A.J. RODENBURG

PROJECT MANAGEMENT UNCERTAINTY, WICKED PROBLEMS AND DECISION MAKING

PROJECT MANAGERS IN PRACTICE SOLVING WICKED PROBLEMS

TUDelft

28/08/18

Table of contents

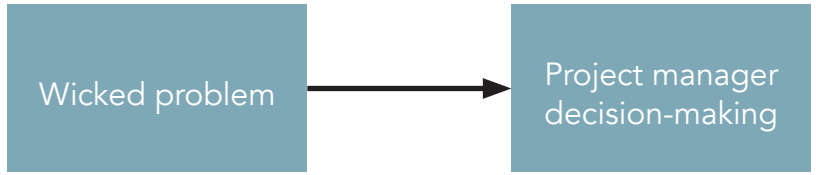
Statement

Background

1

Problem statement

''It is unknown which kind of decision-making process is used by project managers in practice to solve a wicked problem."



Goal of research

Investigate how project managers in practice solve wicked problems

Research sub-questions:

1. What is project management?
2. What is a wicked problem?
3. How can decision making be defined?
4. What are the perspectives on the problem formulation?
5. Which of the decision-making processes are used by project managers?
6. How can wicked problems be solved?

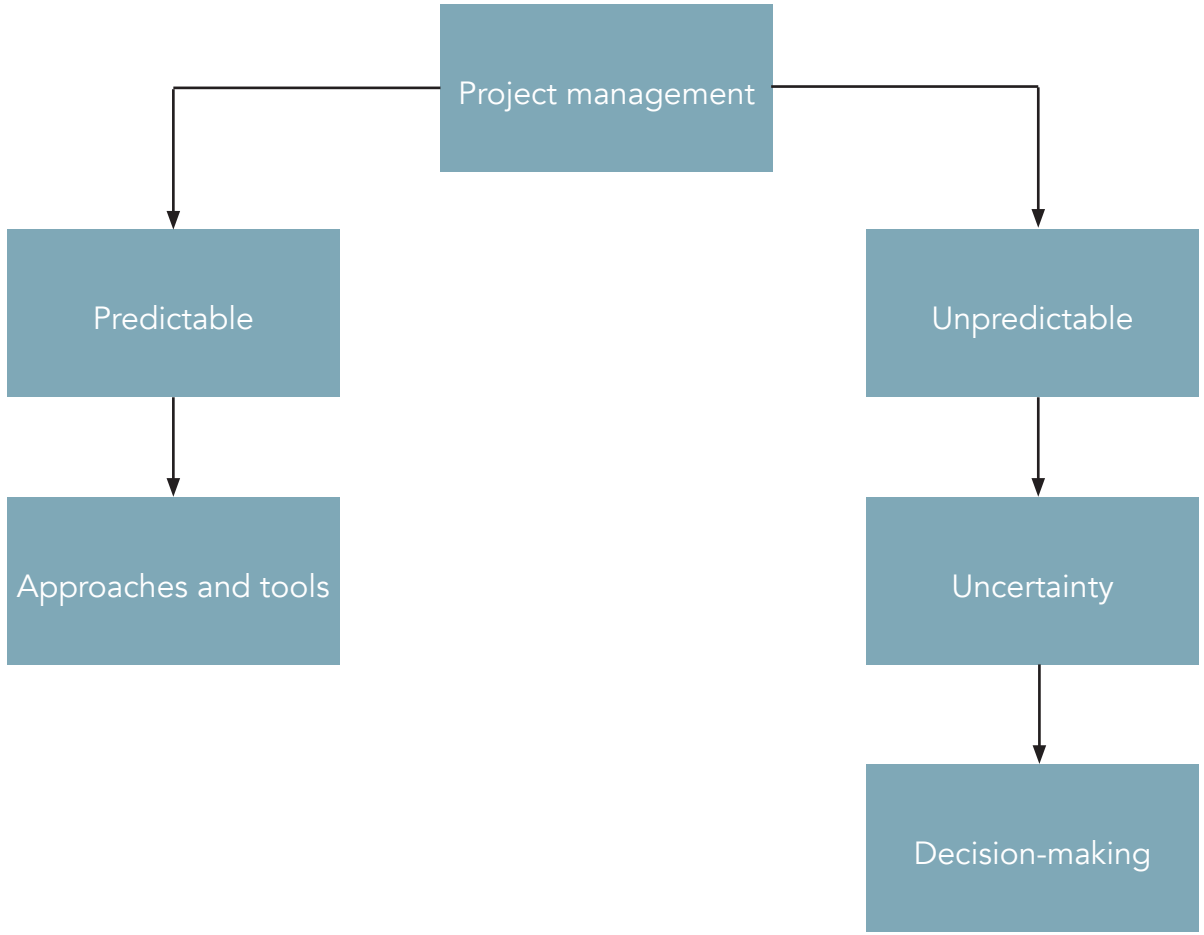
Research main-question:

''How do project managers solve wicked problems in construction projects?"

Theories

2

What is project management?



(Koppenjan, Veeneman, van der Voort, ten Heuvelhof, & Leijten, 2011).

What is a wicked problem?

Type of problems *(Hoppe, 1989)*

		Certainty on (scientific) knowledge	
		Large	Little
(Societal) agreement on problem formulation	Large	Technical problems	Untamed techincal problems
	Little	Political problems	Wicked problems

Definition wicked problem

1. There is a lack of information:
   a. There are multiple problem formulations which are contradictory;
   b. It is unclear if the solution directions of the problem are feasible on the aspects time, budget and quality.

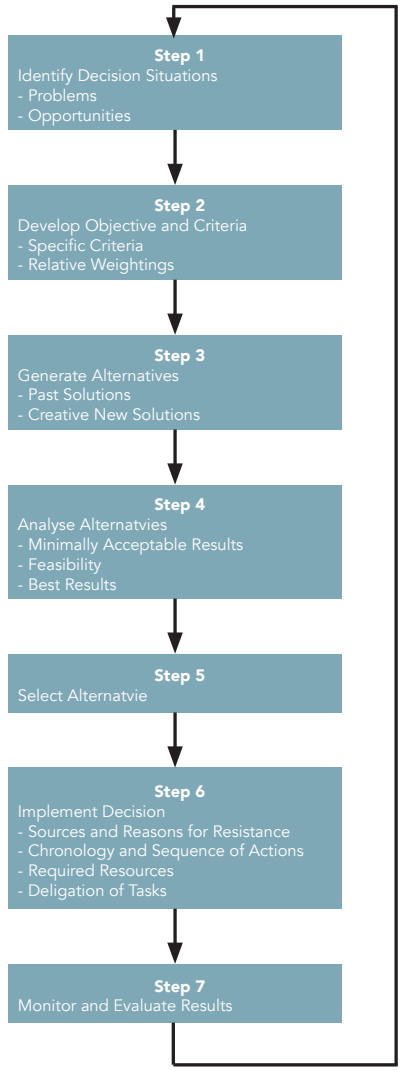
2. Stakeholders have contradictory incentives. With an important incentive of the client, namely: daily business influenced negatively.

Decision-making

Rational decision model
(Black & Porter, 2000)

Design thinking (Brown, 2009)

Fast and slow thinking
(Kahneman, 2011)



Fast and slow thinking

Fast thinking (system 1)

Slow thinking (system 2)

Interaction

Conflict

Methodology

Practices

3

Case 1 Stibbe

Office

Two projects

Descending contract

Coordination

Schedule issue

Case 2 Holland Casino Amsterdam West

Leisure

Holland Casino tenant

DYDL building owner

Arguing and claims

Installations issue

Case 3 SushiSamba

Retail

Employee training

Late notification

Schedule issue

Synthesis

4

Wicked problem

Three problem formulations

Contradictory

Influencing time

	Case 1	Case 2	Case 3
Problem according to project manager	The schedule is delayed due to parties not completing in time	A canopy has to be built and needs to be constructed as soon as possible	One of the contractors never reported their delay. No more steering possible to react on delay
Problem according to client	There is no problem	Due to internal and external factors, high time pressure arose	Because of parties not being transparent during the project, agreements were not fulfilled
Problem according to contractor	Due to organizational problems the project was uncontrollable	A canopy has to be built and needs to be constructed as soon as possible	Due to an unfeasible schedule and lack of information, there was no detailed engineering possible
Problem according to other	The schedule is delayed due to parties not completing in time	The design changes due to more installations on the roof (there is no problem)	Due to an unfeasible schedule and lack of information, there was no detailed engineering possible
Influenced factor by problem	Time	Design, resulting in time	Time
Same heaviness of problem	No	No	Yes
Same direction towards cause of problem	Yes	No	No
Same reason of problem	No	No	No
Timing of the problem	At the start of construc-tion	Halfway of construction	Two weeks before delive-ry of the project

Decision-making by project manager

Executing steps

Identifying the problem

Choosing the solution

	Case 1	Case 2	Case 3
Solving approach	Analysing	Analysing	Hands-on
First step	Identifying the problem	Identifying the problem	Identifying the problem
Seccond step	Develop directions and criteria	Generate possible solutions	Creating solutions
Third step	Generate possible solutions	Analysing effects of possible solutions	Choosing the solution
Fourth step	Analysing effects of possible solutions	Choosing the solution	
Fifth step	Choosing the solution	Develop criteria	
Taking decisions based on	Experience	Experience	Experience
Tools used to develop solutions	Drawing out alternatives	Overthinking arguments	Hands on

Solution of the wicked problem

Alternative solutions

Not all solutions are taken into account

	Case 1	Case 2	Case 3
Possible solutions	3	3	2
All solutions taken into account	Yes	No	No
Influenced factor by solution	Time	Design, resulting in time	Time
Client lowered his norm	Yes. Lower quality demand	Yes. Financial loss because of financing solution	Yes. Financial loss because of inactive employees
Contractor lowered his norm	Yes. Financially	No	Yes. Financially
Loss of business for client	No	Yes. 1,5 years delayed opening of casino	Yes. 4 weeks delayed training of employees
Project delivered on time	Yes	No	No
Financial claims	No	No	Yes

Conclusion

''How do project managers solve wicked problems in construction projects?"

Rational decision making

Lack of information

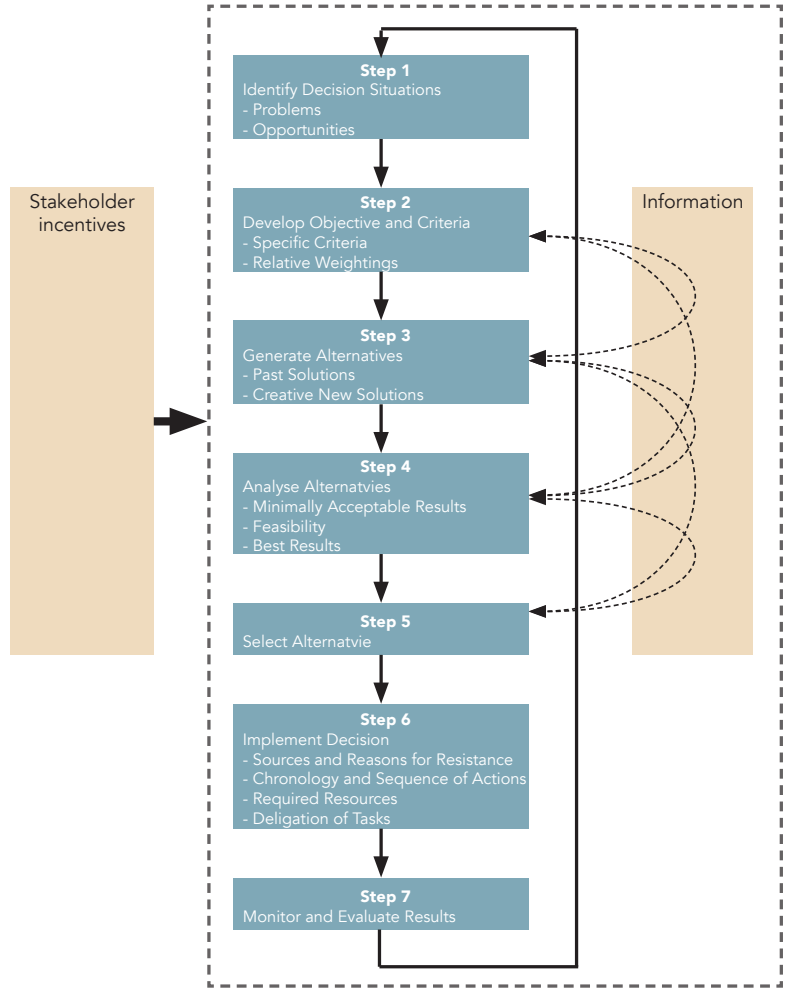
Influenced process

Design thinking

Fast and slow thinking

Process

Solution



Lowered norm

Problem and solution

Collaboration

References

Black, J. S., & Porter, L. W. (2000). *Management: Meeting new challenges.* New Jersey: Prentice-Hall.

Brown, T. (2009). *Change by Design: How design thinking transforms organisations and inspires innovation.* New York: Harper Collins.

Hoppe, R. (1989). *Het beleidsprobleem geproblematiseerd; over beleid ontwerpen en probleemvorming.* Muiderberg: Coutinho.

Kahneman, D. (2011). *Thinking, Fast and Slow.* New York: Farrar, Straus and Giroux.

Koppenjan, J., Veeneman, W., van der Voort, H., ten Heuvelhof, E., & Leijten, M. (2011). Competing management approaches in large engineering projects: The Dutch RandstadRail project. *International Journal of Project Management*, 29, 740-750.