

# Beyond “Agree” and “Somewhat disagree”

Using **Q** Methodology to Reveal  
Values and Opinions of Evaluation  
Participants

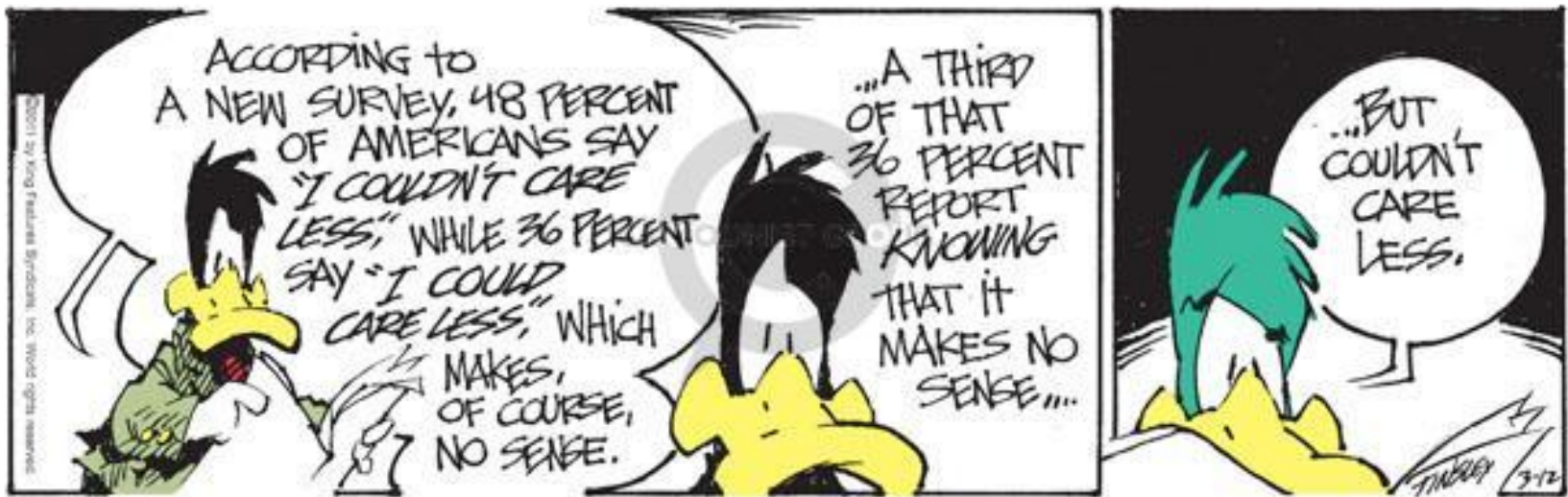
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# Missing answers...



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# Perspectives lost in numbers...



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# What is Q?

**Focus on the subjective dimension of any issue towards which different points-of-view can be expressed (e.g. 'viewpoints on the role of qualitative methods in evaluation')**

1. Each of a sample of participants (**the p-set**)
2. ... sorts a sample of items (**the q-set**)
3. ... into a subjectively meaningful pattern (**the q-sort**).
4. Resulting q-sorts are factor analysed by-person (**q-analysis**)
5. ... yielding a set of factors whose interpretation reveals a set of points-of-view (**the f-set**)

# A Q study

**What do academic chemists think about innovation (defined as the translation of research into commercial outcomes)?**

- Do academic chemists share a common perspective toward innovation? If not, what different perspectives can be empirically identified?
- What are the key characteristics of the innovation perspective(s) that are identified? What are areas of consensus and disagreement among perspectives?

# Participants

		CCI1	CCI2	CCI3	CCI4	CCI5	Total
	<i>N</i>	<b>5</b>	<b>9</b>	<b>13</b>	<b>9</b>	<b>7</b>	<b>43</b>
Role	Principal investigator	1	1	1		1	4
	Co-principal investigator		2	1	3	2	8
	Faculty			1			1
	Postdoctoral students	3		4	2		9
	Grad students	1	6	6	4	4	21
	Undergrad students						
Gender	Male	2	6	8	6	4	26
	Female	2	1	3	3	3	12
	N/A	1	2	2			5
Race	Asian	2	1	1		5	9
	Black/African American				1		1
	Hispanic	2					2
	Native American						0
	White	1	7	9	5	2	24
	Other/NA		1	3	3		7

# Selection of the Q sample

- Literature, survey, interviews, document analysis
- Reward and recognition= 6
- Societal perceptions of chemists' work= 7
- Chemists' perceptions of their own research=6
- Attitudes and beliefs towards high-risk innovative research =8
- Perceptions of chemical research in collaborative settings =7

# The Q sample (excerpt)



1. It is respectable for academic chemists to be founders of new start-ups based on their research. (Reward and recognition)
2. A key goal for our Center is to effectively translate research into new innovations (CCI members' perceptions about their work)
3. Academic chemistry is largely carried out by individual investigators, working with small groups, on problems that often are based on current professional interests in chemistry, rather than on larger problems in science and society. (Societal perceptions of chemists' work)
4. To be a successful academic researcher in chemistry, one must understand the interplay between market requirements and basic research to successfully translate basic research into innovation. (CCI members' perceptions about their work)
5. Academic chemists should focus more on knowledge generation (conference papers, publications, etc.) than translatable solutions (e.g., patents, products, license agreements). (CCI members' perceptions about their work)
6. The most important projects favored by academic chemistry are largely unrecognized outside of the profession. (Societal perceptions of chemists' work)
7. The traditional chemical research format, which involves a single investigator working with a small



# The Q sort

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- Data gathering step
- individual models their own point of view about a subject by rank-ordering the statements
- Face to face
- Online using FlashQ

# The Q sort

Least agree

Most agree

-4	-3	-2	-1	0	+1	+2	+3	+4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Click on the grid to see FlashQ in action

# Parenthesis

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“Likert’s name is among the most mispronounced in our field. It is phonetically lick-ert”

- Latham, Gary P. (2007). *Work motivation: History, theory, research, and practice*. Thousand Oaks, CA: Sage, p.15

# Analysis

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- Correlation
- Factor Analysis
- PQMethod
- SPSS
- R

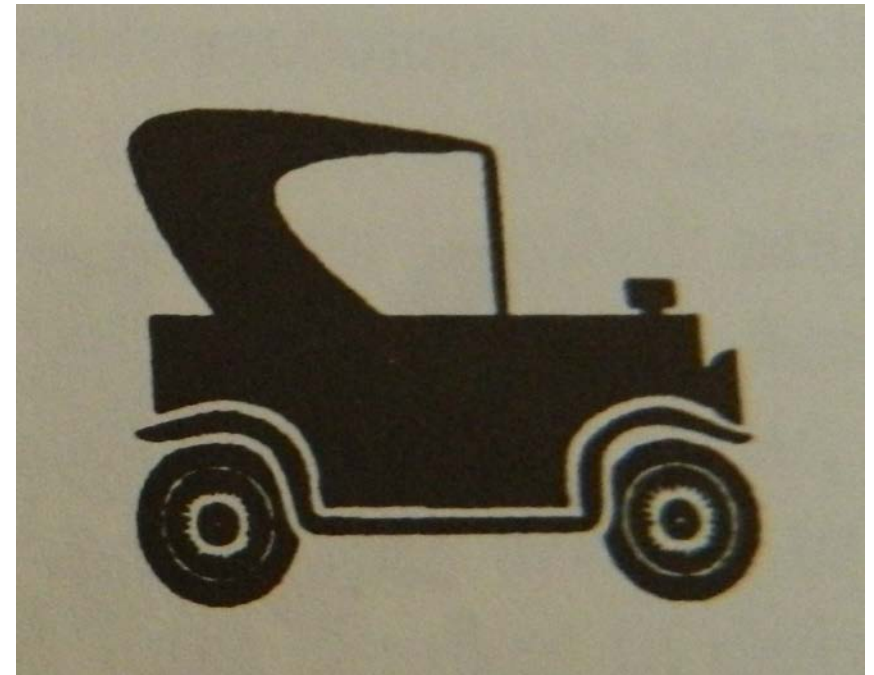
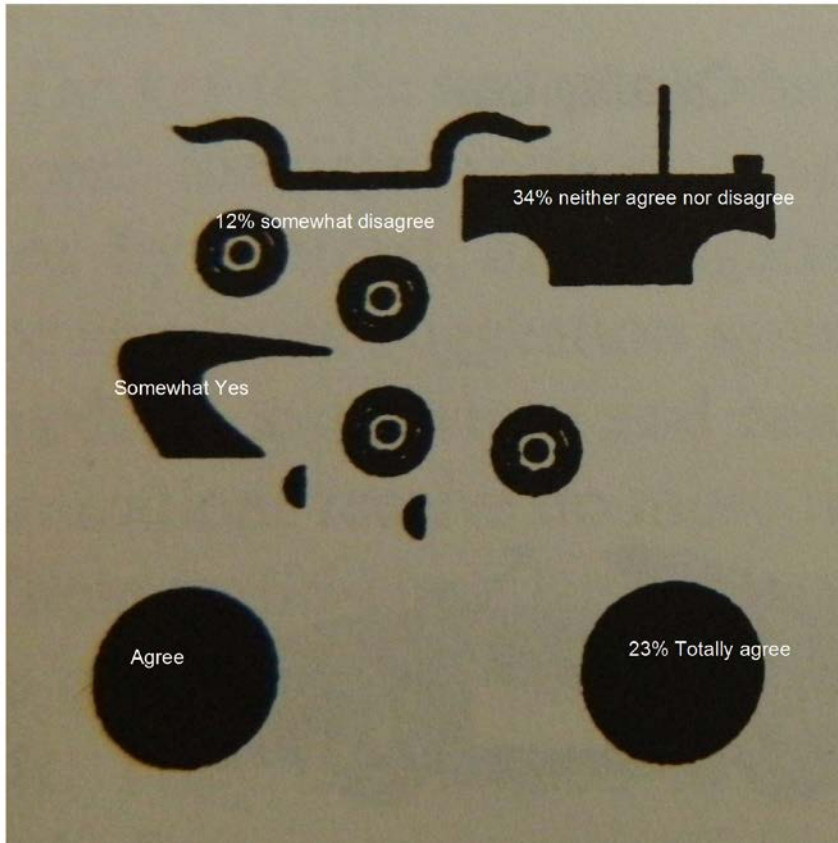
# Factor Interpretation

Q sorter	Factor 1	Factor 2	Factor 3	Factor 4
GS1	0.3966	<b>(0.7265)</b>	0.1209	0.2696
GS2	<b>(0.7633)</b>	-0.0047	0.2785	-0.0663
GS3	0.2036	-0.2691	-0.0215	<b>(0.5830)</b>
GS4	0.3914	0.0020	<b>(0.6987)</b>	0.1784
GS5	<b>(0.6494)</b>	-0.1667	0.1275	0.0523
GS6	<b>(0.7113)</b>	0.0461	-0.1114	-0.2782
GS7	0.3997	0.0036	-0.0145	0.2506
GS8	<b>(0.6581)</b>	0.0045	0.3005	0.2032
GS9	0.0494	<b>(0.5580)</b>	0.1441	0.0539
GS10	0.0430	<b>(0.6480)</b>	0.1907	-0.1150

# Factor Interpretation

- **(Social) Innovation Embracers**
  - Research findings should be translated into practical applications that benefit people and the planet
- **Market Oriented Scientists**
  - Successful innovations in chemistry are driven by commercial or industrial agendas
- **Traditional (Mertonian) Scientists**
  - Reject the business and market-oriented aspects of innovation, preferring to preserve the purity and mission of basic science.
- **Apprehensive Scientists**
  - Fell innovation in academic settings is difficult because reward and recognition systems tend to value research more than innovation

# Conclusion



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# ThanQ

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