



# 7

## Converting Tacit Knowledge to Explicit

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# Chapter Objectives

- ❖ Introduce the student to capturing tacit knowledge from human sources and convert it into explicit knowledge.
- ❖ Introduce the student to the various stages of the traditional one-on-one interview and how they can be managed for effectiveness.
- ❖ Other elicitation techniques such as observation, role-reversal, etc.
- ❖ The variations of the one-on-one interview when more than one person participates.

# Objectives

- ❖ Introduce the basic approach to face-to-face knowledge elicitation from an expert: the one-on-one interview.
- ❖ Introduce the Output-Input-Middle method for organizing captured knowledge
- ❖ Introduce alternate knowledge elicitation techniques
- ❖ Introduce variations to the one-on-one interview when more than two participants are present.

## Objectives ...

- ❖ Introduce the concept of repertory grids as a tool to facilitate the elicitation of knowledge from a human expert
- ❖ Provide a detailed example of how an automated knowledge elicitation system that uses repertory grids would operate

## Objectives ...

- ❖ Introduces techniques to automate the knowledge acquisition process when the human knowledge is resident in databases
- ❖ Provides a detailed example of this approach

# Figure 1

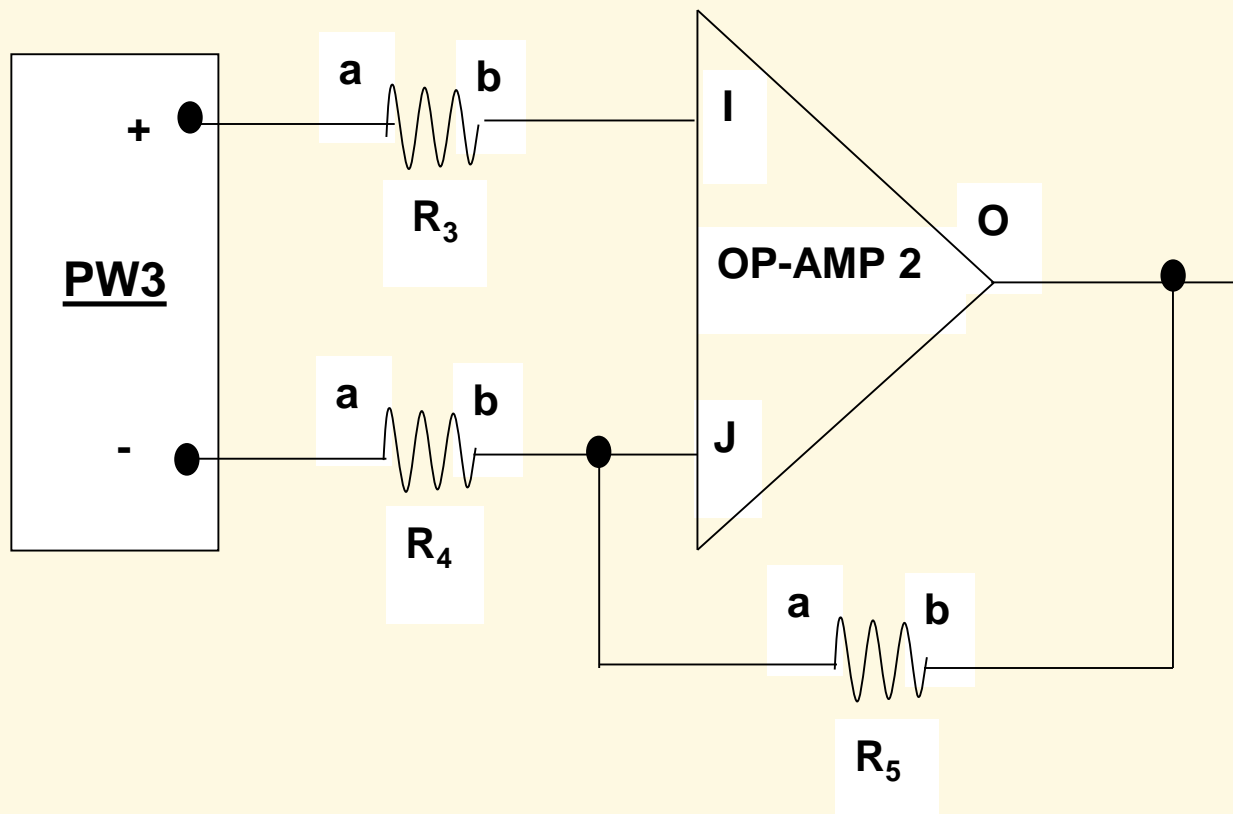
**Knowledge Elicitation**



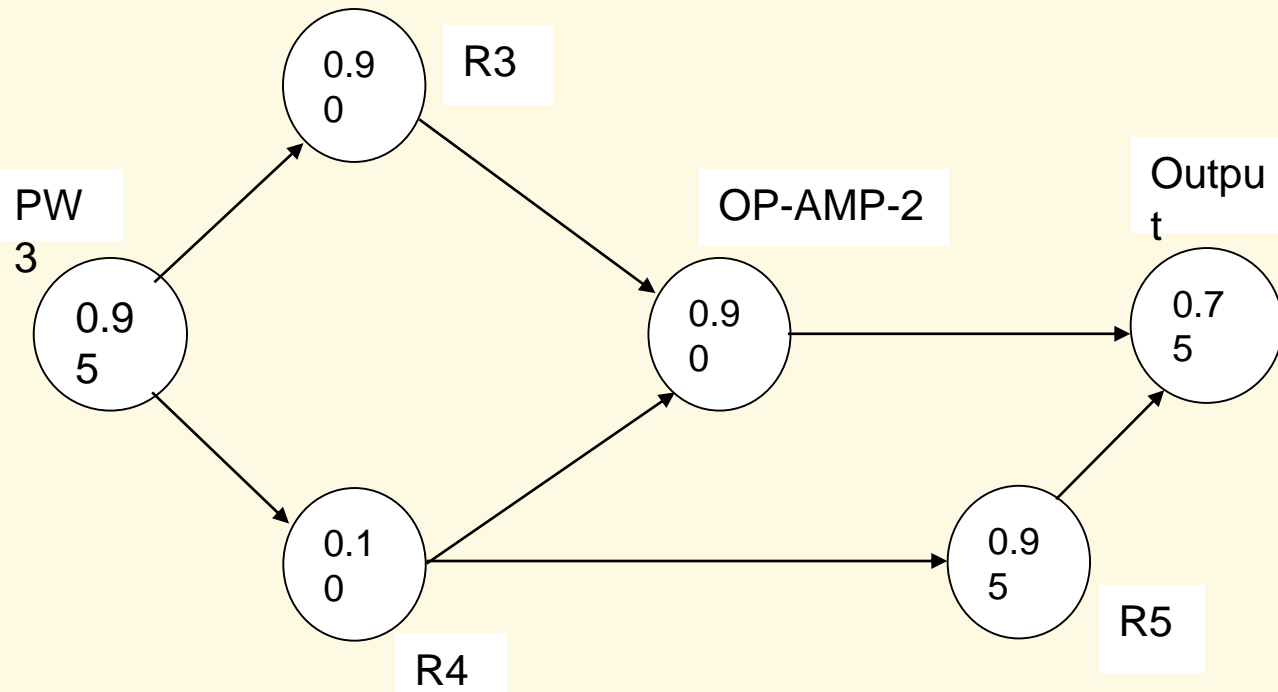
**Knowledge Capture =  
Knowledge Elicitation +  
Knowledge Representation**



# Figure 2



# Figure 3



# Table 1

Table 10.1 Repertory Grid

**ELEMENTS 10, CONSTRUCTS 14, RANGE 1-5**

**PURPOSE: Staff appraisal**

Staff member No.	1	2	3	4	5	6	7	8	9	10	
1 Intelligent	1	1	4	5	3	3	5	2	3	5	Dim
2 Willing	1	2	4	5	1	1	4	3	1	2	Unwilling
3 New boy	1	2	3	5	4	4	4	1	4	3	Old sweats
4 Little supervision	3	1	4	5	2	1	5	2	2	3	Needs supervis.
5 Motivated	1	1	4	5	2	2	5	3	3	2	Unmotivated
6 Reliable	3	2	2	5	1	1	5	1	2	3	Unreliable
7 Mild	3	4	5	2	2	3	1	5	4	5	Abrasive
8 Idea person	1	1	5	4	2	3	1	3	4	4	Staid
9 Self-starter	2	1	5	5	1	3	5	3	4	5	Needs a push
10 Creative	1	1	5	5	2	3	4	3	4	5	Uncreative
11 Helpful	4	3	4	2	3	5	1	4	5	5	Unhelpful
12 Professional	1	2	3	3	2	1	5	2	4	4	Unprofessional
13 overall rating high	2	1	3	4	1	2	5	2	3	4	overall rating lo
14 Messer	2	2	5	4	3	5	1	5	3	1	Tidy
Staff member No.	1	2	3	4	5	6	7	8	9	10	

# Table 2

**Table 10.2 Automobile Selection Grid**

<b>Car</b>	<b>High-Perform?</b>	<b>Cost</b>	<b>Size</b>	<b>Functional ?</b>	<b>Type</b>	<b>Fuel-efficient?</b>	<b>Speed</b>
P-911	yes	High	small	no	coupe	no	fast
Van	no	Medium	Large	yes	van	yes	slow
Caddy	no	High	Large	yes	sedan	no	medium
Focus	no	Low	small	yes	sedan	yes	slow
Miata	yes	High	small	no	coupe	yes	fast
M-B	yes	High	large	yes	sedan	no	fast
BMW	yes	High	medium	yes	sedan	no	fast
Jeep	no	Medium	small	no	suv	no	slow
S-10	no	Low	medium	yes	truck	yes	slow

# Table 3

<b>Component Name</b>	<b>Description</b>	<b>Units</b>
PW3	Power Supply	VDC
OP-AMP2	Operational Amplifier	Volts
R3	Resistor	Ohms
R4	Resistor	Ohms
R5	Resistor	Ohms

# Table 4

<b>Comp. Name</b>	<b>Connect pt.</b>	<b>Comp. Name</b>	<b>Connect pt.</b>
PW3	+	R3	A
PW3	-	R4	A
R3	b	OP-AMP2	I
R4	b	OP-AMP2	J
R4	b	R5	A
OP-AMP2	O	R5	B

# Table 5

<b>Net#</b>	<b>Component name</b>	<b>Connect point</b>
026	PW3	+
026	R3	A
027	R3	B
027	OP-AMP2	I
028	OP-AMP2	O
028	R5	B
029	R5	A
029	OP-AMP2	J
029	R4	B
030	R4	A
030	PW3	-

# Conclusions

- ❖ The student should be familiar with:
  - How to conduct a one-on-one interview with an expert to elicit her knowledge.
  - Alternative techniques for knowledge elicitation and when it is appropriate to use them.
  - Tools that can facilitate the knowledge elicitation process from an expert.
  - Techniques to automate the knowledge capture process from electronic databases.

