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Deconstruction of Information and Cybernetics:
Can we read information and cybernetics differently?

Jang, Seungkwon

2000. 12.

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Deconstruction of Information and Cybernetics:

Can we read information and cybernetics differently?

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Abstract

The paper explores the different ways of understanding the concepts of information and cybernetics. We usually take a view on information theory and cybernetics as a modernist project. In this paper, however, it can be maintained that the conventional perspective can be deconstructed by weak thinking. For this purpose, the terms, weak thinking and strong thinking are deployed.

1.

(post-structuralism)

.   (modernity)

(rationality)   .

Vattimo(1988)   (weak thinking)   .

(strong thinking)   (, 1998, 1999

). Vattimo   Derrida   (deconstrcution)   Lyotard

(post-modern science)   .

, Derrida   (logocentrism)   Vattimo

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1)   ·   ·

． (hierarchy)

．   ．

Lyotard(1984)   , Derrida   Vattimo

．   (modern science)   Lyotard

(information theory)   (cybernetics)

．   ,

．

．   ,

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．

．   (control)   (function)   ,

(performativity)   ．

．   (, Hayles, 1991).

．

．   , Vattimo   Derrida

,   ．   , Whitehead

(becoming)   (process)

．   ,   ．

Lyotard(1984)   Vattimo

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2.

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Derrida   ．   , Derrida

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．   ,   ,

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·   ,   ·

                    Vattimo   ·

                         . Derrida

          ·   ,

                    . Derrida

                                        (Derrida, 1991: 273).   ,

                                                                          ·

                    ,

               ·   ,

(Cooper, 1989).   ,

     ·   ,

                                             ·   ,   ,   ,

                                                            ·

                                  . Derrida   ·

                                                                                    ·

          ,

                                        ·   ,   ,   ,

                                                ·

     ·   ,   ,

     ·

                         , Derrida   ·

               Derrida   (   )   (   )

                                                            . Derrida

                         /   , Levi-Strauss   /   ,   Saussure

     /   (signifier/ signified)

                    ·

                                                            ·

Cooper (1989)   . Derrida

                                                            ·

(overturning)   (metaphorization)   .   -

                    ·   ·

                                             ·   ,

          ·   ,   ·   '

     (undecidability)'   .

                                                                          ·

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.   ,

.

(reinscription),   (displacement),   (reconstruction)   .

(metaphorization)

.

Cooper(1989: 483)   .

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Derrida   .

,

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.   .

(Linstead, 1993).

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.   ,

Derrida   .

.   .

Derrida(1991: 273)   .

(   )

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Derrida

Vattimo   ‘   ’   .

, Derrida   .

Vattimo

. Derrida(1991: 274)

.

.   ,   .

.   .

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,

.

. Derrida   Vattimo

.   , Waddington (1977)

.   (things)   (processes)

.   .

.   (Democritus)   (atom)

.   ,

.   (Heraclitus)   .

.

.

.   Derrida   Vattimo

.

,   Alfred North Whitehead   '   '

(, 1997   ). Whitehead (1926)

.'   '(bifurcation of nature)   '

'(fallacy   of   misplaced   concreteness)   .

Whitehead   (Cartesian dualism)   .

,   '   '   '

Whitehead   .

.   .   ,

Whitehead   ,

.   (experiences)   (real)   .

(notions)   (concrete things)   .

.

Whitehead   Bateson   . Bateson (1972)   '

'(locatable)   '   '(dimensionless)   '

'(man-cutting-tree)   .

.   .

Bateson   Whitehead   (organismic)   (processual)

.

- 5 -

(being)   (becoming)   .'
              '   Prigogine   Stengers(1984)
                                                                    .
Whitehead   .   (weak ontology)
          .   '   (time)   '
              .   , Whitehead
    .   ,   ,
    .
(Prigogine & Stengers, 1984: 310).   -   (things-processes)   -
    (being-becoming)   Vattimo(1988)
                                    .

                                        ,
Lyotard   .
              Lyotard(1984)   .
        ,   (performativity)
(instability)   .

                                        .
      .
                                    .
                                    .

        ,
                              .   ,   (Lyotard
)
        (Lyotard, 1984: 55).
              .
                                                              .   ,
              .

                        Rene Thom(1975)   (catastrophe theory)
                                        . Thom
              (morphogenesis)   .   ,
              '   '(structural stability)   .
                                                              .   ,
                                        .

, Thom

. Thom

Thom(1975) '(form) . Thom(1975: 127)

.' (,)

'

Thom

Shannon Weaver(1949)

(Woodcock & Davis, 1978).

, ,

,

Vattimo

3.

,

,

Pierce(1980: 8) .

(bit)

?   ,

?   ,

(   )

?   ?

.   ,   ,

,   ,   .

.   .

,

.

, Hayles (1989)

.   ,   (context)

(text)   .

.   .

Barthes (1977)   .   (Work)   (Text)   .

,   .   ,

.   .

(Text)

,   .

.   .   ,

.   ,

.   .

.

.   ,   Hayles (1989)

,

.   ,

.

(bit)   .

.

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,

,   .   ,

.

(inhuman)

(Lyotard, 1991).   ,   .

,   .

- 8 -

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.

.   (   )   (   )   .

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.

, Moles(1968)

(   )   .   (   )   (   )

.   ,

.   Moles

.

,

(construct)   .   ,

.   .

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.   .

.

Moles(1968)   .

, Moles

. Moles(1968)

(   )   .   .

.   <   1>

.

<   2>

(strong information)	(weak information)
(order)	(disorder)
(predictable)	(unpredictable)
(banal)	(original)
(redundant)	(informative)
(intelligent)	(novel)
(simple)	(complex)

,   .

                                                                                          .

                                                    .

                                              .   ,   ,

      ,   .

                              .

                                                      . Shannon   Weaver (1949)

          .   .   ,

                                                  .

                                                                      .   Shannon

      Weaver (1949)   .

                                                                              .

                                          .

                  .

                                                              (Shannon & Weaver, 1949:

      116- 117).

                              ,   Donald MacKay (1983: 491)

                                                          .

      1950   ,   .

                                                                                      .

                                          -      -   (source-channel-sink)

                                                          .

                  .

                                                                          .

                          .   Barthes (1977)

      (Work)   .   ,

                  .   .

                                          .   ,

      .

Bateson(1972) ' '(circuit of differences)

.

. , . Bateson '

'(a difference that makes a difference) . .

(force) (form) . (

)

.

, .

Bateson Derrida (*différance*)

. Derrida(1981: 38-39) . "

. , ,

[espacement] ." Bateson ,

Derrida .

, Derrida Bateson .

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.

.

(undecidable) .

.

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.

' ' (*pharmakon*)

Derrida (Cooper, 1989).

, .

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. ,

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. , ,

. ,

.   Bernstein(1978)

(capacity for self-replication)   .

.   .   ,

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Bernstein(1978)   .   .

.

.   ,   (Lyotard,
1991: 12).   ,   .

.

.

.   .

(informing,   'informating')   .

.

,   Claude Shannon   . Shannon
Tribus(1983: 475)   . Shannon

. "1961   Shannon   ,

."   Tribus

.

Pierce(1968)

. Pierce

.   .'   ,

,   ,
(Tribus, 1983: 481-482).

4.

,

(open system)
(Scott, 1987).

2   .   Ludwig von
Bertalanffy   (general systems theory)

.   '

' (Scott, 1987: 76).   ,   ,

,

. Scott(1987: 76)

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ŒR .

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(Scott, 1987: 82).

. 2 ,

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. , ,

(negentropy) ,

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Guilbaud(1959) .

kybernetike .

(steersmanship) .

.   *gubernaculum* ( )   *gubernator* (   )   *gouvernail* ( )

gubernaculum   .

.   ,   ,   .   governor

James Watt   ,

.

Norbert Wiener

, <u>Cybernetics, or Control and Communication in the Animal and the Machine</u>

<u>Animal</u>   .   Wiener

kybernetes   .

. Wiener   James Watt   governor

. Wiener   Clark Maxwell   1868

<u>The Theory of Governors</u>   .

Wiener   (Guilbaud, 1959: 3).

.

von Neumann

(Bernstein, 1978).   von

Neumann   McCulloch   Pitts,   Turing

. von Neumann

.   McCulloch   Pitts

.   McCulloch   Pitts   . '

'.   '

' (Bernstein, 1978).   von Neumann   (   )   Turing

.   (,

).   .

Herbert Simon (1969)   ,

.   . '   ,'

.   ,

.

.   Heims (1989: xxii)   '   '

.

Simon   .

Varela   Simon   '   ' (cognitivism)

(Varela, Thompson & Rosch, 1991).

.   ,   ,

.   .

(mind),   (information-processor)   (brain)

.   . Weizenbaum (1980)

    Simon   ,

                                                                      , Simon

                        ,   -

                                                                        .

                                    :

                                                            1940   1950   .
                                                    1950   ,

                                                                                                      (Varela,
Thompson & Rosch, 1991: 39).

                                                                                        ?
                                        . Morgan (1982)   .

    Bateson   .
                        ,   . Morgan

        .   Morgan

        .   ,

            .

                                                                                                              ,

            ,   ,   .

                                        Beer (1959)   .

                                        .   ,

                                                                    .   ,

                .   ,

            .

                                    .

                                    . Simon   March   Simon (1958)

                    .

        .   (bounded rationality)   .

                                                                                                            .

    Morgan (1982)

                                                            .   ,

                                                                            .

        .

                                                                                    .

, . Buckley (1967)

, . Buckley

. Argyris Schon (1978)

. , .

(learn how to learn)

(double-loop learning) .

. Emery Trist (1973)

. (socio-technical

system approach) .

Morgan (1982: 531) .

(positive feedback) (negative feedback)

.

, .

(Morgan, 1982: 532).

. .

Morgan (1982)

. Morgan (1982: 535)

.

(negentropic)

.

. ,

. ,

.

Morgan .

. Wiener The Human Use of

Human Being Heims (1989) .

40 Wiener

.

. Wiener Prigogine

.

Wiener (Heims, 1989).

,

. .

Wiener

. <u>The Human Use of Human Beings</u>   Wiener   '   ,
    .

(Wiener, 1989: 17).

        .

    . '   ,   Wiener   '   '
                    .   (disorganization)

(Wiener, 1989: 21).   .

                                    .

            .

        .   . '

        .

    ' (Ashby, 1956: 1). Ashby

                    .

                    .

                    .

            .

Ashby (1956)   .

                                        .   ,

                .

                    .

        .

                                    Hayles (1990)   .

            .   ,   .

                            .

                            .   ,
    '   '   .

                                                                            . Ashby (1956:

9) ' ' ' .

.

' '

Ashby(1956: 11) ' '(transformation) . ,

(operand), (operator), (transition)

. , ,

. Ashby .

. Ashby(1956: 11) .

.

.

.

. '

' (Pierce, 1980: 215).

.

. Pierce(1980: 219) Wiener

Wiener

.

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5.

< 3> .

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< 3>

(postmodernity)	(modernity)
(postmodern science)	(modern science)
(processes view)	(things view)
(becoming)	(being)

.

. ,

, , . ,

, , .

(1997)   ,   :   .
(1998) '   :   ',
            8 ,   .
(1999) '   ',
    9 ,   .

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