

Business process IS view comprising a multistage decision process and as a continuous individual information origination and processing situation in the presence of uncertainty – An Elaboration

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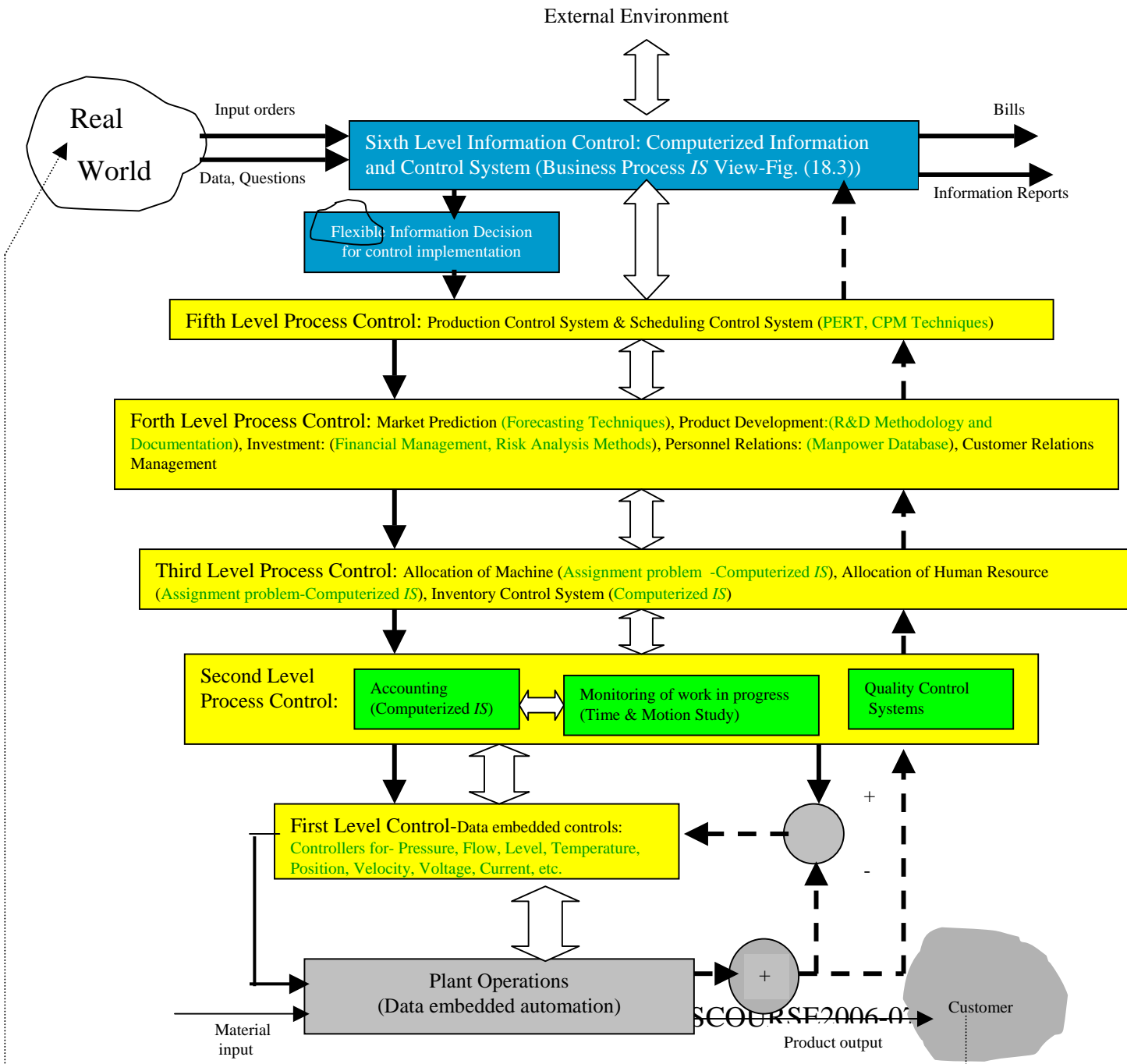
Information Integrity/Integrity Information System/Management Information System

Course Lecture # 22

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## LECTURE # 22

Business process IS view comprising a multistage decision process and as a continuous individual information origination and processing situation in the presence of uncertainty – An Elaboration



**Figure:** Modeling a business process, with a controls interpretation, as integral to a close loop information and control system

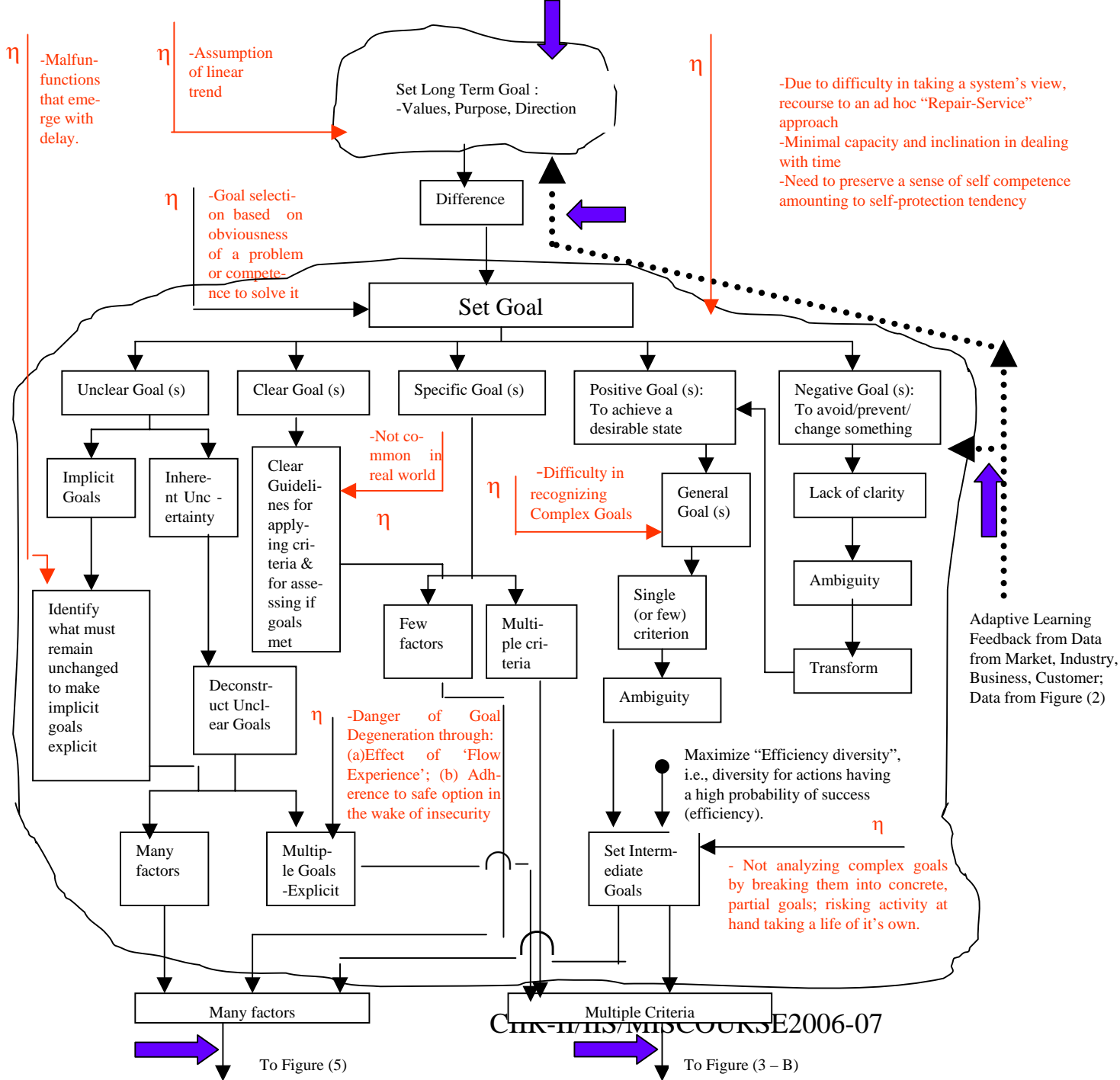
# Open system View of Business IS – A Multiple Stage Decision process: Towards Individual Information Originating & Processing Situation

- **Further**, the information and control system based model of a **business process is an open system spanning multiple stages**:
  - *defining* the **business goal set**;
  - *obtaining* **‘many factors’ & ‘multiple criteria’** characterizing the problem (task) complexity;
  - *recognizing* (deciding) on the problem (**operable goal setting**);
  - *defining* planning & design **constraints and opportunity spaces**;
  - characterizing problem complexity--*culling out useful (relevant) information variables*;
  - *recognizing relationships (interdependencies) between culled out information variables*;
  - *developing state transition models defining dynamic behavior of culled out state (information) variables*; and
  - undertaking **customized planning & design for generating solution alternatives for evaluation and selection of flexible information decision**.

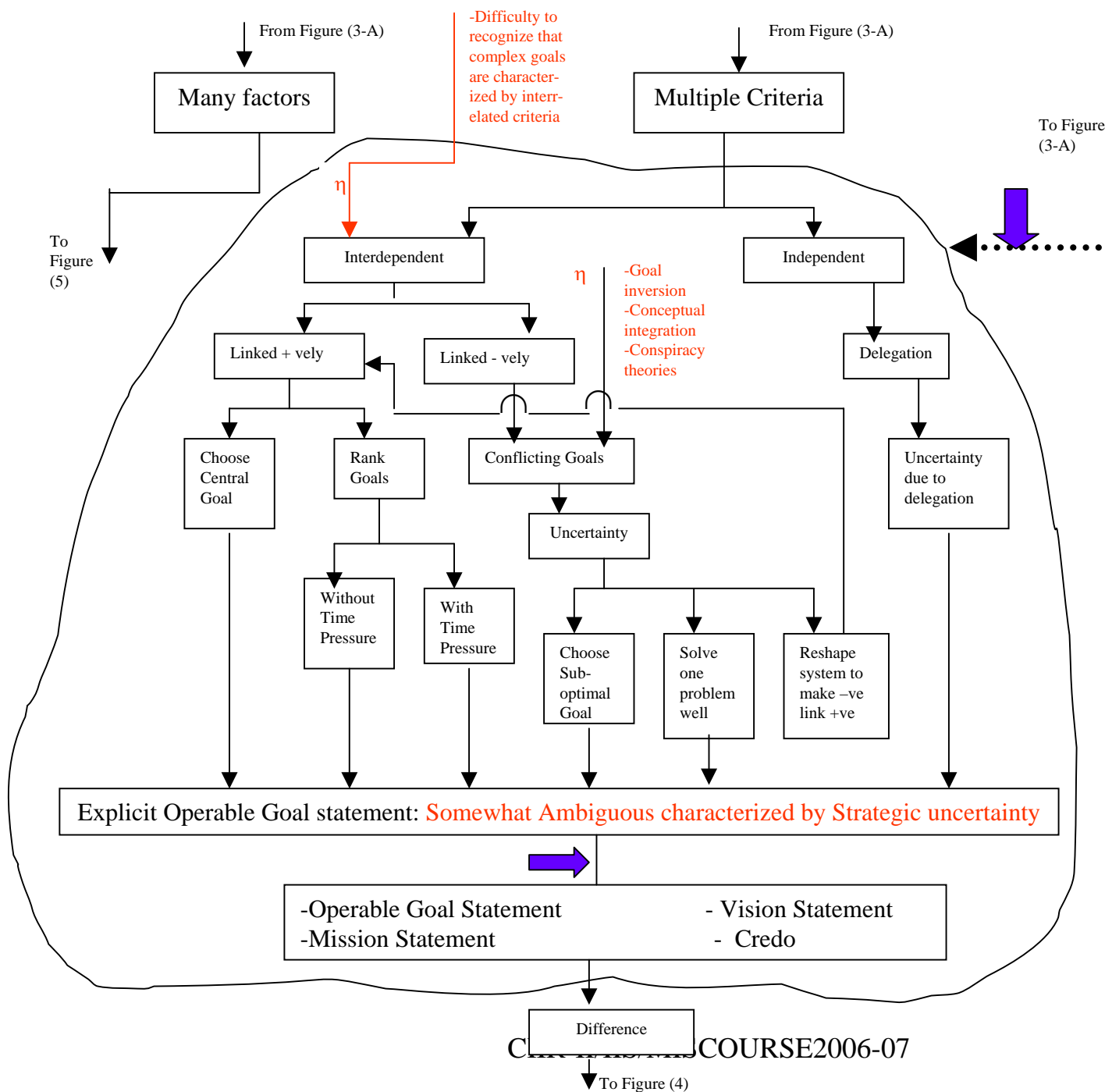
# **Open System View of Business IS – Towards a Continuous Individual Information Originating & Processing Situation characterized by uncertainty**

- \* As with traditional “collective” decision process model, the “individual information originating and processing situation” also has uncertainty due to input noise, process parametric noise, and measurement.
- In addition it has uncertainty due to “application” emphasis, failures of embedded systems, and system complexity.
- Further, at each of its decision stages, these information originating and processing activities are affected by uncertainties due to the system environmental factors of 5“C”s.
- All this results in errors in information processed from stage to stage, leading to loss of Information Integrity in *IS* and in information therefrom.

# **An Elaboration....**

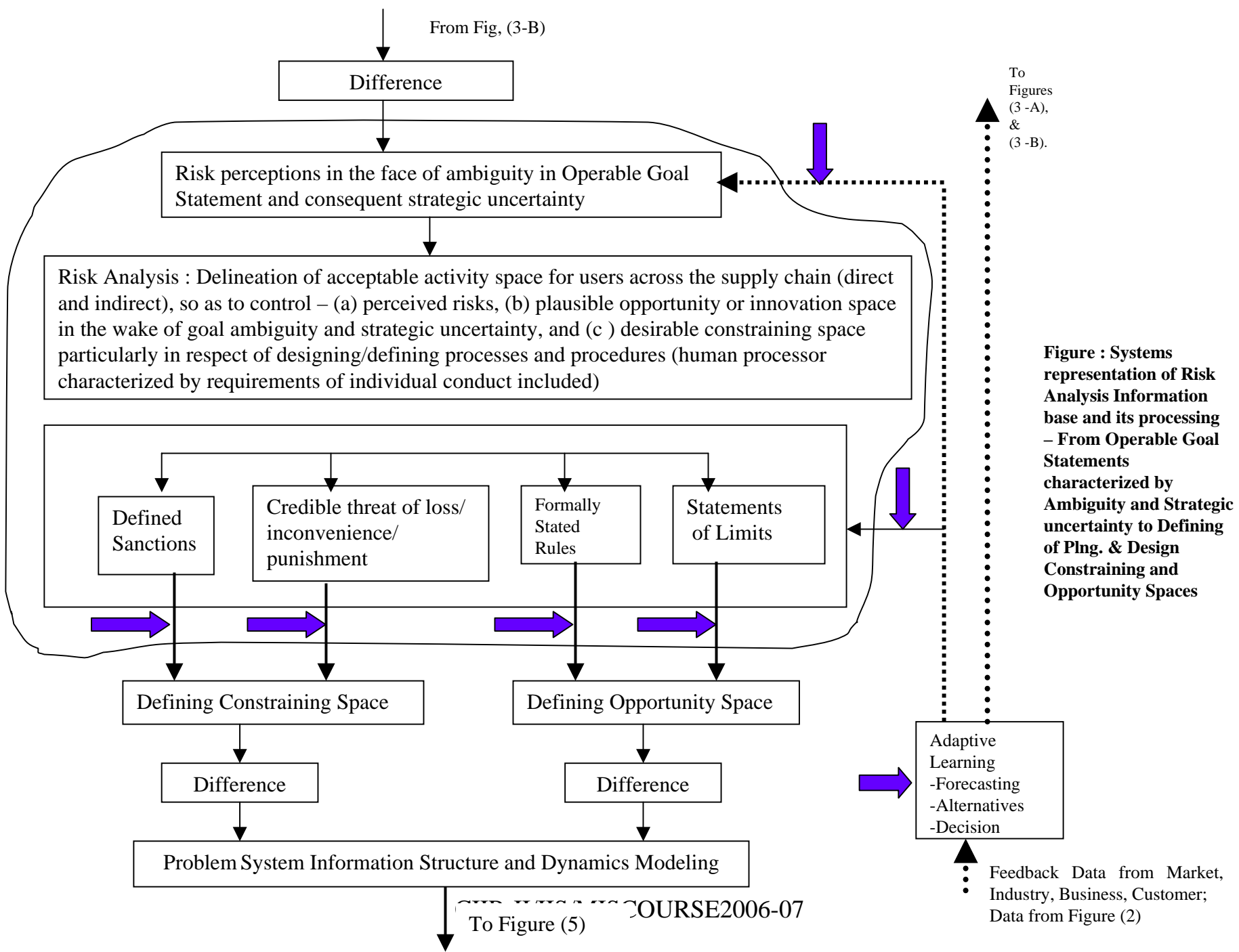


**Figure: Systems representation of Information base and its processing for Setting Operable Goal – From 'Set Goal' to obtaining 'Many Factors' & 'Multiple Criteria' characterizing Problem Complexity**



**Figure: Systems representation of Information base and its processing for Setting Operable Goal – From ‘Many Factors’ & ‘Multiple Criteria’ characterizing Problem Complexity to Operable Goal Statement**

Adaptive Learning Feedback  
Feedback Data from Market,  
Industry, Business, Customer;  
Data from Figure (2)



From Fig. (3-B)

Difference

Risk perceptions in the face of ambiguity in Operable Goal Statement and consequent strategic uncertainty

Risk Analysis : Delineation of acceptable activity space for users across the supply chain (direct and indirect), so as to control – (a) perceived risks, (b) plausible opportunity or innovation space in the wake of goal ambiguity and strategic uncertainty, and (c) desirable constraining space particularly in respect of designing/defining processes and procedures (human processor characterized by requirements of individual conduct included)

Defined Sanctions      Credible threat of loss/inconvenience/punishment      Formally Stated Rules      Statements of Limits

Defining Constraining Space

Defining Opportunity Space

Difference

Difference

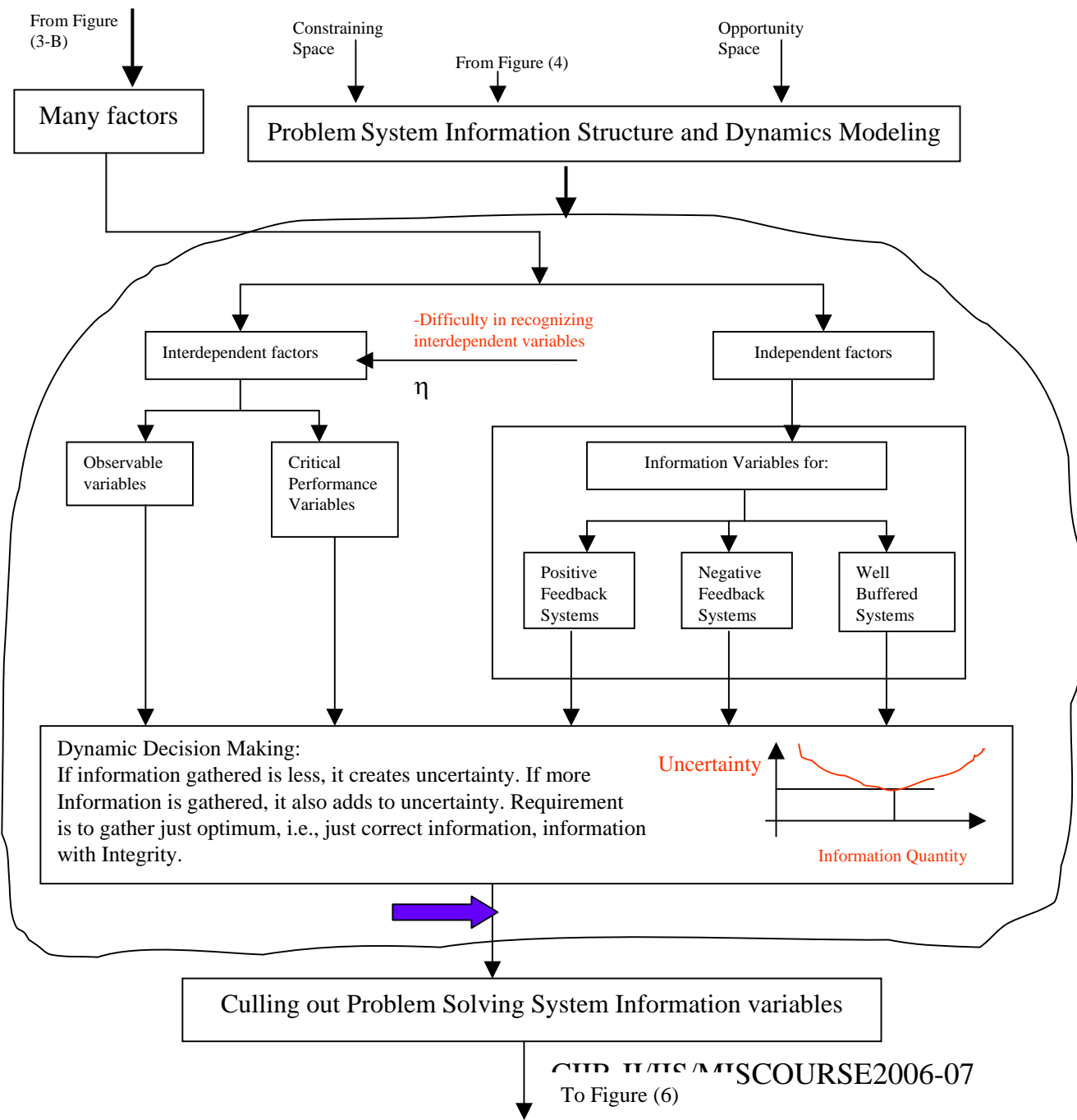
Problem System Information Structure and Dynamics Modeling

To Figures (3 -A), & (3 -B).

**Figure : Systems representation of Risk Analysis Information base and its processing – From Operable Goal Statements characterized by Ambiguity and Strategic uncertainty to Defining of Plng. & Design Constraining and Opportunity Spaces**

Adaptive Learning  
-Forecasting  
-Alternatives  
-Decision

Feedback Data from Market, Industry, Business, Customer; Data from Figure (2)



To Figures (3 -A), (3 -B), & (4)

↑

Feedback Data from Market, Industry, Business, Customer; Data from Figure (2)

**Figure: Systems representation of Information base for Problem Information Structure Modeling – From Many Factor Information Variables to Problem Solving System Information Variables**

From Figure (5)

Culled out Problem Solving System Information variables

- Insufficient assessment of reality model
- Disregard for systemic nature of situations
- Difficulty in thinking by analogy
- Difficulty in pursuing efforts to know more
- Difficulty recognizing interrelated variables
- Looking at problem as a sequence of problems to be solved one at a time
- Not accounting for side effects and repercussions of certain measures
- Not recognizing problems that come with delay
- Difficulty in having big picture
- Preoccupation with immediate goals leading to dealing with partial goals in isolation

- Information overload
- Economizing on cognitive energy leading to see a system as a bundle of unrelated individual systems and leading to neglect of side effects and repercussions
- Adoption of reductive hypothesis
- Effects of overgeneralization in the form of:
  - (a) Tendency to deconditionalize,
  - (b) Tendency for similarity (as against dissimilarity) matching,
  - (c) Inability to recognize that effectiveness of a measure almost always depends on the context within which measure is produced, and
  - (d) Tendency (in the face of insecurity) to act either with minimal information (saving on cognitive energy) or by gathering excessive information

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Processing for developing structure of Information model

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- Difficulty in thinking by analogy

Method 1:  
By analogy

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-How long should one observe?  
Observation over less time will give incorrect structural information. To continue to observe for long time will delay planning and action. How to decide on the optimum time needed for observation?

Method 2:  
By observing changes that variables undergo over time

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- Difficulty due to complexity
- All Information variables not observable
- Uncertainty

Method 3:  
By observing co-variance, between which there is time lag . This requires collection and integration of data/information over time.

Structure of Problem Information Model: Interdependencies of culled out information variables



To Figure (7)

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To Figures (3 -A), (3 -B), & (4)

**Figure: Systems representation of Information base for Problem Information Structure Modeling – From Problem Solving System information Variables to Problem Solving Information Structure Model**

Feedback Data from Market, Industry, Business, Customer; Data from Figure (2)

From Figure (6) ↓

### Problem Information Structure Model

- Difficulty in perceiving – recognizing, dealing, arranging in time.
- Tendency to treat successive steps in temporal development as individual steps.
- Reliance on only few mechanisms of prognostication to gain insight in to the future.
- Limited focus on the present.
- Fixation with the characteristics of the moment brings with danger that too much significance ascribed to present circumstances.
- Fixation on linear future development preventing from anticipating changes in direction and pace.

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- Difficulty in dealing with non-linear configurations like “exponential growth.”
- Tendency to interpret numbers solely on the basis of their size.
- Tendency to rely on “feelings” or “intuition”- even professionals demonstrate this trait.
- Reliance on magical hypothesis as a result of overgeneralization.
- Misjudging non-linear growth.
- Fallacy of “progressive conditionalizing” resulting in action completely devoid of reality.
- Fallacy of metahypotheses.
- Absence of learning mechanisms in the form of continuity and constant correctives in respect of information, making prediction difficult.

### Forecasting Methods: Processes for Developing Information Dynamics Model, i.e., the Model of Time Configurations of Problem Information Structure

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- Difficulty due to complexity
- Information dynamics difficult to develop
- Uncertainty

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- Limited focus on a notable feature of the present
- Extension of the perceived trend in a more or less linear and “monotone” fashion (that is, without allowing for any change in direction)

### Primary method – Forecasting based on present

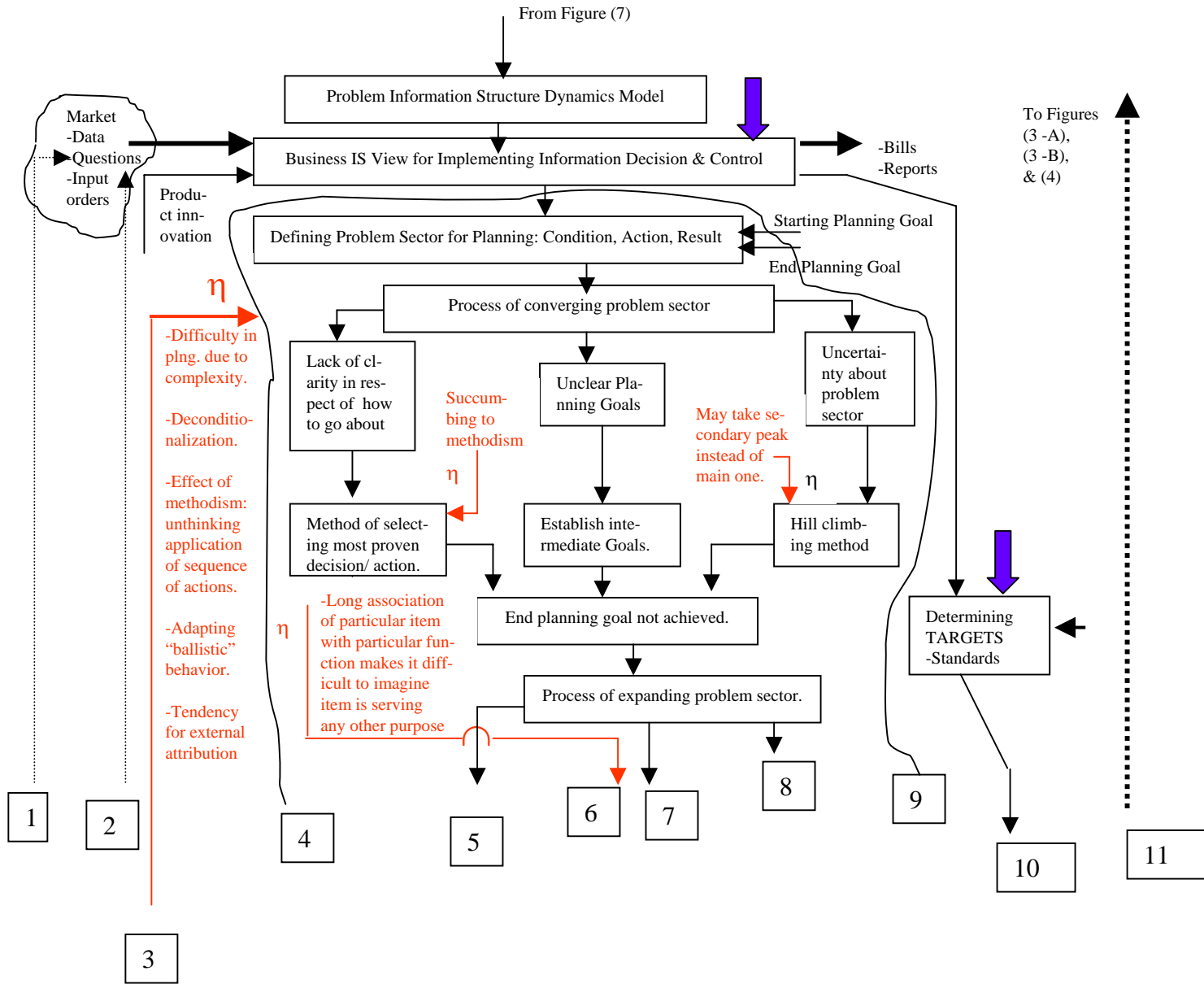
### Problem Information Structure Dynamics Model

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To Figure (8)

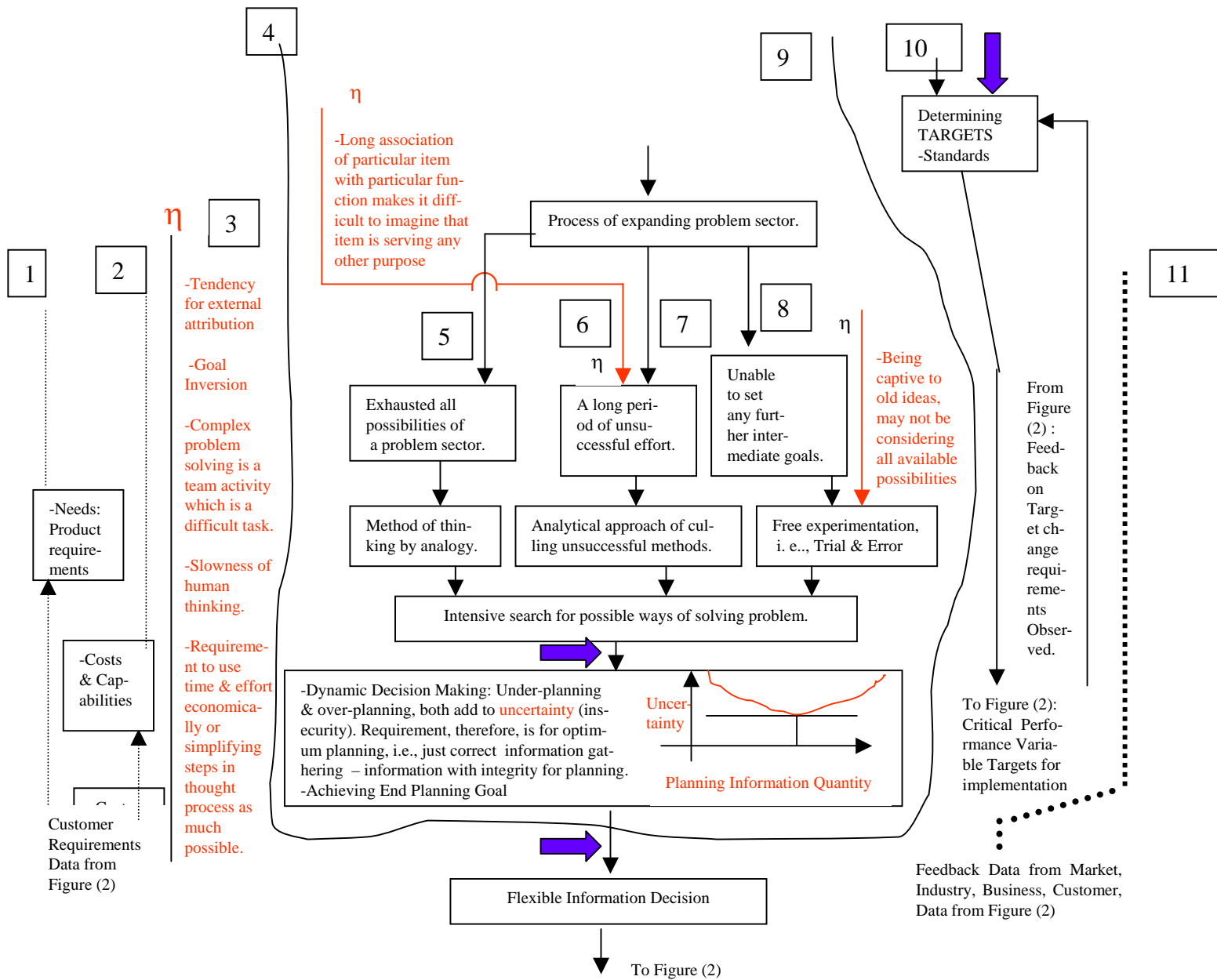
▲ To Figures  
(3 -A),  
(3 -B),  
& (4)

**Figure: Systems representation of Information base for Problem Information Structure Dynamics Modeling – From Problem Solving System Information Structure Model to Problem Solving Information Structure Dynamics Model**

Feedback Data from  
Market, Industry,  
Business, Customer;  
Data from Figure (2)



**Figure (a) :**  
**Systems representation of Information base for Flexible Information Decision – From Problem Information Structure Dynamics Model to Flexible Information Decision**



**Figure ( b ) :**  
**Systems representation of Information base for Flexible Information Decision – From Problem Information Structure Dynamics Model to Flexible Information Decision**

**THANK YOU**