

SCSD2613

System Analysis and Design



PART III

Information Gathering #2: Unobstrusive Method

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■ OBJECTIVES

- Recognize the value of **unobtrusive** methods for information gathering.
- Understand the concept of **sampling** for human information requirements analysis.
- **Construct** useful samples of people, documents, and events for determining human information requirements.
- Create an analyst's playscript to **observe** decision-maker activities.
- Apply the **STROBE** technique to observe and interpret the decision-maker's environment.

■ WHAT IS UNOBSTRUSIVE METHOD?

- Less disruptive
- Insufficient when used alone
- Multiple methods approach
- Used in conjunction with interactive methods

Fact-finding – the process of collecting information about system problems, opportunities, solution requirements, and priorities



Requirements discovery – the process, used by systems analysts of identifying or extracting system problems and solution requirements from the user community

■ UNOBSTRUSIVE METHOD

SAMPLING

- Types of Sampling

INVESTIGATION

- Quantitative
- Qualitative

OBSERVATION

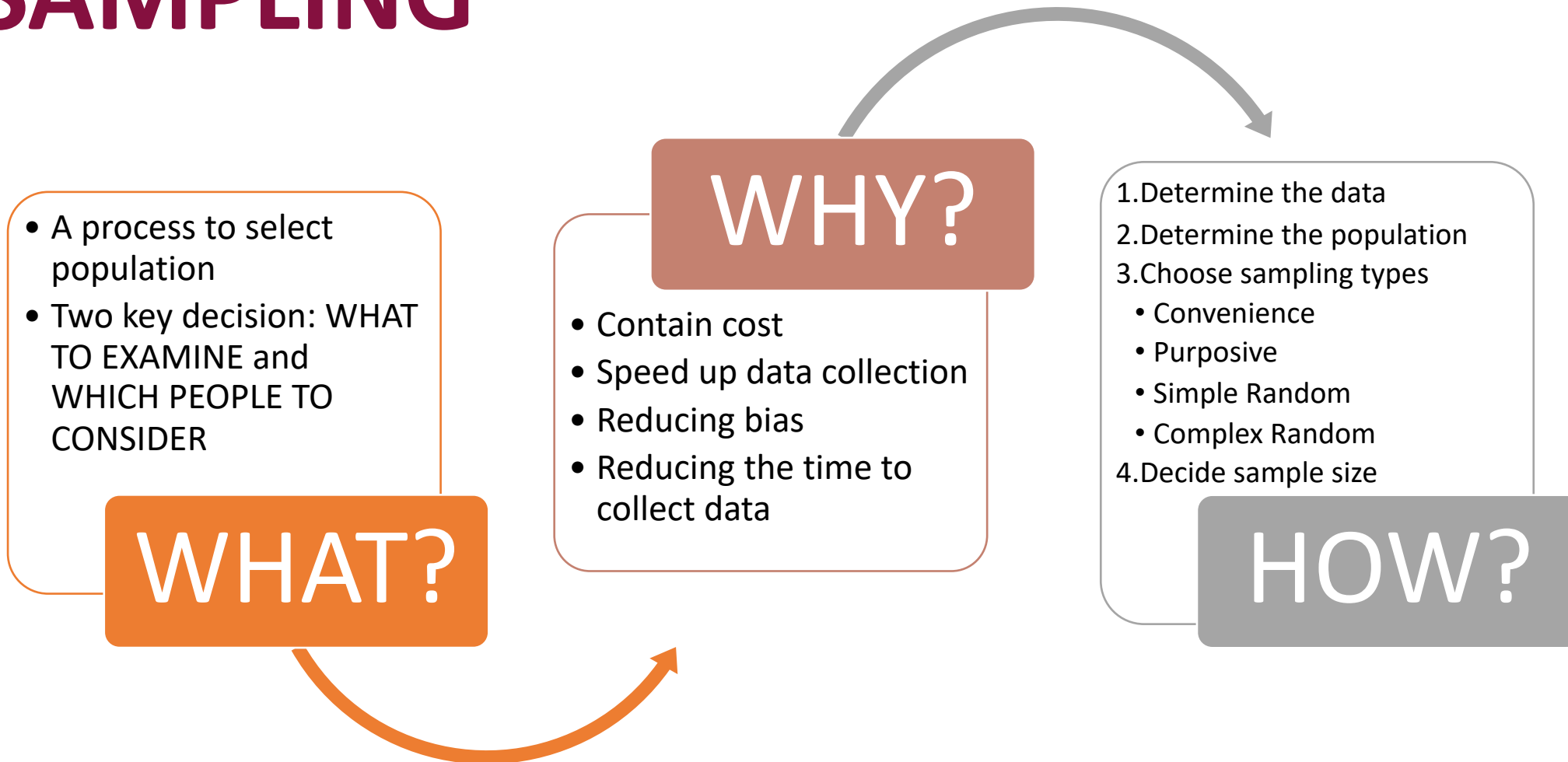
- STROBE

■ UNOBSERVATIVE METHOD

SAMPLING

- Types of Sampling

■ SAMPLING



■ SAMPLING – sample size decision

1. Determine type of errors (percentage), p
2. Determine acceptable interval estimate, i
3. Choose confidence level and look up the confidence coefficient (z value) in table
4. Calculate σ^2 the standard error of the proportion

$$\sigma_p = \frac{i}{z}$$

5. Determine sample size

$$n = \frac{p(1-p)}{\sigma_p^2} + 1$$

■ SAMPLING – sample size decision

EXAMPLE:

Suppose the Toys company, a large manufacturer company for producing toys ask you to determine an estimate size of toys that may have been **broken** during packaging process.

Assume that, the estimation of broken (error) toys is **5%** with interval estimate will be **0.02** and confidence level is **95%**.

■ SAMPLING – sample size decision

1. Determine type of errors (percentage), p – 5% or 0.05
2. Determine acceptable interval estimate, i – 0.02
3. Choose confidence level and look up the confidence coefficient (z value) in table – 95%
4. Or 0.95 and $z = 1.96$ (lookup table)
5. Calculate σ_p the standard error of the proportion

$$\sigma_p = \frac{0.02}{1.96} = 0.0102$$

6. Determine sample size

$$n = \frac{p(1-p)}{\sigma_p^2} + 1 = \frac{0.05(1-0.05)}{(0.0102)(0.0102)} + 1 = 458$$

■ SAMPLING TYPES

Four Main Types of Samples the Analyst Has Available

	Not Based on Probability	Based on Probability
Sample elements are selected directly without restrictions	Convenience	Simple random
Sample elements are selected according to specific criteria	Purposive	Complex random (systematic, stratified, and cluster)

The systems analyst should use a complex random sample if possible.

■ SAMPLING TYPES

CONVENIENCE

- Convenience samples are unrestricted, nonprobability samples.
- This sample is easy to arrange
- The most unreliable

SIMPLE RANDOM

- Need to obtain a numbered list of population to ensure that each document or people in the population has equal chance of being selected.
- However this is not practical for sampling document or reports.

SAMPLE TYPES

PURPOSIVE

- A purposive sample is based on judgment
- Choose a group of individuals who appear knowledgeable and are interested in the new information system
- A nonprobability sample
- Only moderately reliable

COMPLEX RANDOM

The complex random samples that are most appropriate for a systems analyst are:

Systematic sampling
Stratified sampling
Cluster sampling

■ UNOBSTRUSIVE METHOD

INVESTIGATION

- Quantitative
- Qualitative

■ INVESTIGATION

- The act of discovery and analysis of data
- As IS analysts works to understand users, organizations and information requirements, it will become important to examine different type of hard data
- Hard data
 - Quantitative
 - Qualitative

■ QUANTITATIVE DOCUMENTS

- Analyzing quantitative documents (example):
 1. Reports used for decision making
 2. Performance reports
 3. Records
 4. Data capture forms
 5. Ecommerce and other transactions

■ QUANTITATIVE DOCUMENTS

Week	Number of Batches Produced	Number of Batches Rejected	Percentage Rejected	Amount Away from 5% Goal
2/2	245	19	7.8	2.8
2/9	229	19	8.3	3.3
2/16	219	14	6.3	1.3
2/23	252	13	5.2	0.2
3/2	245	13	5.3	0.3
3/9	260	13	5.0	***
3/16	275	14	5.1	0.1
3/23	260	13	5.0	***
3/30	260	13	5.0	***
4/6	244	12	4.9	***
4/13	242	11	4.5	***
4/20	249	11	4.4	***
4/27	249	11	4.4	***

*** indicates met or exceeded the <5% goal

... and trends.

Performance reports show goals ...

A Performance Report Showing Improvement

PROJ. NAME OAK, FC # 562 KEY SIGNATURE _____

RENT POTENTIAL	11750	81299	DEPOSIT POTENTIAL	311750	81299	31700	PRORATE	15.00
Base Rent	885		Security				Days	121.00
Furniture	55		Cleaning				Daily Rate	1.21
A/C			H/S dep	200	115		Totals	130.00
Util.			H/S rent				Deposits	31.60
HMSR								340
TV								
Maid								
Total Rent	910							

PAYMENT RECORD: Tot. 311750 + 81299 + Rent = 910

Memo Only	Date Due	Date Paid	Receipt Number	Paid to Noon	Total Rent	Security	Cleaning	31700 Bx	311750	81299	Other	Amount Paid	Balance Due
TV 10/3 MOI	9/28	9/28	106642	9/30	1066.42	202	115	44.20	25		444.50	15	1430.50
CHVSR-16	10/1	10/3	107503	10/31	910								0
BILL MO	11/1	11/8	10935	11/8	1093.50								0
Prorated	11/24	11/24	11200	11/23	212.00								0

Orig. Move-in Date 8-28 BLDG. # same Exp. same NAME Kendall X# 1 1st.

Observe the number and type of transactions.

Watch for places the computer can simplify the work.

Check for errors.

Look for opportunities for improvement in design.

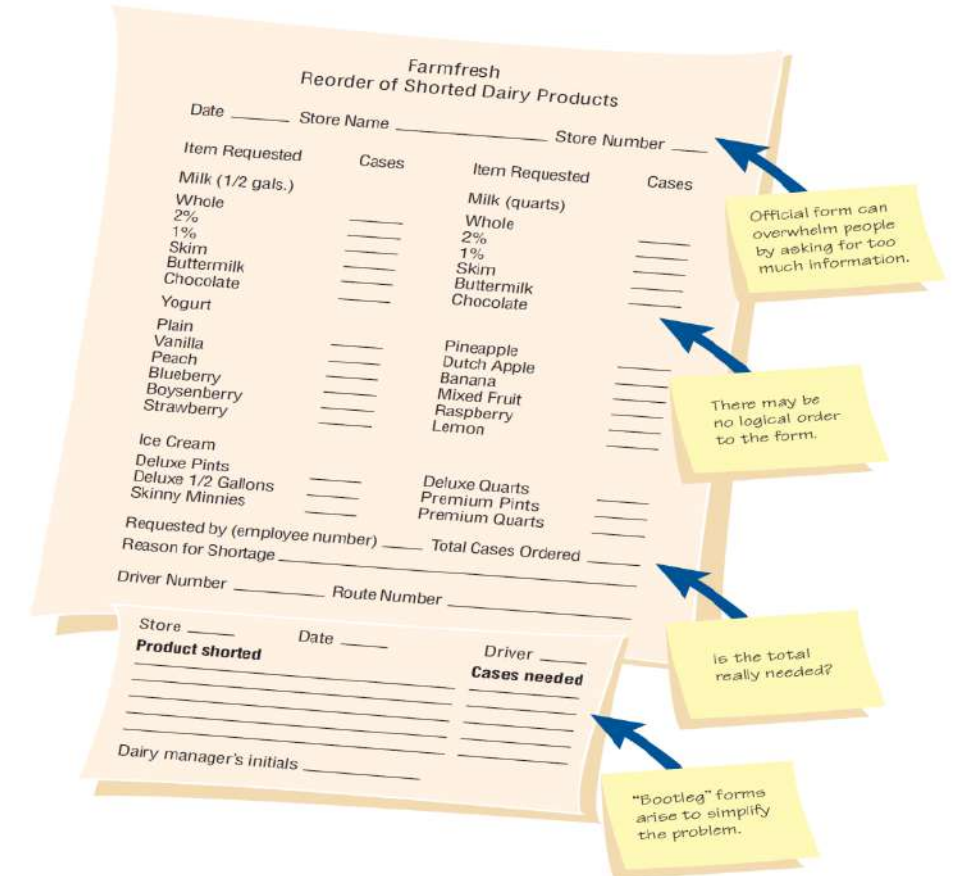
A Manually Completed Payment Record

■ QUANTITATIVE DOCUMENTS - Record

- Records provide periodic updates of what is occurring in the business
- There are several ways to inspect a record:
 - Checking for errors in amounts and totals
 - Looking for opportunities for improving the recording form design
 - Observing the number and type of transactions
 - Watching for instances in which the computer can simplify the work (calculations and other data manipulation)

■ QUANTITATIVE DOCUMENTS – Data Capture Form

- Collect examples of all the forms in use
- Note the type of form
- Document the intended distribution pattern
- Compare the intended distribution pattern with who actually receives the form



Farmfresh Reorder of Shorted Dairy Products

Date _____ Store Name _____ Store Number _____

Item Requested	Cases	Item Requested	Cases
Milk (1/2 gals.)	_____	Milk (quarts)	_____
Whole	_____	Whole	_____
2%	_____	2%	_____
1%	_____	1%	_____
Skim	_____	Skim	_____
Buttermilk	_____	Buttermilk	_____
Chocolate	_____	Chocolate	_____
Yogurt	_____		_____
Plain	_____	Pineapple	_____
Vanilla	_____	Dutch Apple	_____
Peach	_____	Banana	_____
Blueberry	_____	Mixed Fruit	_____
Boysenberry	_____	Raspberry	_____
Strawberry	_____	Lemon	_____
Ice Cream	_____		_____
Deluxe Pints	_____	Deluxe Quarts	_____
Deluxe 1/2 Gallons	_____	Premium Pints	_____
Skinny Minnies	_____	Premium Quarts	_____

Requested by (employee number) _____ Total Cases Ordered _____

Reason for Shortage _____

Driver Number _____ Route Number _____

Store _____ Date _____ Driver _____

Product shorted _____ **Cases needed** _____

Dairy manager's initials _____

Official form can overwhelm people by asking for too much information.

There may be no logical order to the form.

Is the total really needed?

"Bootleg" forms arise to simplify the problem.

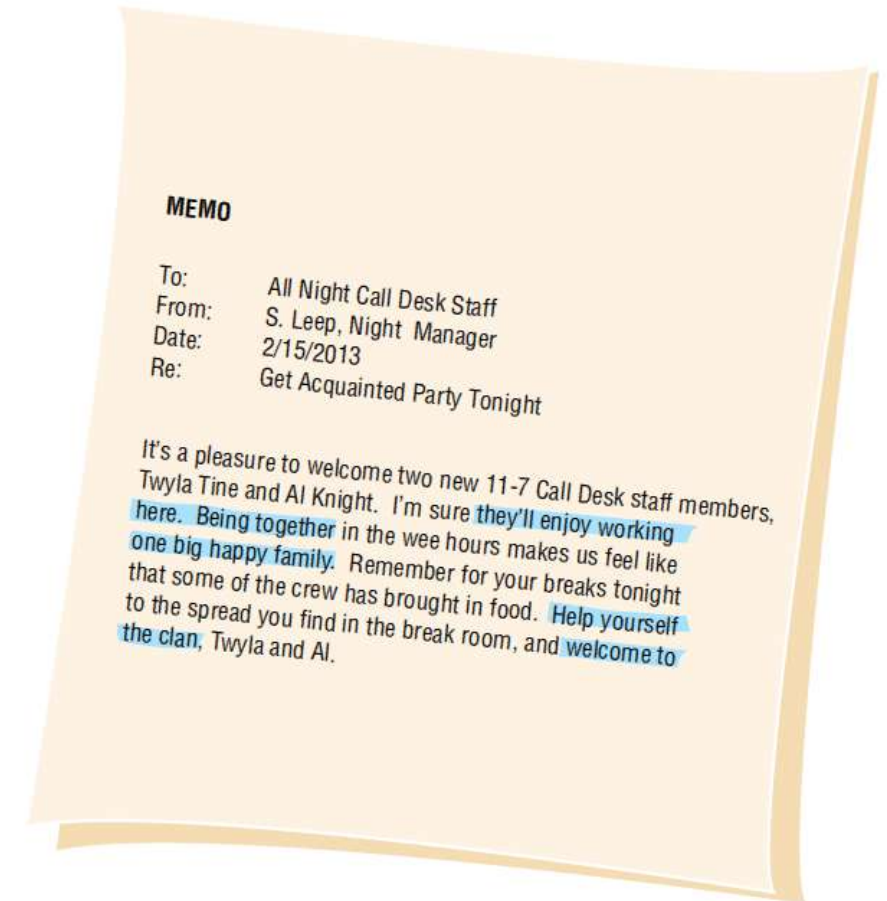
Questions to Ask about Official and Bootleg Forms that Are Already Filled out

■ QUANTITATIVE DOCUMENTS – Questions to ask?

- Is the form filled out in its entirety?
- Are there forms that are never used?
- Are all copies of forms circulated to the proper people or filed appropriately?
- Can people who must access online forms do so?
- If there is a paper form that is offered as an alternative to a Web-based form, compare the completion rates for both
- Are “unofficial” forms being used on a regular basis?

■ QUALITATIVE DOCUMENTS

- Key or guiding metaphors
- Insiders vs. outsiders mentality
- What is considered good vs. evil
- Graphics, logos, and icons in common areas or web pages
- A sense of humor
- Example:
 - Email messages and memos
 - Signs or posters on bulletin boards
 - Corporate websites
 - Manuals
 - Policy handbooks



Analysis of Memos Provides Insight into the Metaphors that Guide the Organization's Thinking

■ UNOBSTRUSIVE METHOD

OBSERVATION

- STROBE

■ OBSERVATION

- Observation provides insight on what organizational members actually do
- See firsthand the relationships that exist between decision makers and other organizational members
- Can also reveal important clues regarding HCI concerns

■ OBSERVATION – Analyst's Playscript

- Involves observing the decision-makers behavior and recording their actions using a series of action verbs
- Examples:
 - Talking
 - Sampling
 - Corresponding
 - Deciding

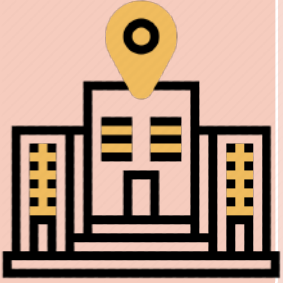
Playscript Analysis	Company: Solid Steel Shelving Analyst: L. Bracket	Scenario: Quality Assurance Date: 1/3/2013
<u>Decision Maker (Actor)</u>	<u>Information-Related Activity (Script)</u>	
Quality Assurance Manager	Asks shop floor supervisor for the day's production report	
Shop Floor Supervisor	Prints out daily computerized production report	
Quality Assurance Manager	Discusses recurring problems in production runs with quality assurance (QA) manager	
	Reads production report	
	Compares current report with other reports from the same week	
	Inputs data from daily production run into QA model on computer	
Shop Floor Supervisor	Observes onscreen results of QA model	
	Calls steel suppliers to discuss deviations from quality standards	
	Attends meeting on new quality specifications with quality assurance manager and vice president of production	
Quality Assurance Manager	Drafts letter to inform suppliers on new quality specifications agreed on in meeting	
Vice President of Production	Sends draft to vice president via email	
	Reads drafted letter	
Quality Assurance Manager	Returns corrections and comments via email	
	Reads corrected letter on email	
	Rewrites letter to reflect changes	

Sample of Analyst's Playscript

■ OBSERVATION – STROBE

- **STR**uctured **OB**servation of the **E**nvironment—a technique for observing the decision-maker's physical environment
- Often it is possible to observe the particulars of the surroundings that will confirm or negate the organizational narrative
 - Also called stories or dialogue
 - Information that is found through interviews or questionnaires

STROBE ELEMENTS – what to observe?



OFFICE LOCATION

- Who has the corner office?
- Are the key decision makers dispersed over separate floors?



DESK PLACEMENT

- Does the placement of the desk encourage communication?
- Does the placement demonstrate power?



STATIONARY EQUIPMENT

- Does the decision maker prefer to gather and store information personally?
- Is the storage area large or small?



PROPS

- Is there evidence that the decision maker uses a PC, smart phone, or tablet computer in the office?



EXTERNAL INFORMATION SOURCES

- Does the decision maker get much information from external sources such as trade journals or the Web?



OFFICE LIGHTING AND COLOR

- Is the lighting set up to do detailed work or more appropriate for casual communication?
- Are the colors warm and inviting?



CLOTHING WORN BY DECISION MAKERS

- Does the decision maker show authority by wearing conservative suits?
- Are employees required to wear uniforms?

■ STROBE & DECISION-MAKER CHARACTERISTICS

Characteristics of Decision Makers	Corresponding Elements in the Physical Environment
Gathers information informally	Warm, incandescent lighting and colors
Seeks extraorganizational information	Trade journals present in office
Processes data personally	PCs, or tablet computers present in office
Stores information personally	Equipment/files present in office
Exercises power in decision making	Desk placed for power
Exhibits credibility in decision making	Wears authoritative clothing
Shares information with others	Office easily accessible

■ APPLYING STROBE

- The five symbols used to evaluate how observation of the elements of STROBE compared with interview results are:
 - A checkmark means the narrative is confirmed
 - An “X” means the narrative is reversed
 - An oval or eye-shaped symbol serves as a cue to look further
 - A square means observation modifies the narrative
 - A circle means narrative is supplemented by observation

Anecdotal List with Symbols for Applying STROBE

Narrative Portrayed by Organization Members	Office Location and Equipment	Office Lighting, Color, and Graphics	Clothing of the Decision Maker
Information is readily flowing on all levels	✗	●	●
Adams says, "I figure out the percentages myself."	✗	●	●
Vinnie says, "I like to read up on these things."	✓	●	●
Ed says, "The right hand doesn't always know what the left hand is doing."	◑	●	●
Adams says, "Our company doesn't change much."	●	✓	●
The operations staff works all right, sometimes.	●	◑	●
Vinnie says, "We do things the way Mr. Adams wants to."	●	●	◑
Julie says, "Stanley doesn't seem to care sometimes."	●	●	✓
	●	●	●
	●	●	●
	●	●	●
	●	●	●

Key

✓ Confirm the narrative	◑ Cue to look further
✗ Negate or reverse the narrative	◑ Modify the narrative
	● Supplement the narrative

An Anecdotal List with Symbols



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Thank You

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