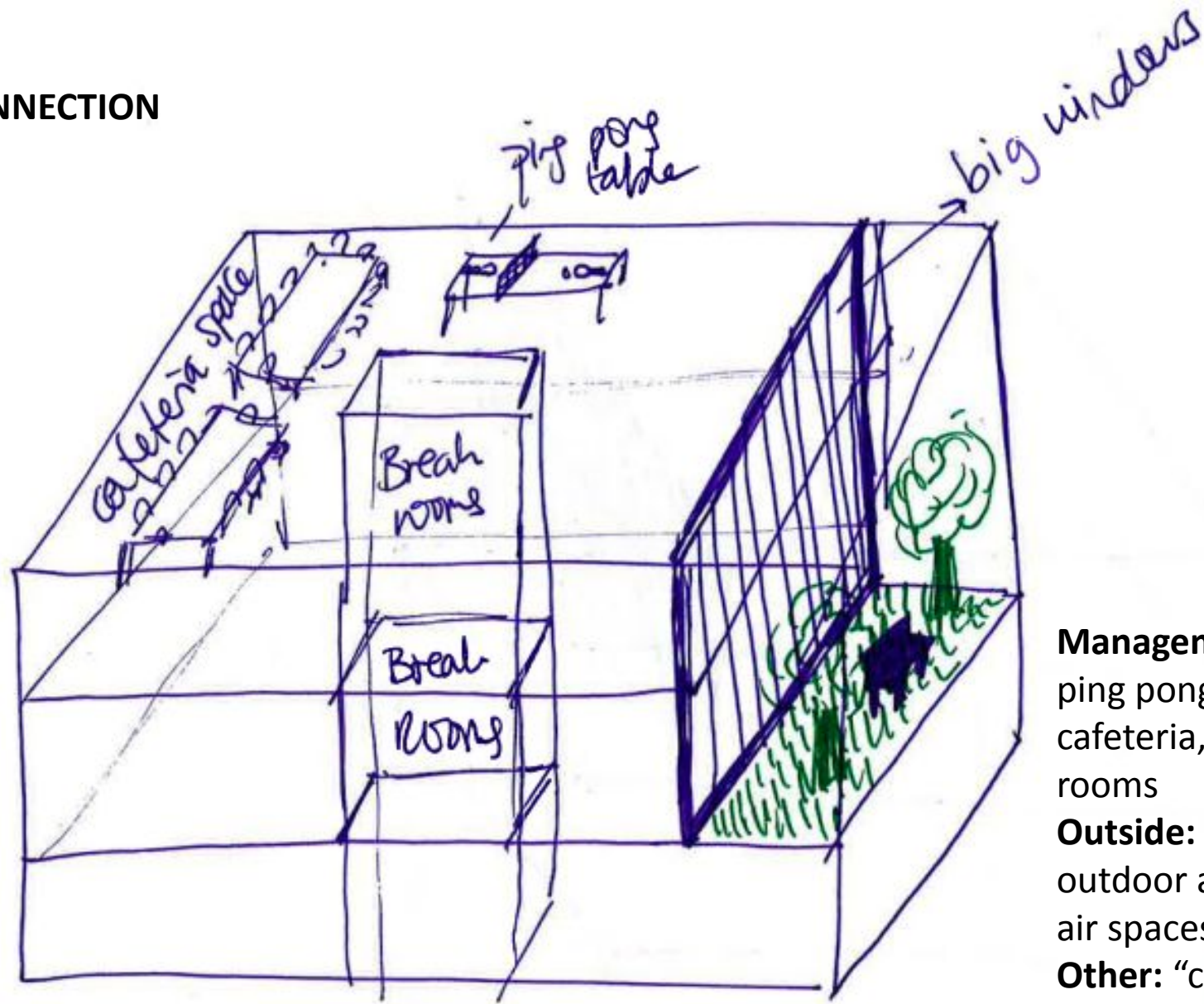
- **Outside/beyond office:** safe neighborhood; no buildings nextdoor; rooftop garden
- **Other:** Circular building

CONNECTION



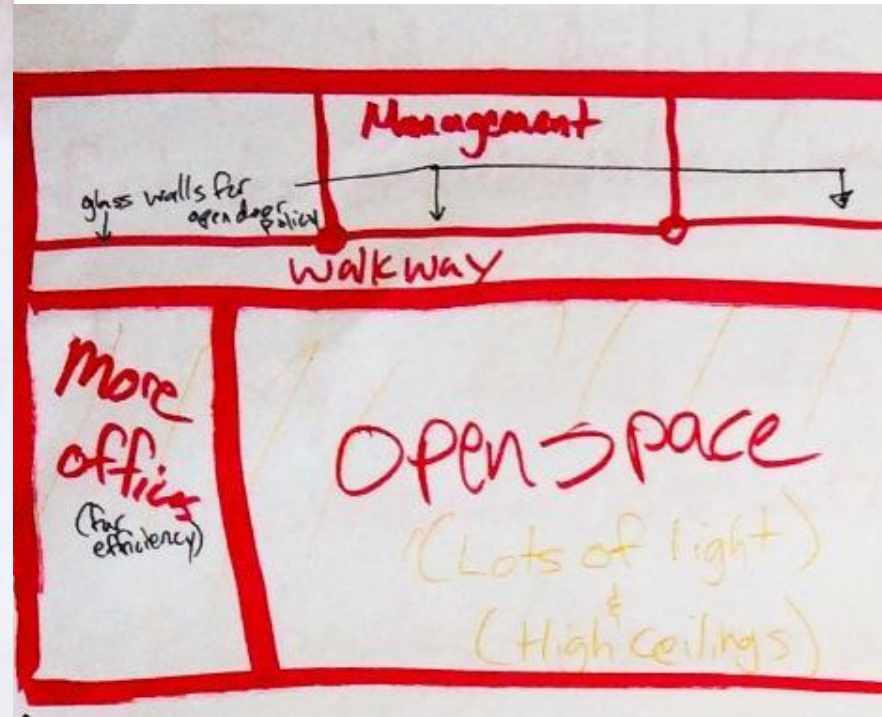
Main ideas:
Management/EEs:
cubicles face common area;
sociopetal seating
Outside: trees
Collaboration:
collaborative seating

CONNECTION



Management/EEs:
ping pong table, cafeteria, break rooms
Outside: windows, outdoor area, "open air spaces"
Other: "connection to health"

- having open air spaces (connection to nature, health)



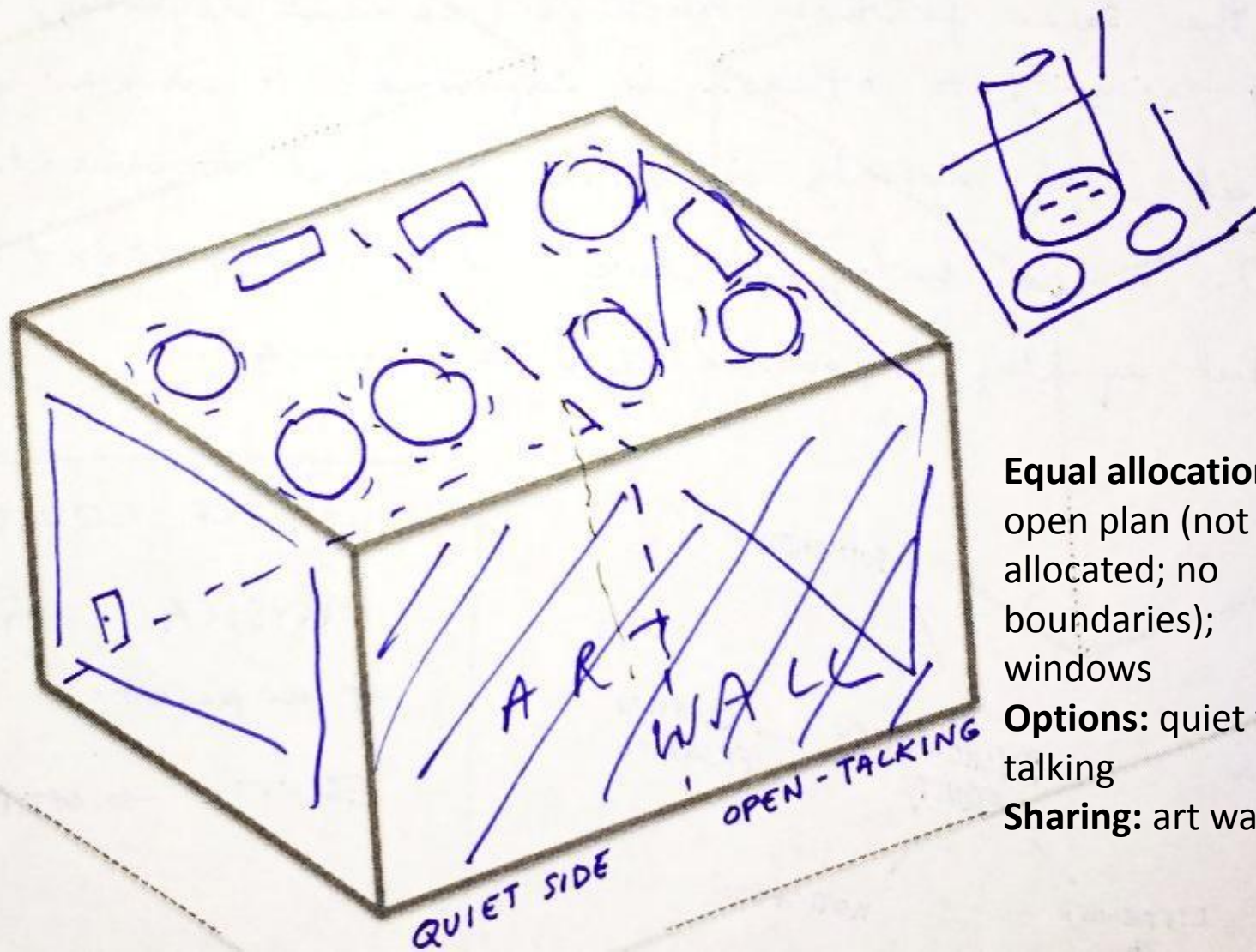
Management/EEs:
glass walls for open door policy; walkway by management

Outside: worker activity area; no ceiling

Other: lots of light, high ceilings

- big windows
- OPEN floor plan / no seating arrangement
- Personal art / poster wall → each person brings 1 piece

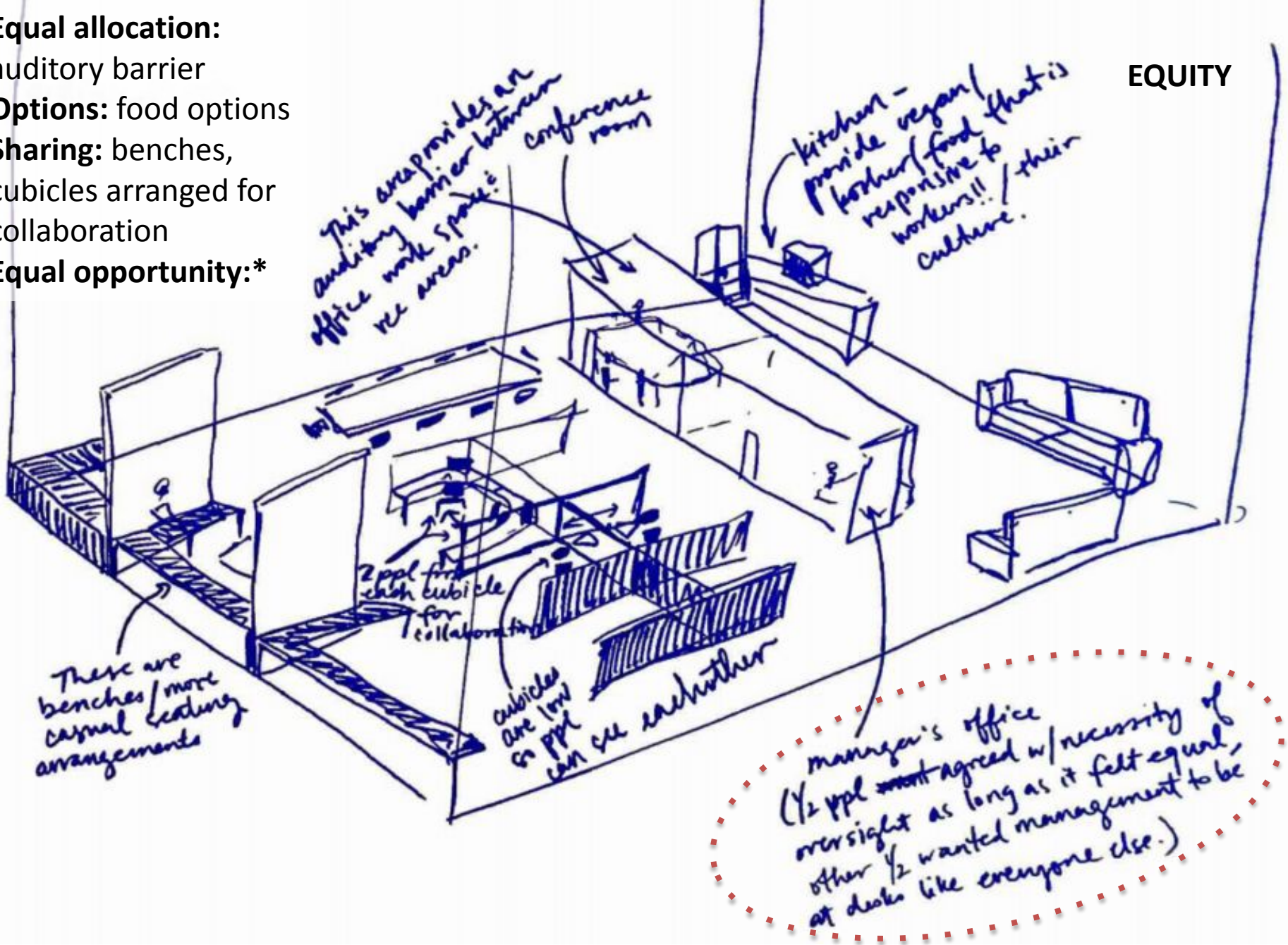
EQUITY



Equal allocation:
 open plan (not allocated; no boundaries); windows
Options: quiet vs. talking
Sharing: art wall

EQUITY

- Equal allocation:**
 - auditory barrier
- Options:** food options
- Sharing:** benches, cubicles arranged for collaboration
- Equal opportunity:***



This area provides an auditory barrier between office work space & conference room

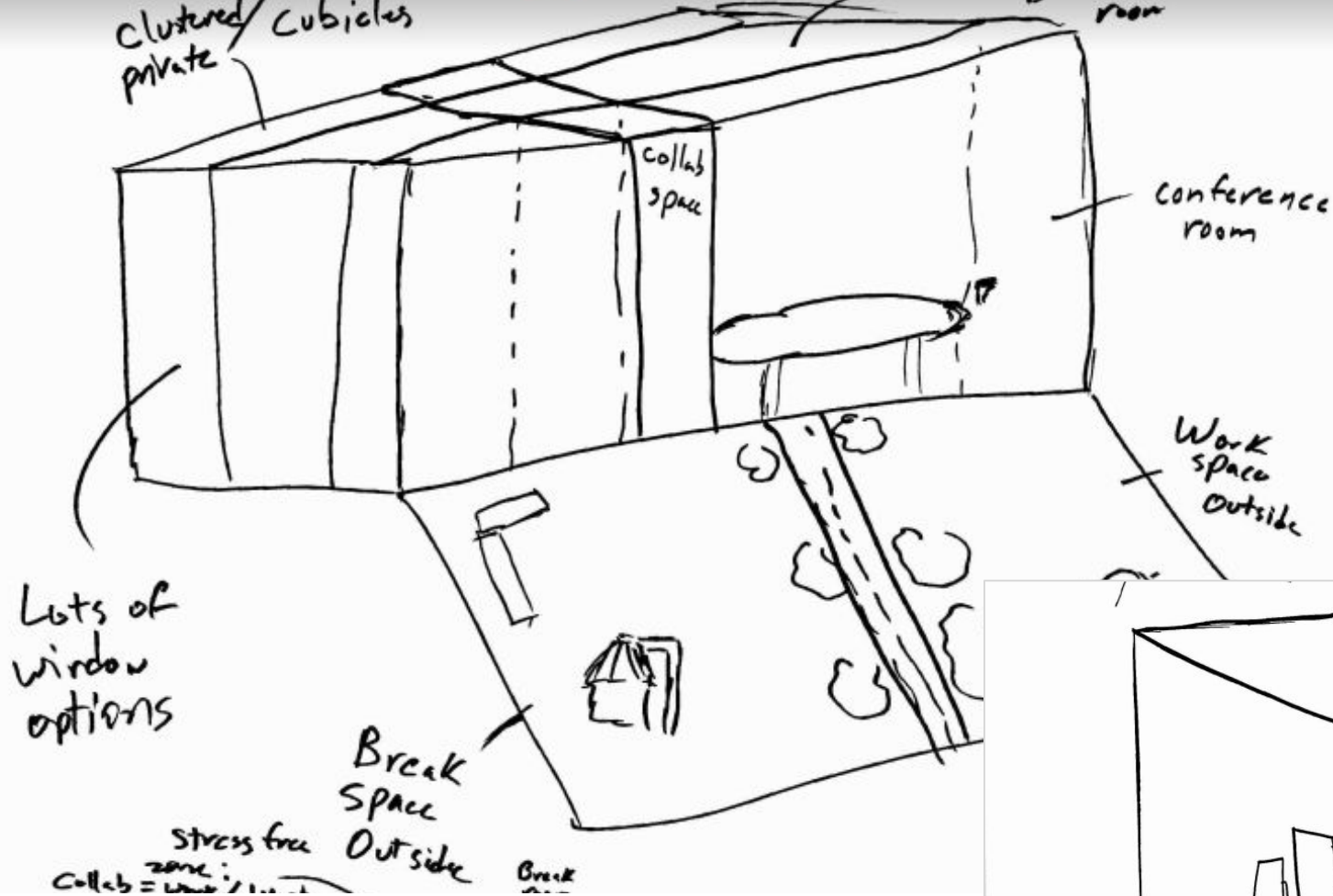
kitchen - provide vegan/vegetarian food responsive to workers!! / their culture.

These are benches / more casual seating arrangements

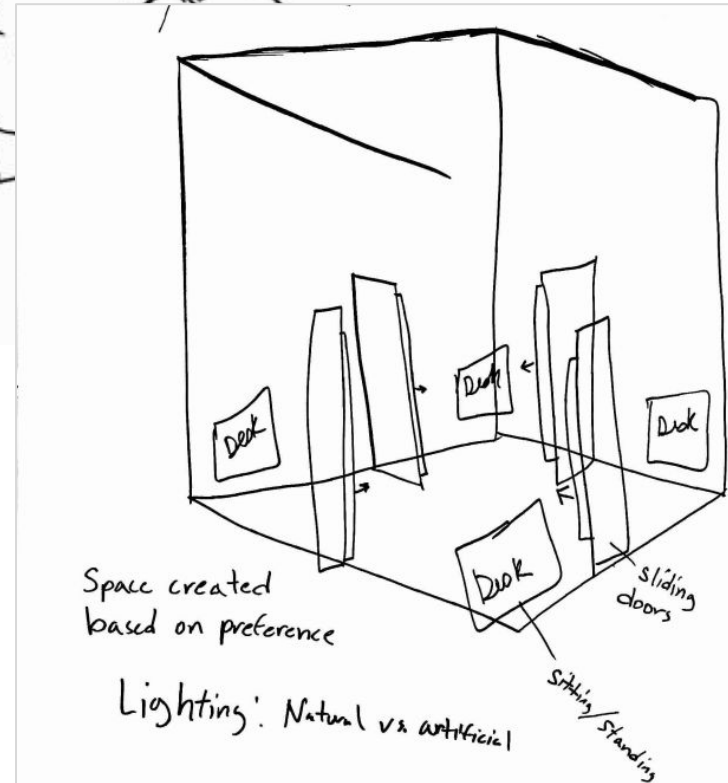
2 ppl fit in each cubicle for collaboration

cubicles are low so ppl can see each other

manager's office (1/2 ppl ~~want~~ agreed w/ necessity of oversight as long as it felt equal, other 1/2 wanted management to be at desks like everyone else.)



FLEXIBILITY



Main ideas:

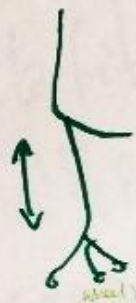
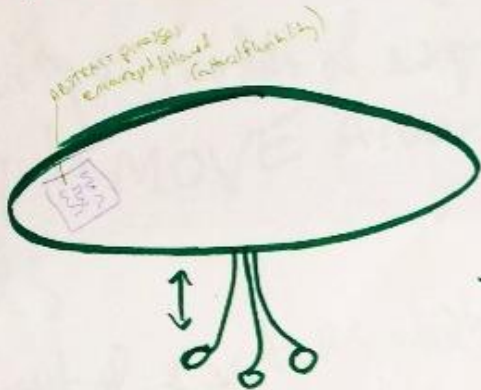
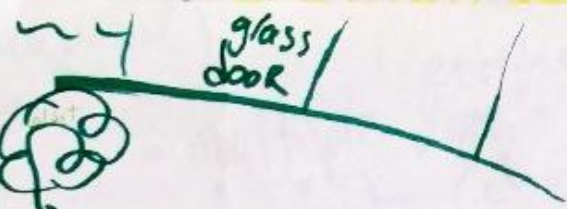
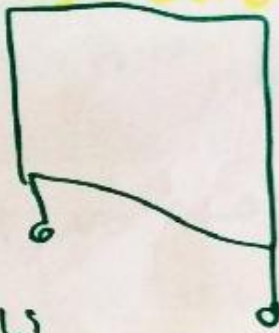
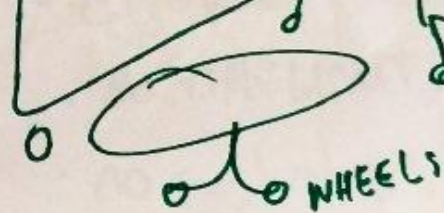
Inviting: natural lighting, windows

Options: movable (sliding) walls; work and break spaces outside; individual and collaborative spaces; sit/stand

Open: "space created based on preference"

FLEXIBILITY

movable wall
10 x 10 ft
24 inch, some products



- SHARED supplies
- blankets
- pens
- earplugs

tools which facilitate personal comfort in shared space

light adjustable circular tables of varying circumference



CARPETED nothing space: allows floor sitting invites + SPONGEY = encourages

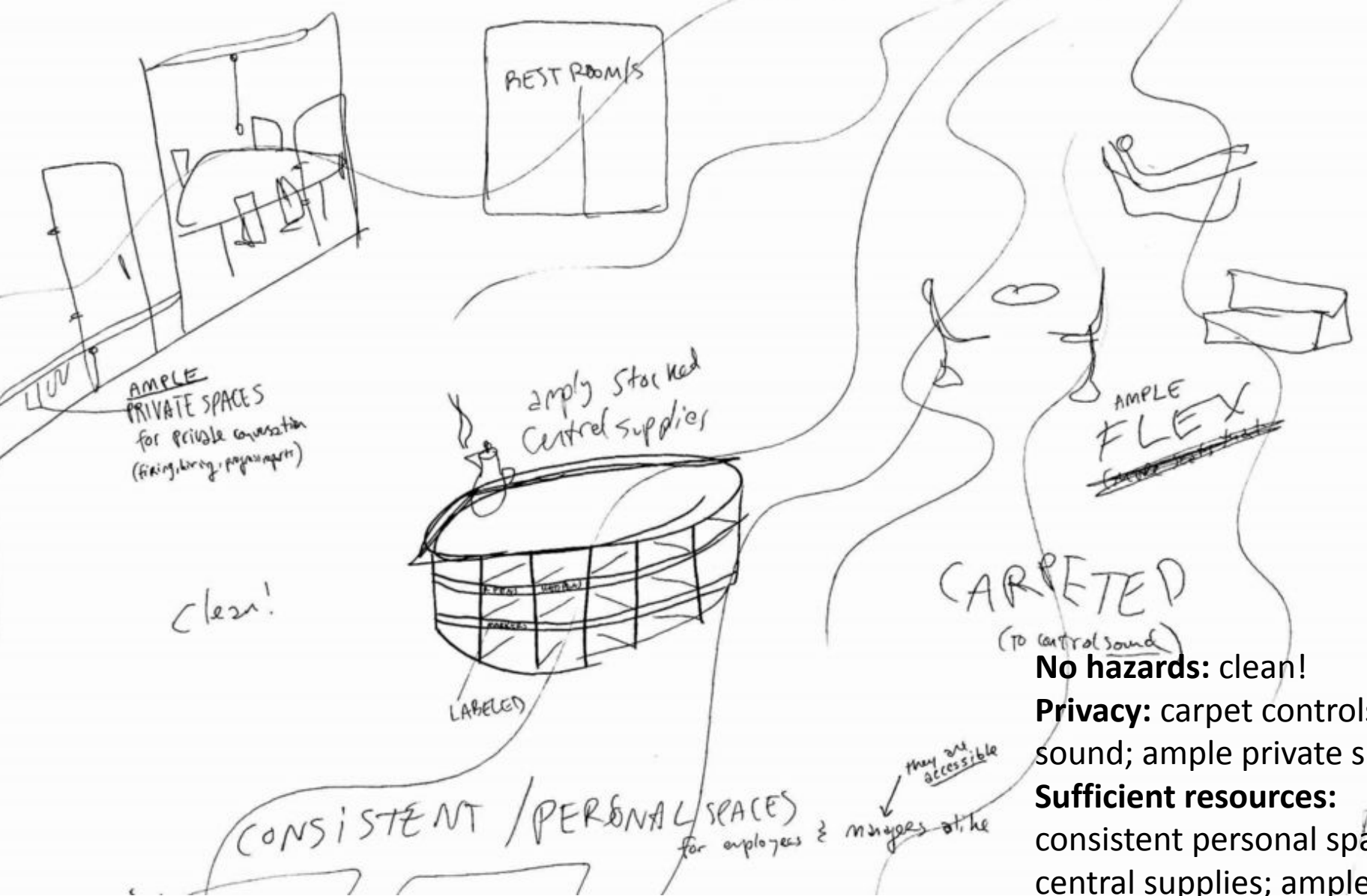
Options: different postures (carpeted space to encourage); furniture (and tree!) on wheels

Multiple resources: shared supplies

PREDICTABILITY

CENTRAL

XIRI 31-0000
WIFI



No hazards: clean!

Privacy: carpet controls sound; ample private spaces

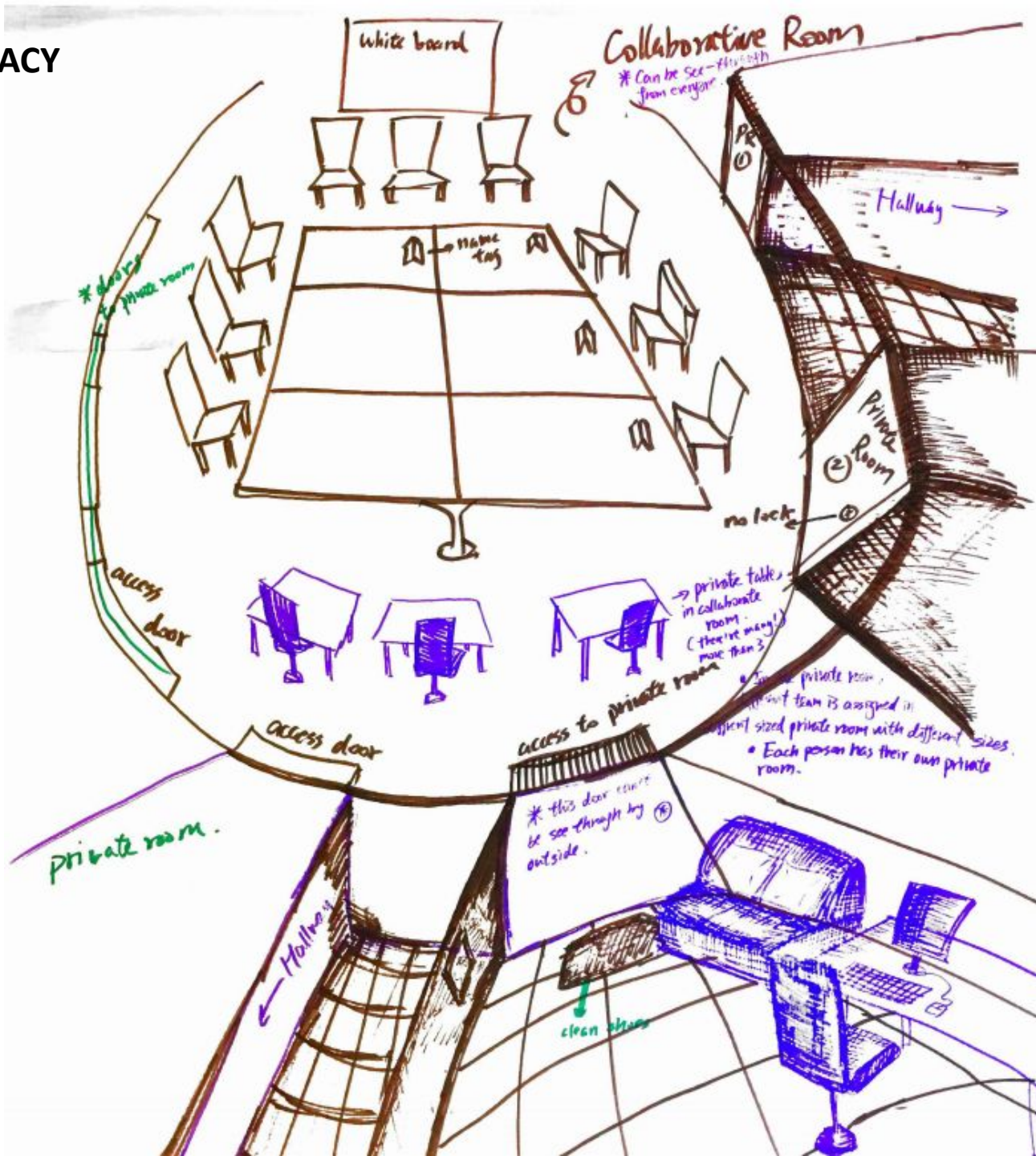
Sufficient resources: consistent personal spaces; central supplies; ample flex space

PREDICTABILITY



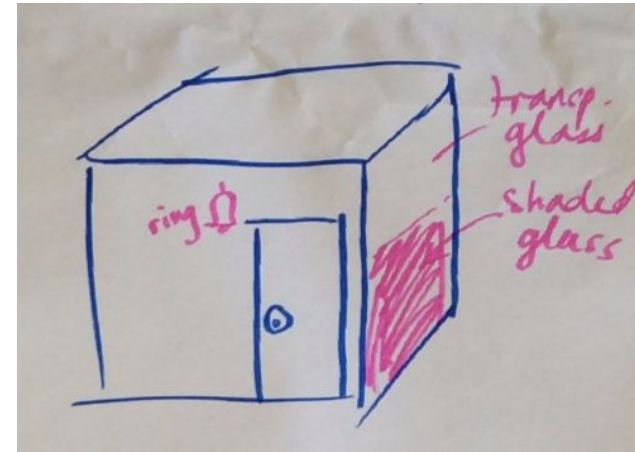
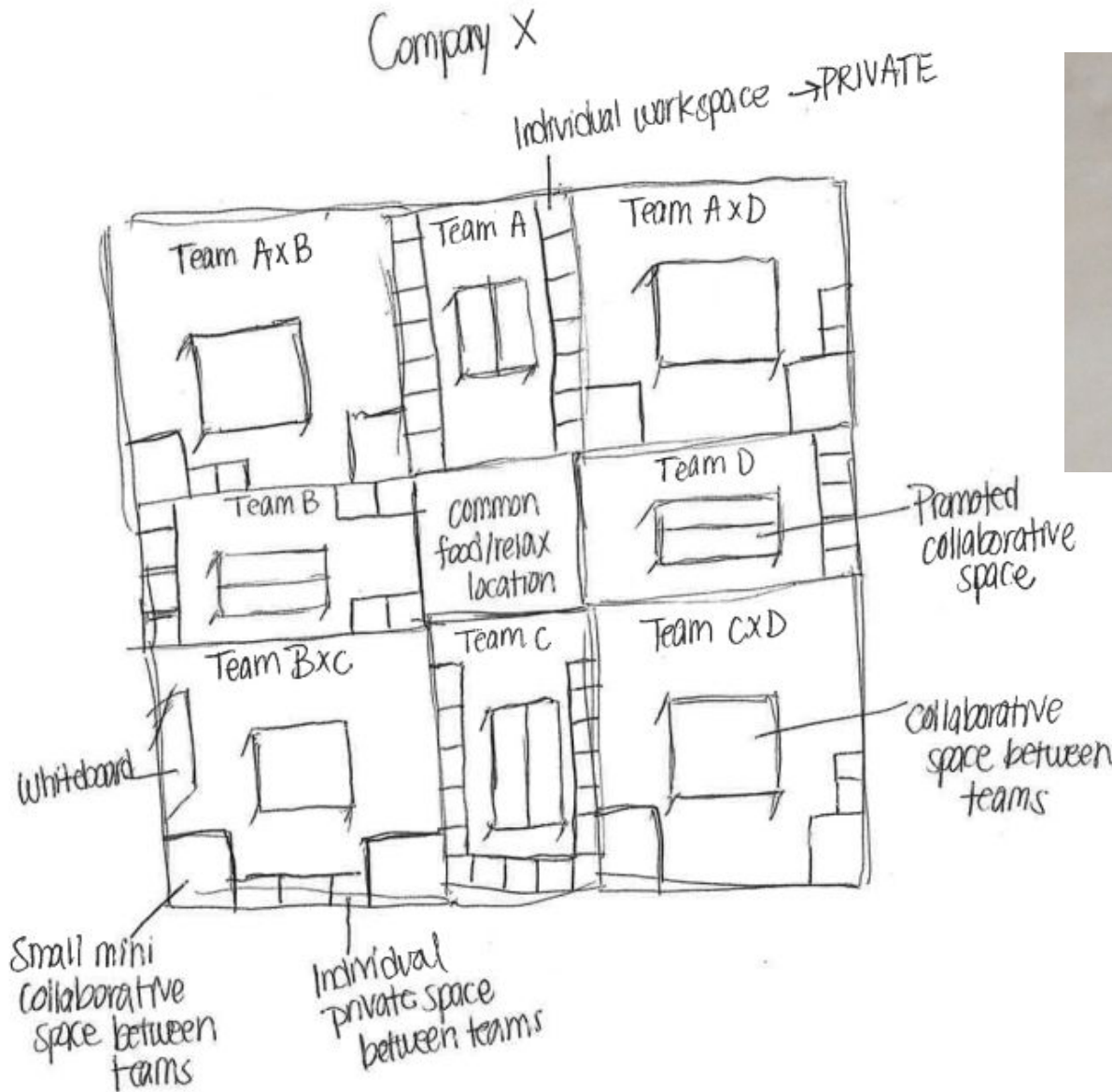
Familiarity: staff information via display; coffee tables

PRIVACY



Collaboration and privacy: pathways to collaboration; private spaces (can't see in); private tables in collaborative room
Comfort: chairs

PRIVACY



Collaboration and privacy: individual vs. collaborative spaces; common vs. individual private space
Personal space: opaque windows

What we learned:

- Which aspects of the physical environment focus group participants felt were related to each of the design qualities.
- Disclaimer: Focus group participants offered insights into their own thinking of how these design qualities can be expressed in the workplace. However, this information was obtained from people without the design or research expertise to understand how workplace design can be used to achieve key objectives. It does not necessarily indicate what aspects of an environment are linked to each of the design qualities.
- The design process should be guided by people who are familiar with related research and have professional experience designing workplaces to properly apply these design qualities.
- Presenting designs generated by experts to occupants to evaluate whether designs truly convey these qualities could be a good initial step towards connecting design qualities to basic need satisfaction.

Summary

- Design Qualities for need satisfaction are the Vital Signs of Workplaces
- The “health” of a workplace can be assessed by the degree to which design qualities support user needs

How to create healthy workplaces

- Form professional partnerships with all relevant stakeholders such as psychologists, ergonomists, occupational health professionals, and HR to work with design professionals to identify specific job-related needs of potential future space users.
- Work with the people familiar with applicable research and design concepts to identify ways that the physical environment can satisfy user needs (not wants).

THANK YOU

cbanks@berkeley.edu

www.healthyworkplaces.berkeley.edu



Built to Thrive: How to Build the Best Workplaces for Health, Well-Being, and Productivity. ICHW, September 2019.

<https://berkeleycoeh.catalog.instructure.com/browse/ichw/courses/built-to-thrive-book-and-community>