

# KJ Diagrams

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## **Abstract**

This document provides basic instructions for the construction of KJ diagrams. KJ diagrams, also known as affinity diagrams, are a mechanism for collecting and organizing facts relevant to a problem. KJ diagrams focus on language data as opposed to numerical data and are especially useful for facilitating group problem solving efforts. The end result of a KJ diagram is typically a set of 4-7 causal factors that underlie a problem. The KJ diagram is a map of the causal structure of a problem with can focus and guide problem solving efforts.

**Key words:** affinity diagrams, KJ diagrams, causal loop diagrams, total quality management

## **Acknowledgments**

Although I deviate from his strict teachings, many of the concepts and ideas in this document arose from observations of the methods of Shoji Shiba as he taught them at MIT in the 1990s.

# Introduction to KJ Diagrams

- Purpose
  - Unearth facts relevant to a problem.
  - Build common understanding of a problem.
  - Understand the causal structure of a problem.
- Most suited for
  - Multi-faceted problems
  - Non-technical problems
  - Problems involving disparate interests and perspectives
- Developed by Kawakita Jiro (thus “KJ”).
- KJ Diagram also called “Affinity Diagram”—several variants in use.
- Example problems
  - Why don't more Americans commute to work by bicycle?
  - What limits the productivity of the Des Moines call center?
  - Why aren't yields 100 percent on the number 3 pretzel line?
  - Why is it I'm late for class about once a day?
  - Why do I spend so much money eating out?
- Process
  1. Form Team
  2. Pose a question
  3. Write statements of fact that relate to the question
  4. Arrange similar facts into groups
  5. Create headers for groups of facts
  6. Arrange groups and identify links among groups
  7. Write concluding statement and reflect
  8. Perform ritual “YO WAN”

# 1. Form Team

- Team size is ideally 3-6 members.
- Team should include key stakeholders.
  - Sometimes face a trade-off between including key stakeholders and including those who have basic knowledge of problem.
- Allocate about two hours.
- Can be completed by one person for problems addressed by a single individual.
- Materials required:
  - Square self-stick notes (e.g., “Post Its”)
  - Markers (e.g., “Sharpie”) for post its
  - Flip chart or whiteboard
  - Markers for chart/board

## **Example:**

A bicycle advocacy group wished to increase the number of people who commute to work by bicycle in the United States. The group assembled a team to discover some of the underlying factors that limit the use of bicycles in commuting. The team comprised two people from the advocacy group, two bike commuters and two people who do not commute by bicycle.

## 2. Pose Question

- “Why/what” questions usually work better than “how” questions.
  - “Why don’t...” vs. “How can we...?”
- Question should be “scrubbed” to ensure that it reflects group’s problem solving focus.
- Write question at top of whiteboard or flipchart.

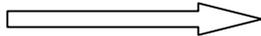
*Why don't more Americans commute to work by bicycle?*

### 3. Write Statements of Fact

- Each team member writes 5-10 statements of fact on individual self-stick notes.
- Rules
  - Statements are facts not judgments.
  - Facts are in some way relevant to the question.
  - Facts need not directly “answer” question.
- Each fact is scrubbed by the author and then scrubbed by the group to eliminate judgments, inferences, and predictions.

*People are idiots when it comes to picking bike routes.*

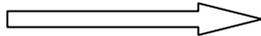
scrub



*The best bike routes are not usually the best car routes.*

*Americans are couch potatoes.*

scrub



*Many people have a hard time committing to exercise.*

#### *Why don't more Americans commute to work by bicycle?*

The best bike routes are not usually the best car routes.

Biking time is more than driving time for trips > 10 miles.

Many people live > 10 miles from work.

A decent commuter bike costs at least \$500.

Recreational bikes are not always good commuter bikes.

Helmets give cyclists "helmet hair"

Fixing flats requires some technical skill

Most workplaces do not provide secure bike storage.

Cyclists are often perceived as eccentric.

Few workplaces provide locker room facilities.

On warm days, cyclists sweat.

Cars are an expression of self for many Americans.

Cycling requires at least modest fitness.

Carrying cargo requires extra equipment.

It's hard to stay comfortable on a bike in the rain.

Bikes locked outside are prone to theft.

Many people don't know what kind of gear they need for commuting.

Most locations have variable climate over the year.

In the winter, it's dark on the commute home.

Cyclists are exposed to danger from cars when they share the road.

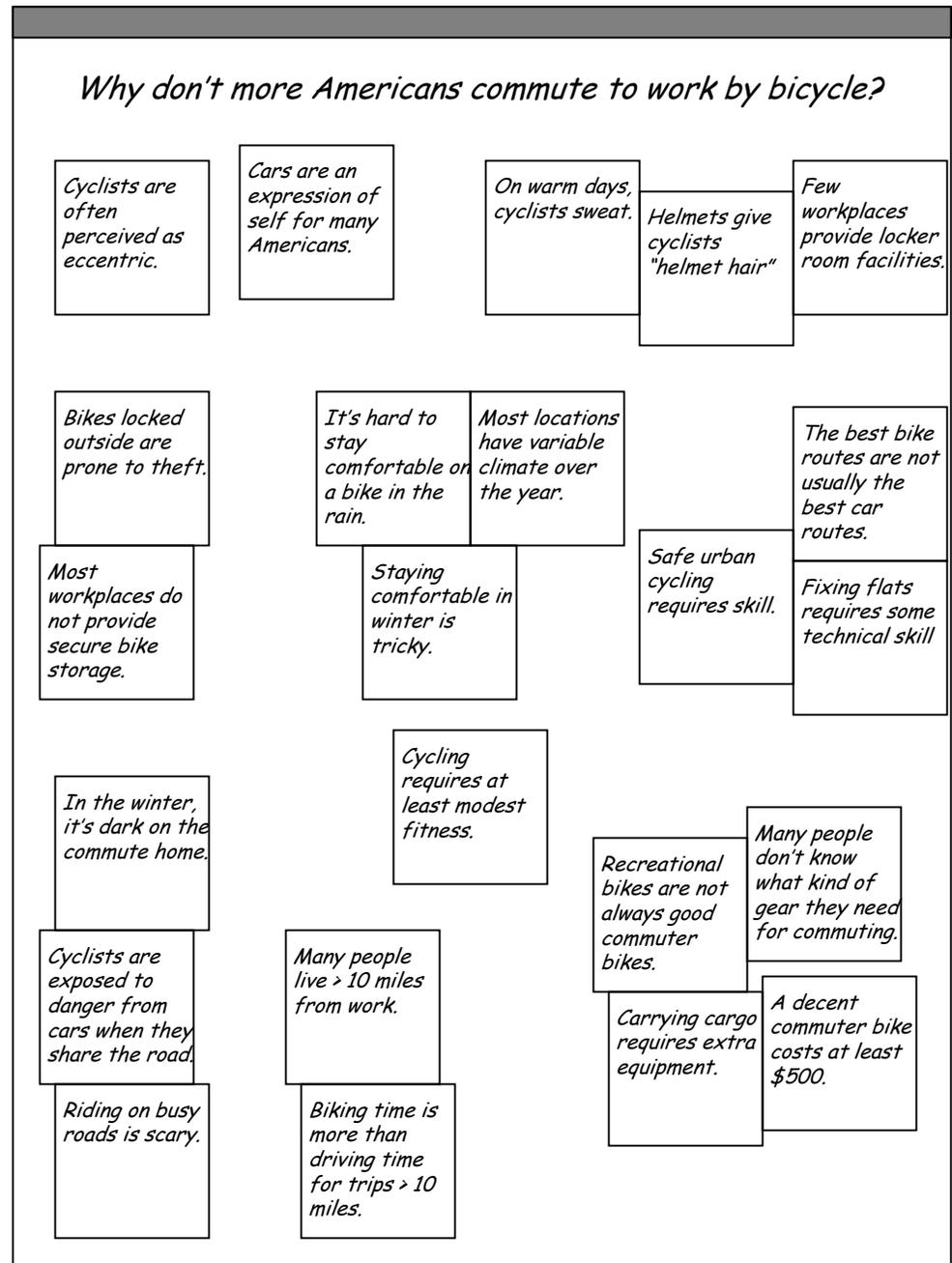
Safe urban cycling requires skill.

Riding on busy roads is scary.

Staying comfortable in winter is tricky.

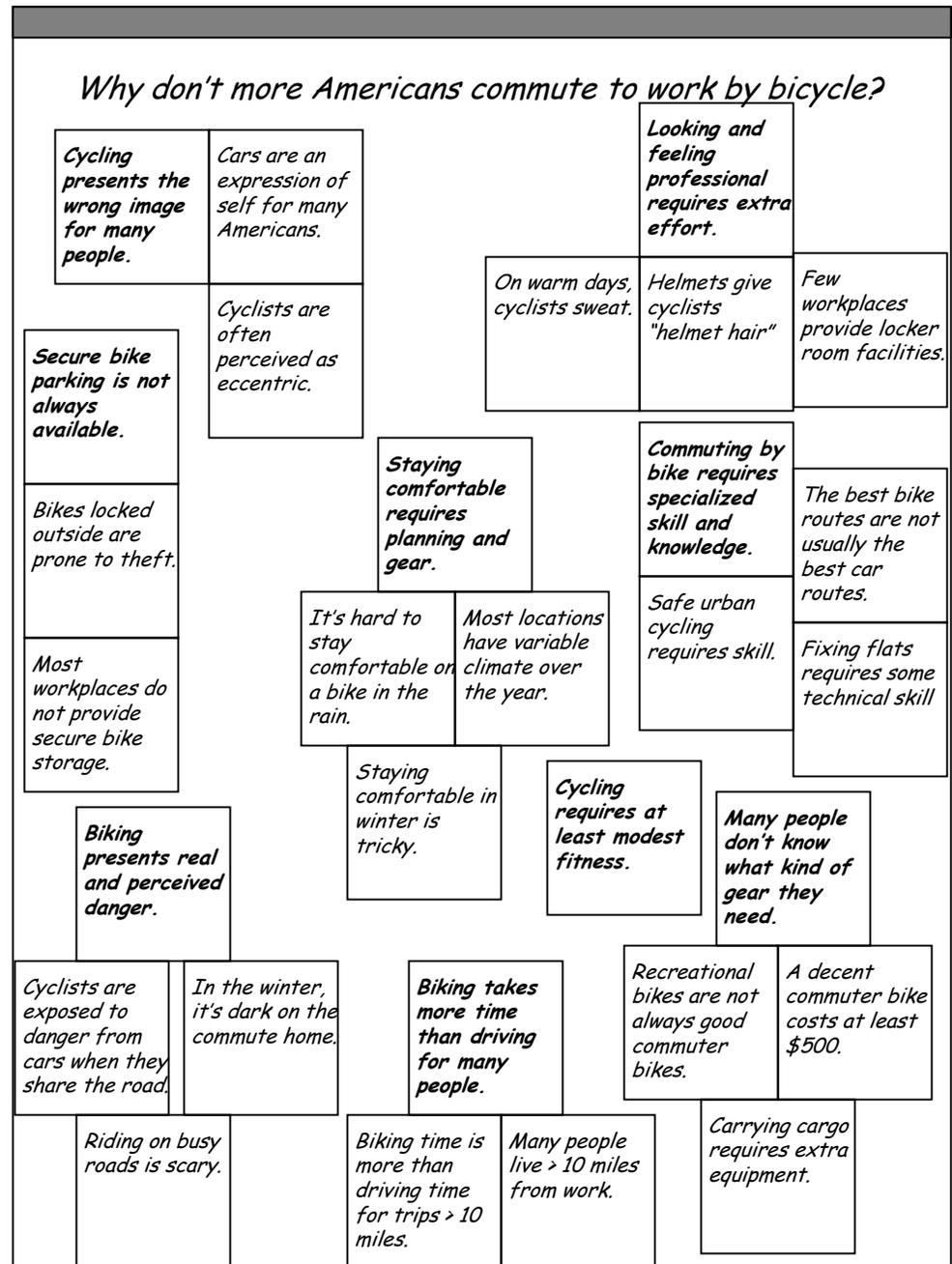
## 4. Arrange Facts in Groups

- The KJ dogma requires that this grouping be done in silence. There is some merit to this idea as it is fast and efficient and ensures that the less-verbal team members participate.
- Groupings are such that facts reflect similar ideas or feelings.
- Try to avoid generic, often technical, groupings under categories such as cost, performance, convenience, safety. Instead allow groupings to form based on intuition about similarity of underlying facts.
- An occasional “lone wolf” is o.k.
- Strictly redundant facts may be stacked on top of each other.
- If you don't like a grouping, just change it...don't argue about it.
- Work quickly to get some basic structure in place.



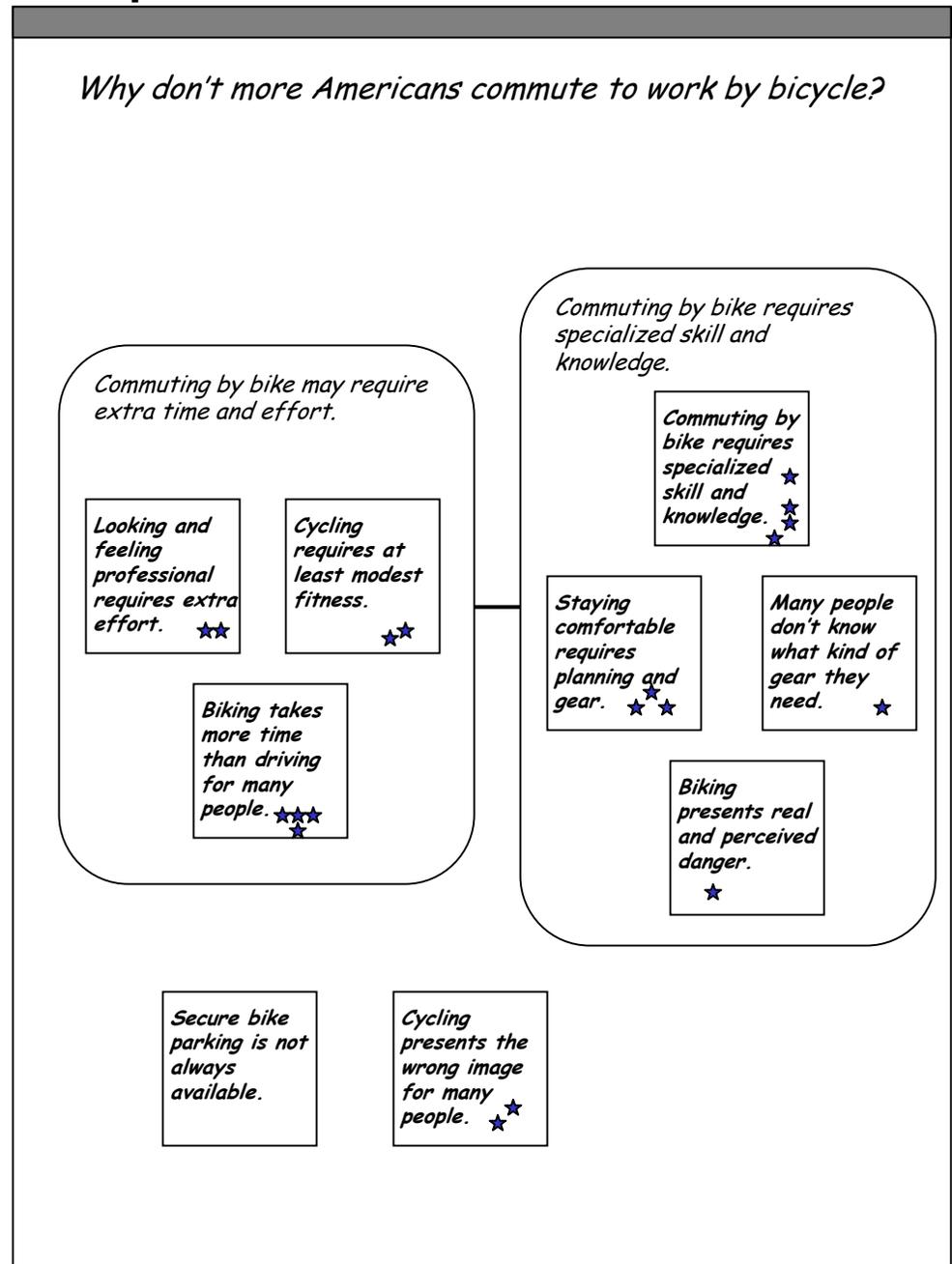
## 5. Create Headers for Groups

- A header summarizes the facts in a group.
- In some cases, an existing fact can serve as a header.
- In other cases, a new statement is drafted to summarize the facts.
- Generalize just enough to capture the collection of facts, but not more.
- Write headers in distinctive style (e.g., different color or script). (Here, the headers are shown in boldface.)



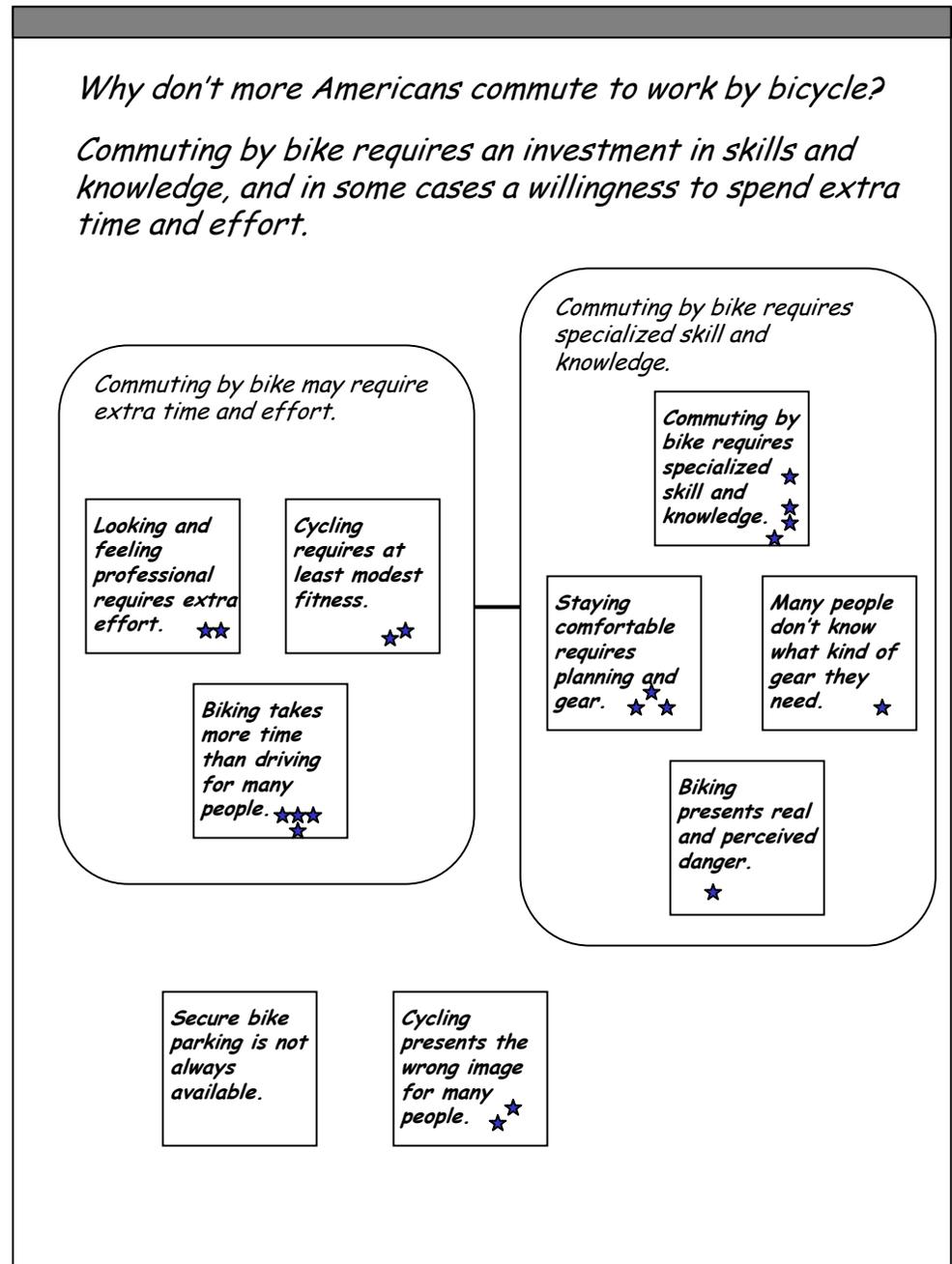
## 6. Arrange Groups and Show Relationships

- Stack the facts underneath the headers.
- Arrange the headers/stacks into groups in order to reflect similarities among the headers.
- Circle these groups and create a label for these groups of headers. These labels can be written right on the board or on another self-stick note.
- Some headers will remain “lone wolves”
- Identify the most significant headers with “stars” or “dots” through multi-voting.
  - In multi-voting each member of the team may allocate three dots/stars as he/she sees fit.
- Draw lines to indicate relationships among groups.



## 7. Write Concluding Statement and Reflect

- Draft a statement that captures the essential message of the facts, headers, and groups.
- By necessity, this statement will not capture every factor.
- In most cases, the factors identified by the KJ diagram will provide several very clear direction for further problem solving efforts. For the bike commuting example:
  - How can skills and knowledge be easily and effectively delivered to potential bike commuters?
  - Which segments of the population are least likely to require extra time/effort for bike commuting due to distance/dress, etc.?
  - How could safe, efficient routes be identified and marked?
  - How could the image of bike commuting be enhanced?
  - What information systems might be used to guide cyclists in choices of cold-weather gear?



## Step 8: Perform the ritual “YO WAN”

- As with many methodologies within the Total Quality Management (TQM) movement, the construction of the KJ diagram carries with it some ritual.
- In the best case, ritual may create a cultural bond that contributes to organizational efficiency and problem solving efficacy.
- In any case, the ritual adds a bit of levity to the process.
- The YO WAN ritual is performed as follows:
  - After team members come to consensus that the KJ diagram is a good reflection of the causal structure of the problem, the team stands ready for the YO WAN.
  - All team members hold their hands in front of them at waist level with palms up.
  - The team chants YO...WAN while simultaneously bringing the hands together in a clapping motion at chest height. The WAN syllable coincides with the clap.
  - If the chant is not sufficiently enthusiastic it is repeated (or the team returns to the KJ diagram until it is a good reflection of the group’s problem solving effort).
- I’m sure YO WAN is derivative of some expression in Japanese, but has probably lost quite a bit in various reinterpretations over the years. (In an interesting twist on this ritual, one group I worked with on a product development project insisted on chanting “YO MAMMA.”)

