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ACPS2021 - Wrocław - 21.05.2021
Modelling intuitive design strategies in architecture
Dr. AGNIESZKA RUMIEŻ

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OF ARCHITECTURE

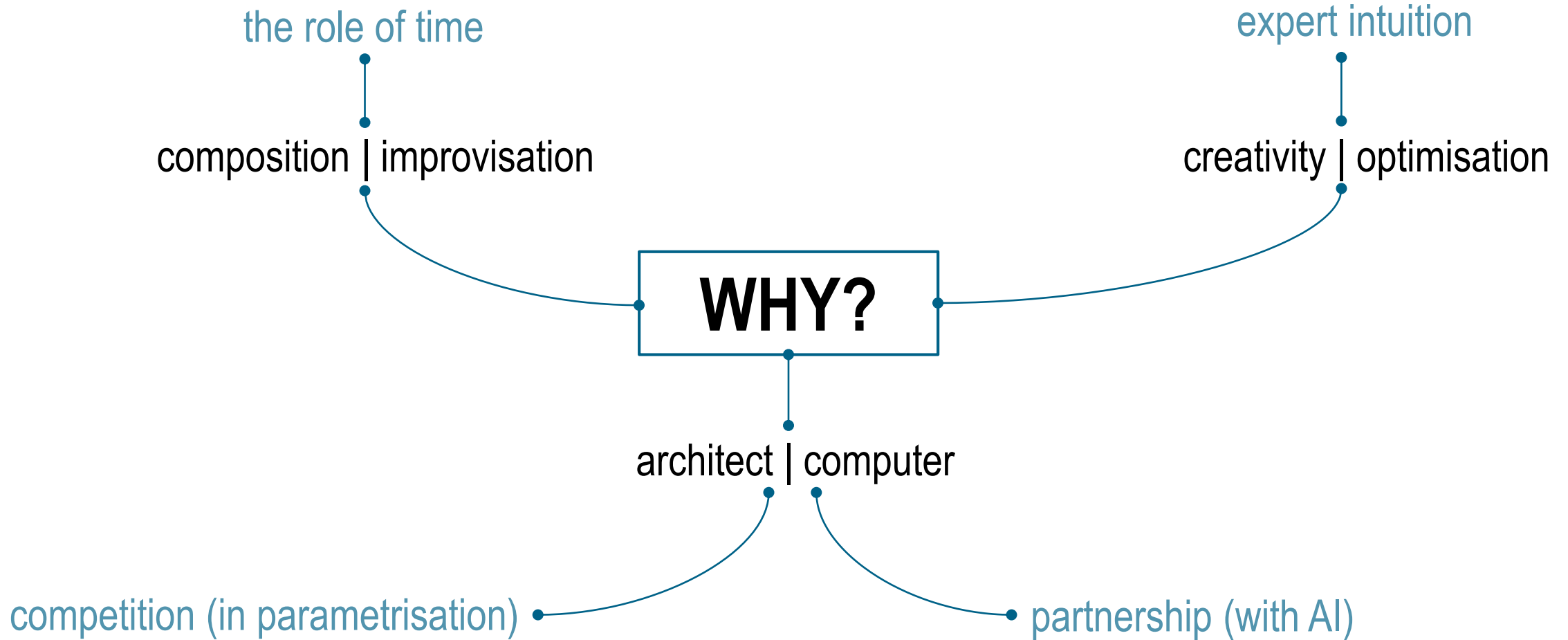# MODELLING INTUITIVE DESIGN STRATEGIES
IN ARCHITECTURE

Poznań-Wrocław, 21.05.2021

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DEFINITION

„a self-organizing process that relies on and stages the particular constraints that encourage the emergence of something new and inventive"

[E. Landgraf, 2011]

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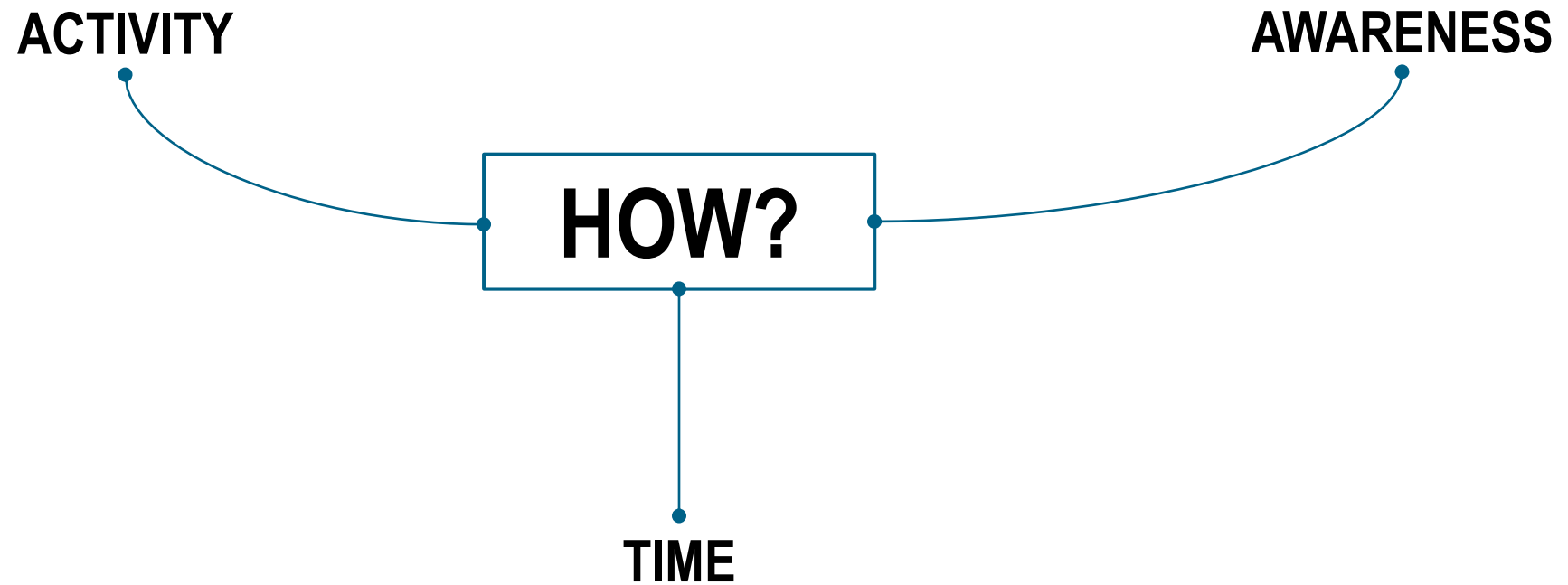Dr. AGNIESZKA RUMIEŻ

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THESIS

Architectural design does not have to derive solutions literally from the design variables, as it is recently customarily considered.
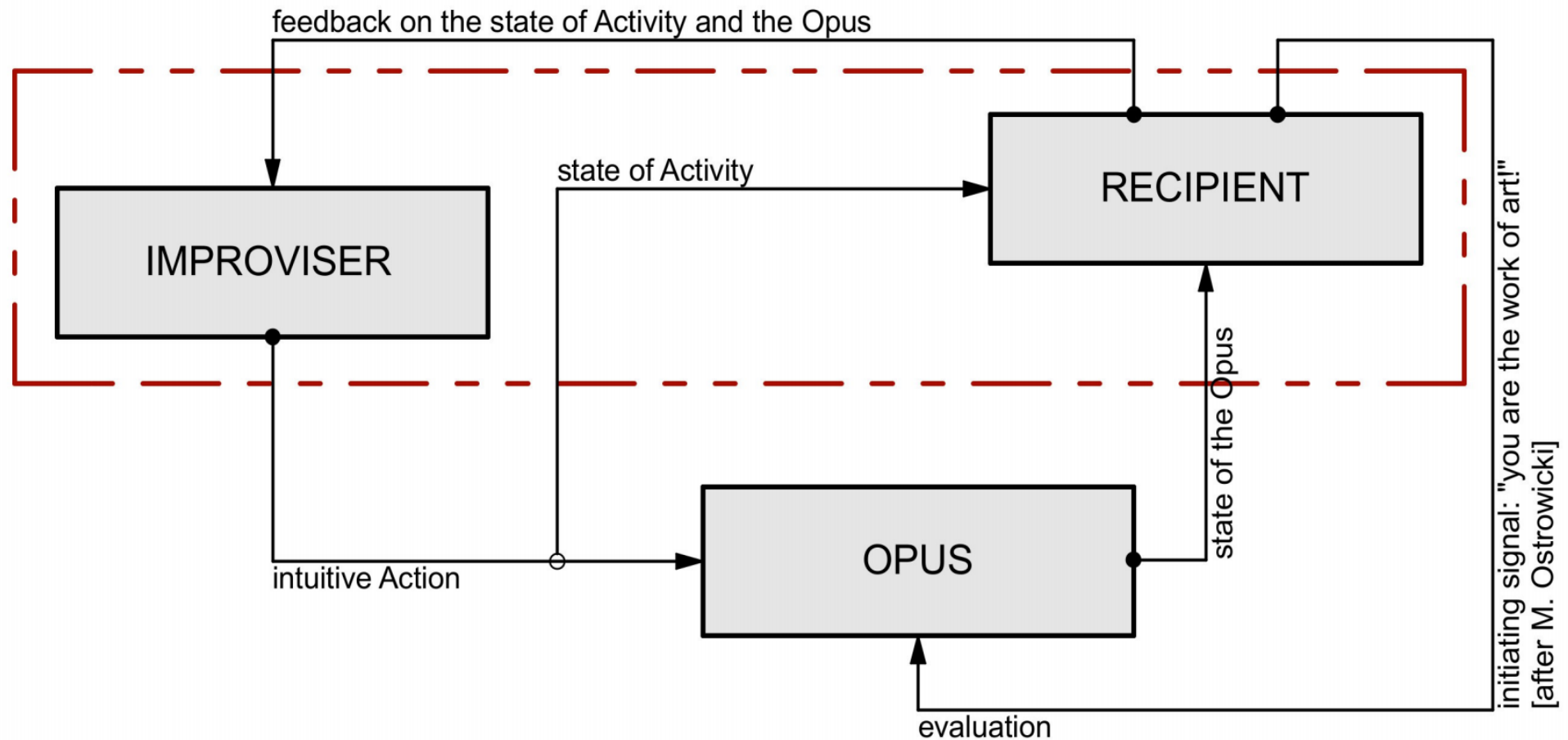
These variables, which nowadays can be built within a structure of digital design tools, can combine the **conscious and non-conscious** factors of the architectural creation process, correcting the freedom of improvisation in its technical means.

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ACTIVITY

AWARENESS

HOW?

TIME

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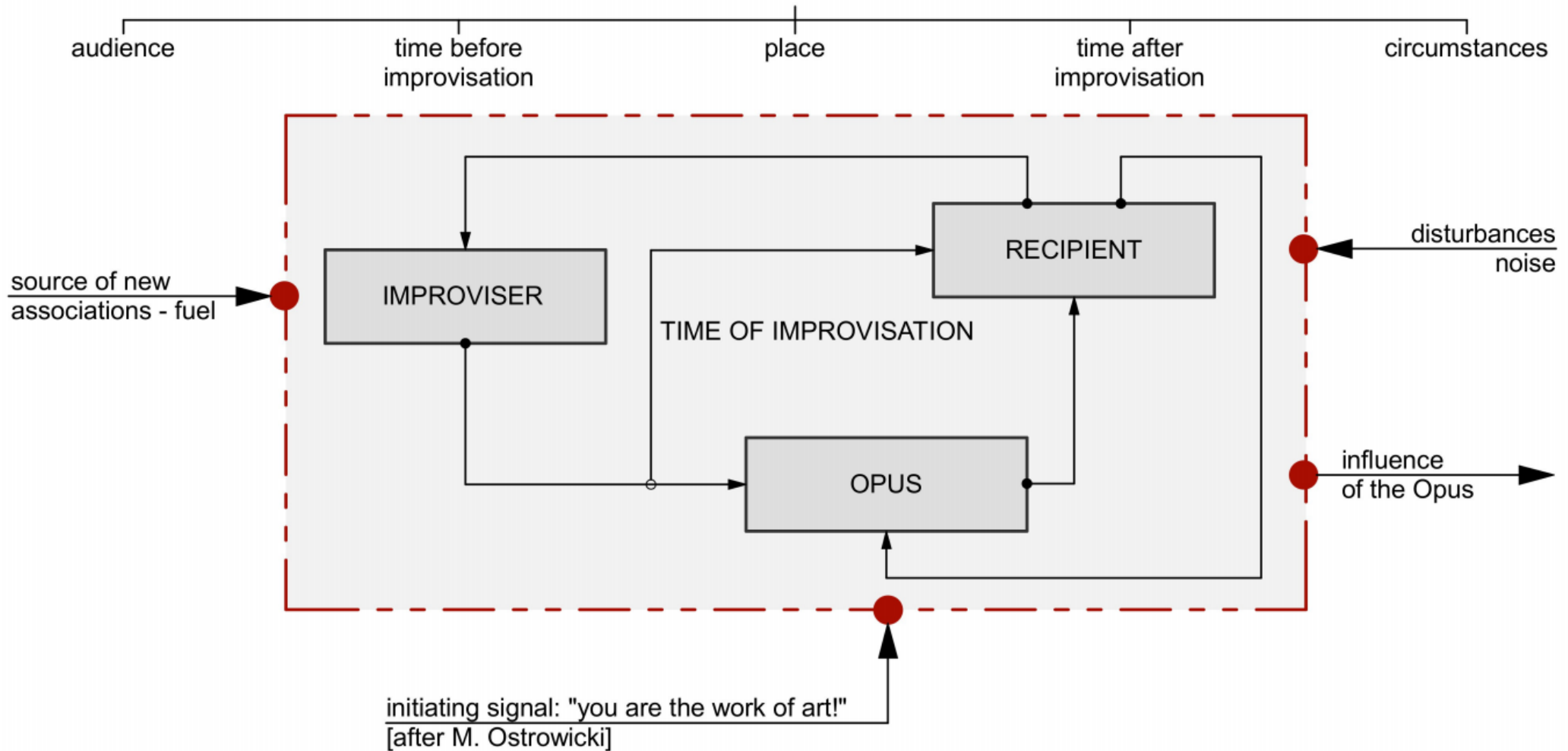Dr. AGNIESZKA RUMIEŻ

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RESEARCH PROCESS

- Conceptualization

- System analysis

- Modelling (catastrophes)

- Multiple case studies

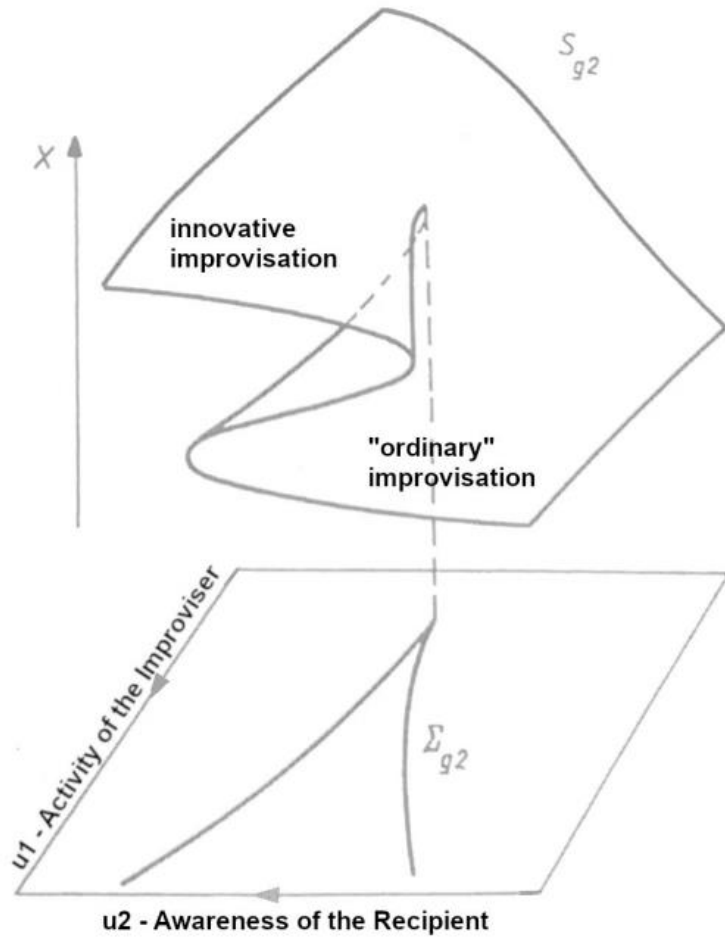**Fig.1** Scheme of subsystems and interrelations in the system of architectural improvisation; authoring.

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Fig.2 Scheme of boundaries and openings of the system; in-coming and out-going signals; authoring.

$$F(x, u_1, u_2) = \pm x^4 + u_1 x^2 + u_2 x$$

where:

x	– dynamic variable – here: TIME
u_1	– control parameter, called bifurcation parameter – here: ACTIVITY
u_2	– control parameter, called asymetry parameter – here: AWARENESS

Therefore, the set of critical points is as follows:

$$S_{g_2} = \{(x, u_1, u_2): \pm 4x^3 + 2u_1 x + u_2 = 0\}$$

Finally, the catastrophy set has a form:

$$\sum_{g_3} = \{(u_1, u_2): 8u_1{}^3 \pm 27u_2{}^2 = 0\}$$

Fig.3 Model of cusp catastrophe with control parameters of bifurcation curve; authoring.

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IMPROVISATIONS

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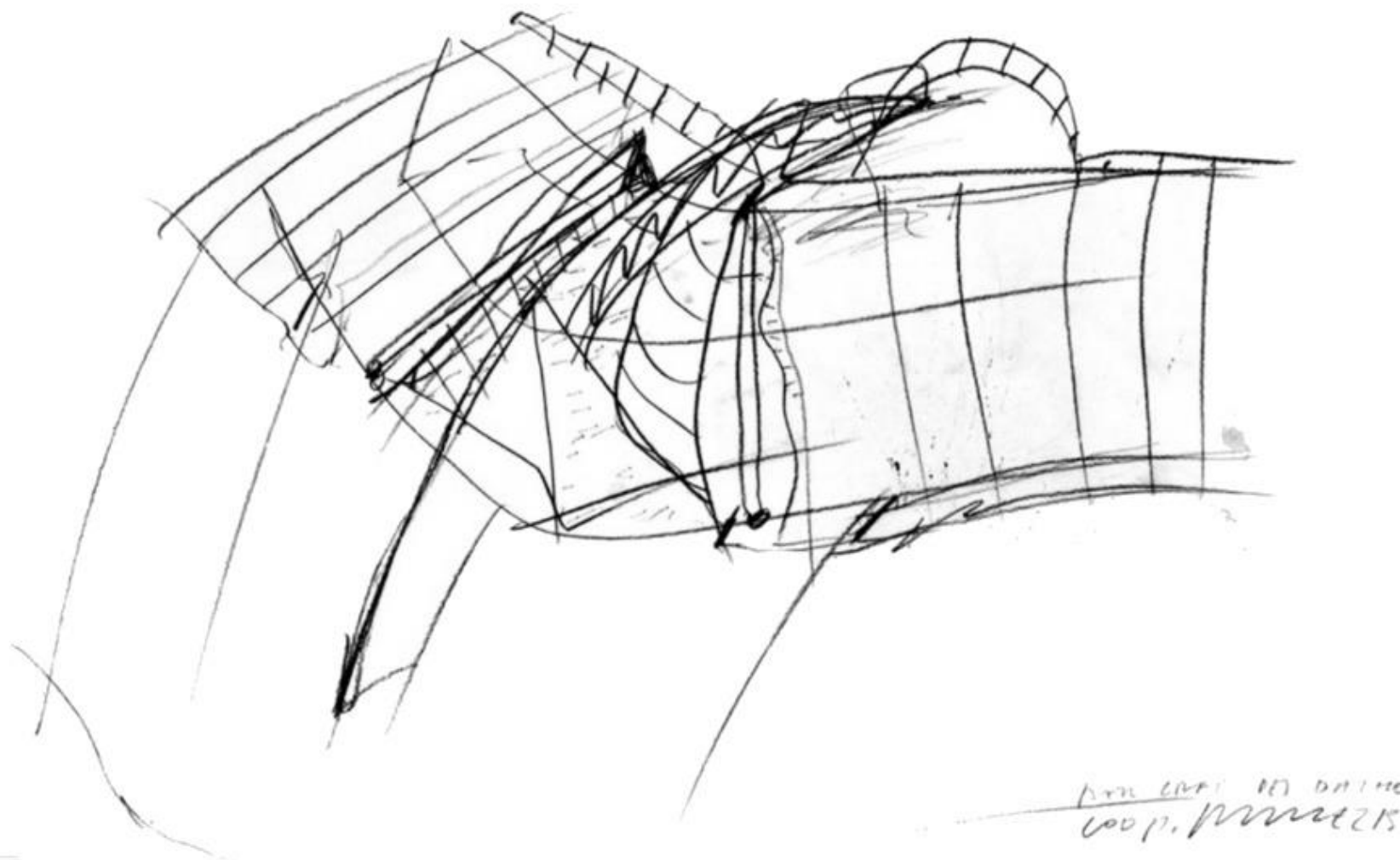Dr. AGNIESZKA RUMIEŻ

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Fig.4 Jackson Pollock, Untitled, (ca.1950),
Ink on paper, 47,9 x 63,1 cm,
The Museum of Modern Art, New York,
source: moma.org, access: 22-04-2018

A rich typology of gestures that are
represented on paper.

- the precision of skillful movement is
combined with uncertainty inscribed in the
excercised painting technique.

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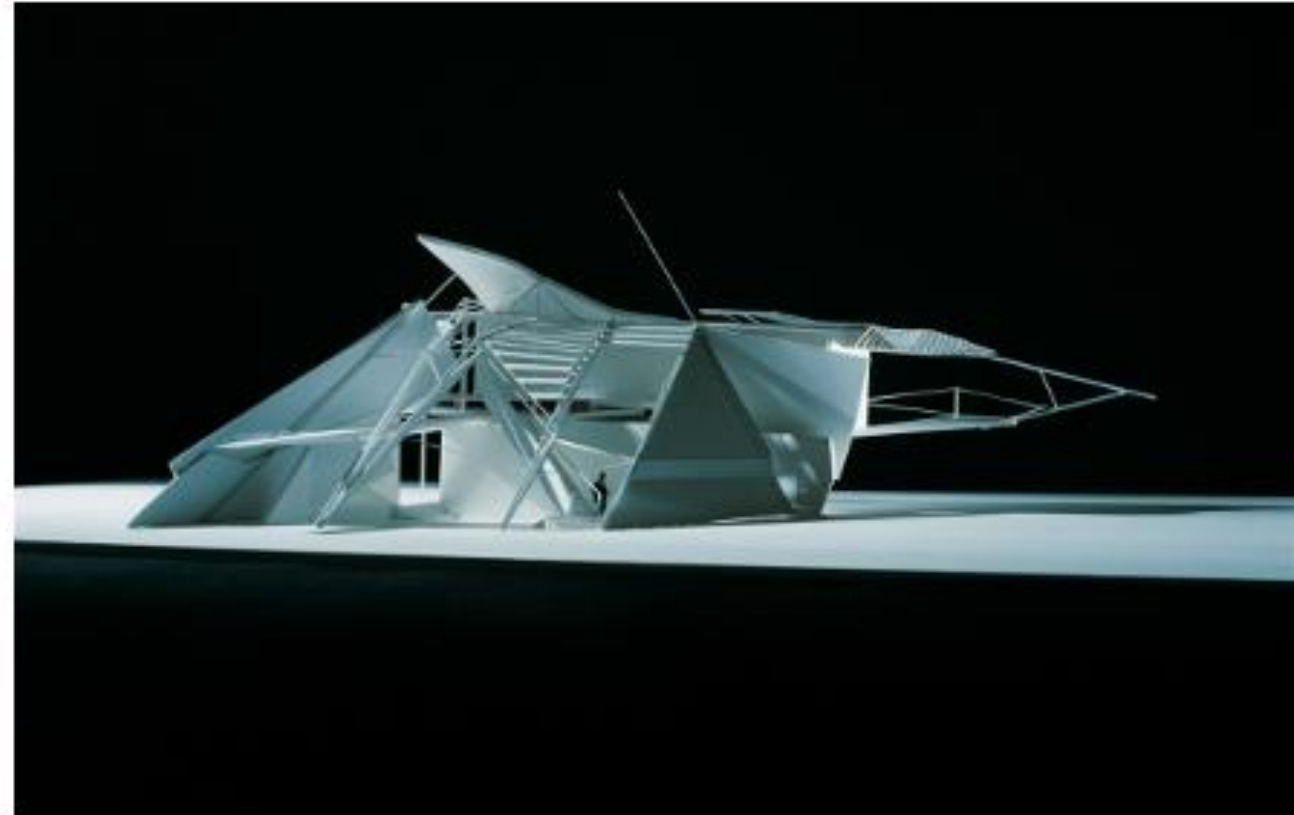Dr. AGNIESZKA RUMIEŻ

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Fig.5 Rooftop Remodeling on Falkestraße in Vienna (project 1983-87, realised: 1987-88).
source: http://www.coop-himmelblau.at/architecture/projects/rooftop-remodeling-falkestrasse, access: 22-04-2018

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Fig.6 Open House in Malibu (1983-1992),
source: http://www.coop-himmelblau.at/architecture/projects/open-house, access: 22-04-2018

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Fig.7 Herzog & de Meuron Studio,
Beijing Olympic Stadium, 2002-2008,
source:
https://commons.wikimedia.org/wiki/F
ile:Beijing_Birds_Nest_Olympics.jpg;
access: 30-10-2017

„…in a very strange way, we do not
always know what we do…"

[Jacques Herzog, 2008]

Fig.7 Herzog & de Meuron Studio, Beijing Olympic Stadium, 2002-2008,
source: https://commons.wikimedia.org/wiki/File:Beijing_Birds_Nest_Olympics.jpg; access: 30-10-2017

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THANK YOU
FOR YOUR ATTENTION

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