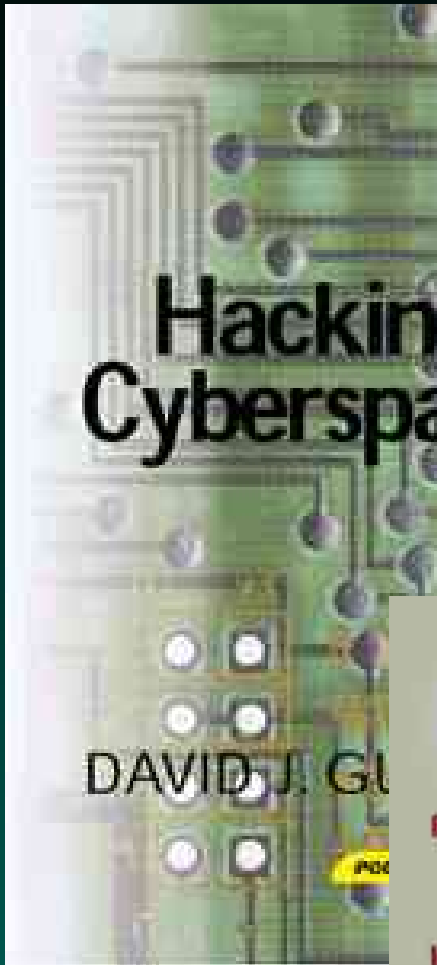


# Beyond Computing: Computers, Communication, and Education

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Technically speaking, the word “computer” is a misnomer

## Universal Machine

A machine that can simulate any other machine

A machine that can act like another machine through different programming

e.g. printing press, video editing system, audio production, graphics presentation system, etc.





Computer as a communication device

But which devices and how is dictated not by the machine but by the definition of *communication* employed by users and designers of systems.



# Communication

throughout in meaning so that it is satisfactorily received or understood. **v**  
: to open into each other : CONNECT (the rooms ~) — **com-mu-ni-ca-**  
**tee** \kə-'myū-ni-kə-'teɪ/ *n* — **com-mu-ni-ca-tor** \kə-'myū-nə-'kəl-ər/ *n*  
**com-mu-ni-ca-tion** \kə-'myū-nə-'kə-'shən/ *n* (14c) **1** : an act or instance  
of transmitting **2** *a* : information communicated **b** : a verbal or  
written message **3** *a* : a process by which information is exchanged  
between individuals through a common system of symbols, signs, or  
behavior (the function of pheromones in insect ~); *also* : exchange of  
information **b** : personal rapport (a lack of ~ between old and young  
persons) **4** *pl* *a* : a system (as of telephones) for communicating **b**  
: a system of routes for moving troops, supplies, and vehicles **c** : per-  
sonnel engaged in communicating **5** *pl* *but sing or pl in conctr* *a* : a  
technique for expressing ideas effectively (as in speech) **b** : the tech-  
nology of the transmission of information (as by the printed word or  
telecommunication) — **com-mu-ni-ca-tion-al** \-shən-'l/ *adj*  
**com-mu-ni-ca-tive** \kə-'myū-nə-'kət-iv, -ni-kət-iv/ *adj* (1654) **1** : tend-  
ing to communicate : TALKATIVE **2** : of or relating to communication  
— **com-mu-ni-ca-tion-ist** \-shən-'l-ist/ *n* — **com-mu-ni-ca-tion-ist** \-shən-'l-ist/ *n*



Two alternative conceptions of communication have been alive in American culture since the term entered common discourse in the nineteenth century....We might label these descriptions, if only to provide handy pegs upon which to hang our thought, a transmission view of communication and a ritual view of communication. (James Carey)

The image shows the bottom portion of a book cover, featuring a horizontal bar with yellow, red, and blue segments. Below the bar, the name 'James W. Carey' is printed in a black, serif font.

James W. Carey

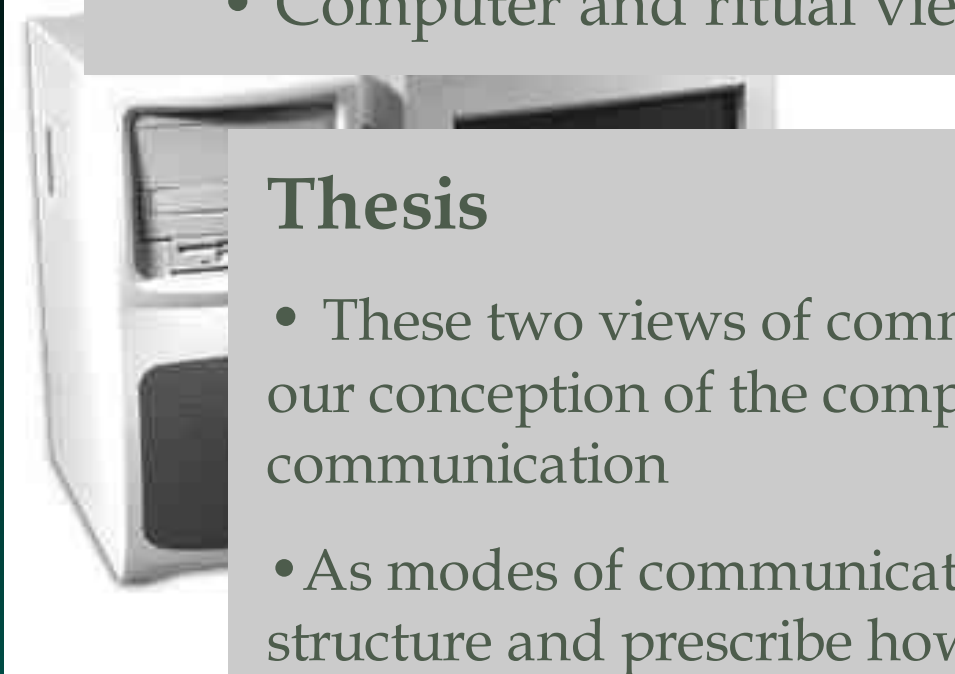
## Two definitions or viewpoints of Communication

- Transmission view of communication
- Ritual view of communication

These two viewpoints derive from differing problematics; that is the basic questions of the one tradition do not connect with the basic questions of the other. (James Carey)

# Computer as a Device of Communication

- Computer and transmission view
- Computer and ritual view



## Thesis

- These two views of communication have directed our conception of the computer as device of communication
- As modes of communication, these two views structure and prescribe how computers have been utilized in education
- The two views of communication both enable and foreclose our understanding of the technology and its possible applications



# Transmission

# Transmission

The transmission view of communication is the commonest in our culture--perhaps in all industrial cultures--and it dominates dictionary entries under the term. It is defined by terms such as imparting, sending, transmitting, or giving information to others. It is formed from a metaphor of geography or transportation. In the nineteenth century but to a lesser extent today, the movement of goods or people and the movement of information were seen as essentially identical processes and both were described by the common noun "communication."  
(James Carey)

# Transmission

**Definition** - Communication is the process of sending, transmitting or giving information to others

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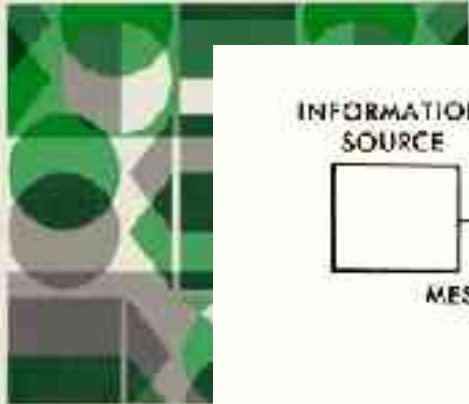
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**Metaphor** - Communication is understood as a form of transportation

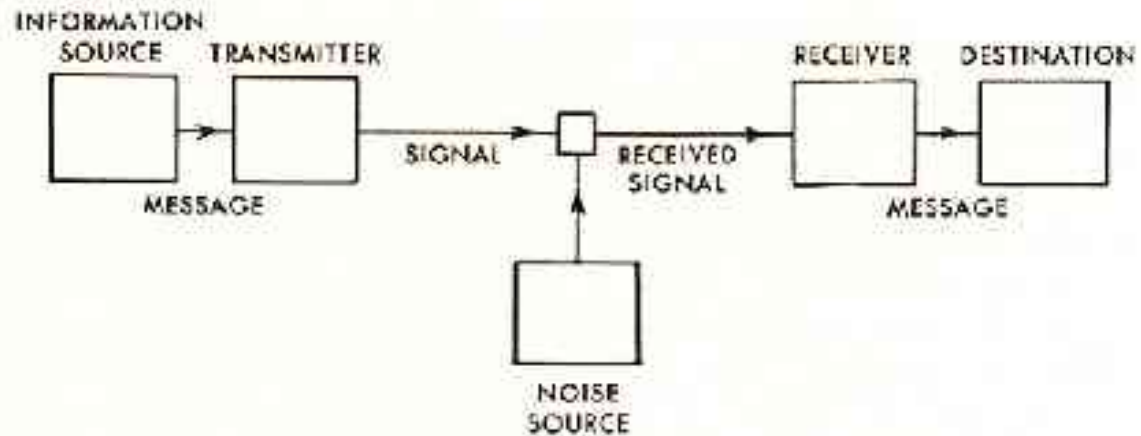
# Transmission

## Definition



## THE MATHEMATICS OF COMMUNICATION

by Claude E. Shannon and Warren Weaver



# Transmission

Metaphor

In the 19th century but to a lesser extent today, the movement of goods or people and the movement of information were seen as essentially identical processes and both were described by the common noun “communication” (James Carey)

# Transmission

Metaphor

Functionally, both information and material goods were distributed in the form of physical objects.

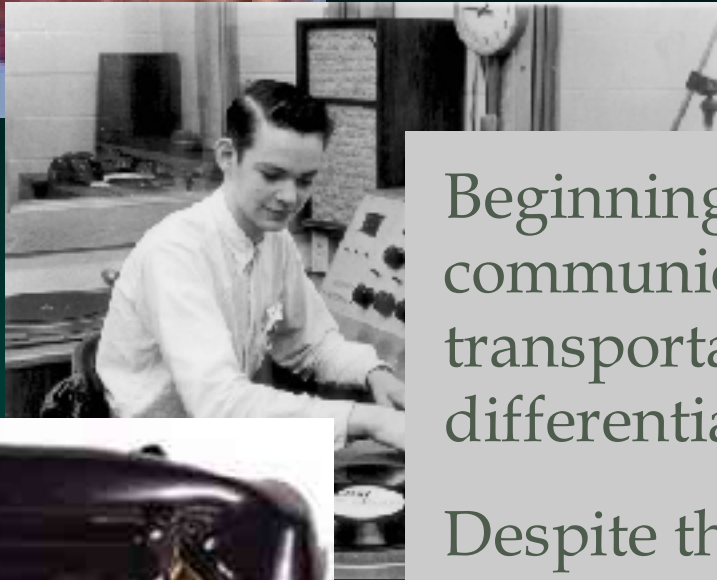
and the movement of information were

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Nominally, one finds that the word communication was employed in the 18th and 19th centuries to describe not only the circulation of printed material and letters but also the development of roads, canals, and railways.

# Transmission

## Metaphor



Beginning with the telegraph, communication and transportation have been differentiated.

Despite this, communication is still understood **metaphorically** as a kind of movement--the movement of information.

# Transmission

## Examination of Communication

Quantitative issues - the amount, speed, and extent of information flow

“How much information with how little noise may be transmitted at what speed and over what distance to how many locations?”  
(Mark Poster)



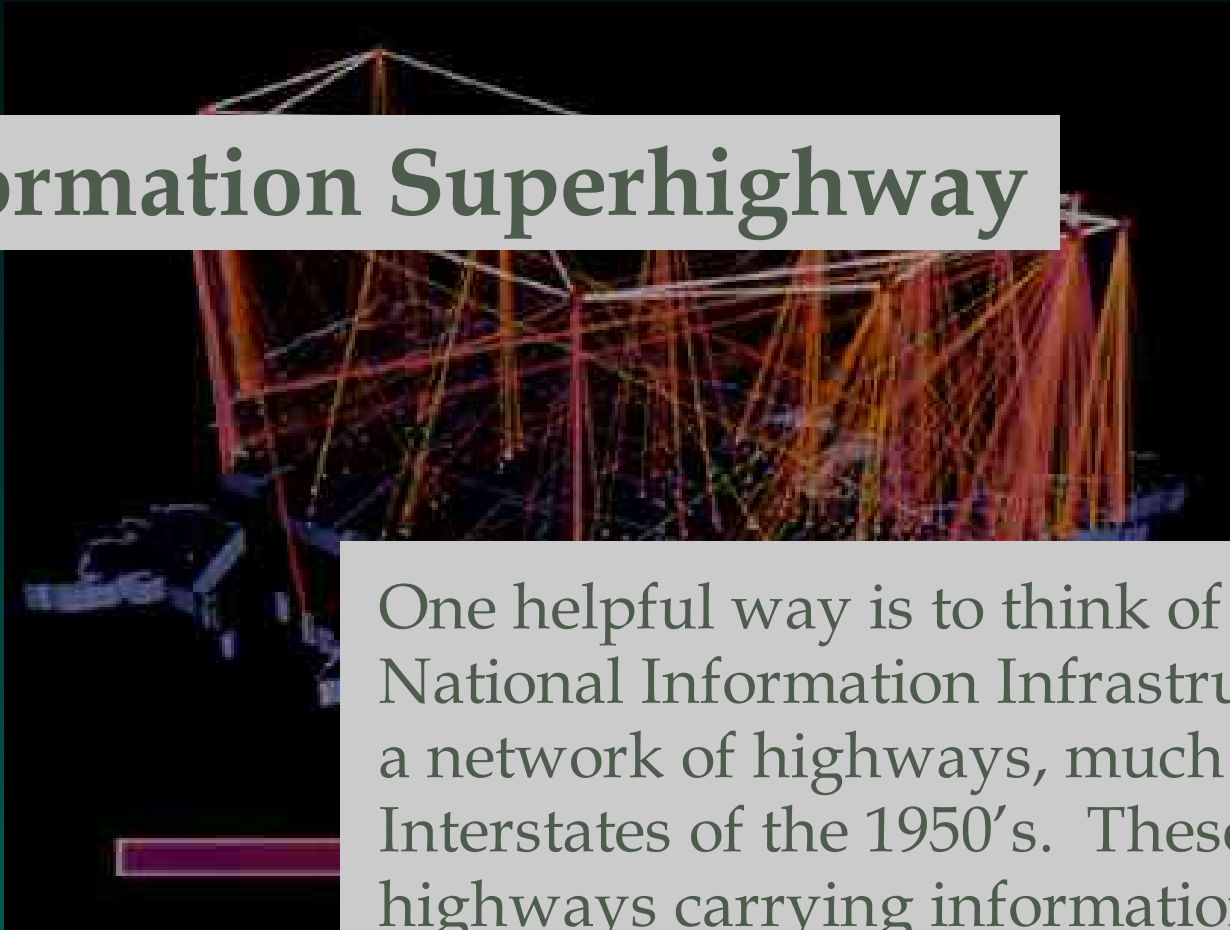
# Transmission



If one examines a newspaper under a transmission view of communication, one sees the medium as an instrument for disseminating news and knowledge...in larger and larger packages over greater distances. Questions arise as to the effects of this on audiences: news as enlightening or obscuring reality, as changing or hardening attitudes, as breeding credibility or doubt. (James Carey)

# Transmission

## Information Superhighway



One helpful way is to think of the National Information Infrastructure as a network of highways, much like the Interstates of the 1950's. These are highways carrying information rather than people or goods. (Al Gore)

# Transmission



## The Computer

Quantitative issues and questions

Network bandwidth, data transfer rates, and processing speed

How much information with how little noise may be accessed by how many people in what period of time in how many different locations.

# Transmission



## Education

Process of transferring information from teacher to students

Lecture and Examination

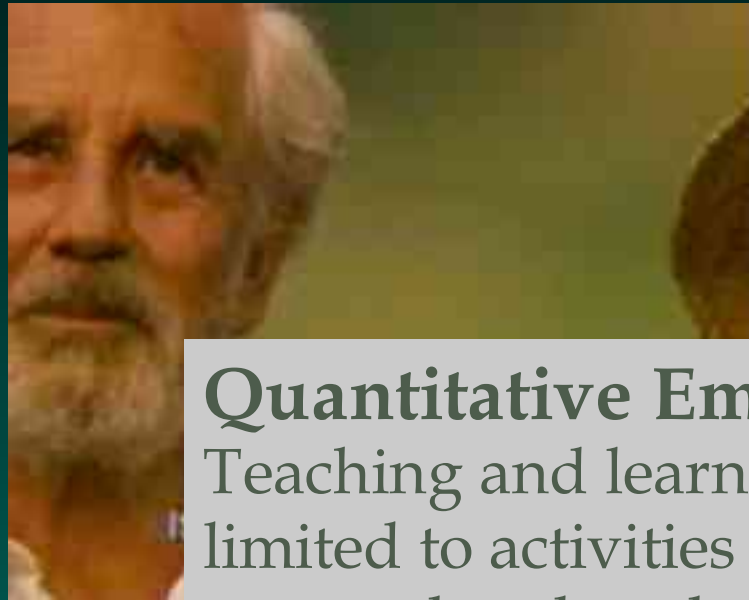
Quantitative concerns – How much information may be conveyed to how many students in what period of time?

Classroom and Distance Education

# Transmission



# Transmission



## **Quantitative Emphasis**

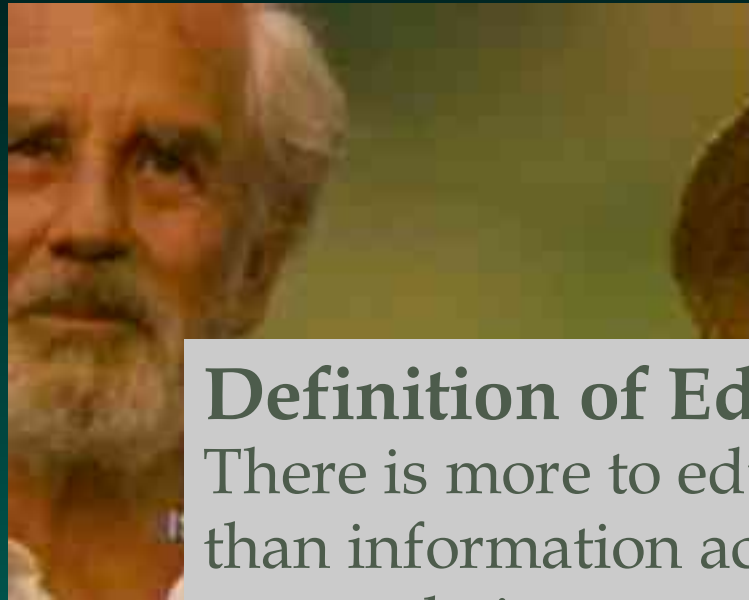
Teaching and learning are limited to activities that can be assessed and evaluated quantitatively.

# Transmission



**Technological determinism**  
The mere presence of technology is simply and unquestionably equated to improvements in education.

# Transmission



## **Definition of Education**

There is more to education than information access and accumulation.



# Ritual

In a ritual definition, communication is linked to terms such as sharing, participation, association, fellowship, and the possession of a common faith. This definition exploits the ancient identity and common roots of the terms “commonness,” “communion,” “community,” and “communication.” A ritual view of communication is directed not toward the extension of messages in space but toward the maintenance of society in time; not the act of imparting information but the representation of shared beliefs. (James Carey)

# Ritual

**Definition** - Communication is a performance that produces and sustains the common bond that is definitive of a specific community

common roots of the terms commonness, "communion," "community," and "communication."

A ritual view of communication is directed not toward the extension of messages in space but

toward the  
of imparting  
shared belie

**Etymology** - Communication,  
Communion, Community,  
Commonality, Common

# Ritual

## Definition

Understood as ritual, communication is an intentionally redundant activity or infinitely repeatable practice that does not necessarily seek to provide new insight or to convey information but endeavors to establish and maintain the common tenets that compose and define a specific social organization.

# Ritual

## Definition

Understood as ritual, communication is an intentionally redundant activity or infinitely repeatable practice that does not necessarily seek to provide new insight or but endeavors to maintain the co-compose and d organization.

## Examples

- 1) Religious Practices
- 2) Socializing with Friends
- 3) Fan Culture

## Examination of Communication

Qualitative issues - How shared performances participate in and define specific communities.

When taking a ritual view, one not concerned with how much information may be sent over what channels to how many people for what effect. One is interested in the way communicative events are employed to create, sustain, and transform specific social traditions and affiliations.

# Ritual



A ritual view of communication will focus on a different range of problems in examining a newspaper. It will, for example, view reading a newspaper less as sending or gaining information and more as attending a mass, a situation in which nothing new is learned but in which a particular view of the world is portrayed and confirmed... We do not encounter questions about the effect or function of messages as such, but the role of presentation and involvement in the structuring of the reader's life and time. (James Carey)

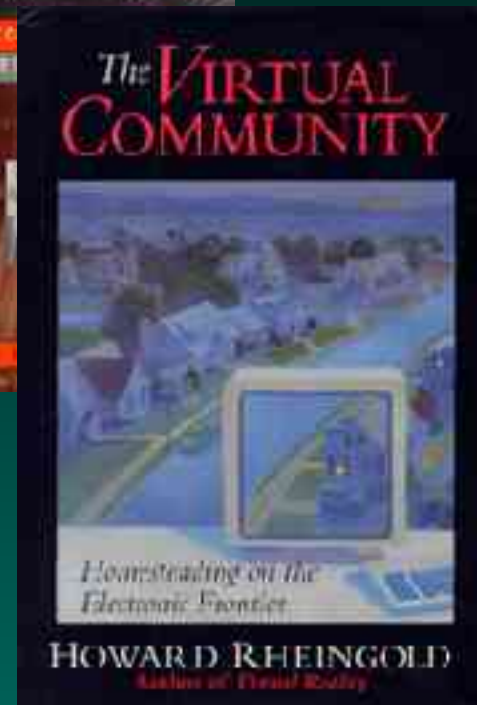
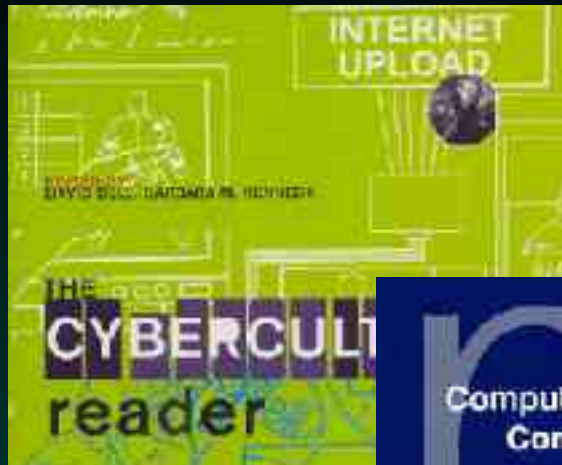
# Ritual

## Virtual Community



Much of our energy has been directed toward understanding the speed and volume with which computers can be used as communication tools. Conspicuously absent is an understanding of how computers are used as tools for connection and community. (Steve Jones)

# Ritual







## The Computer

Qualitative issues and questions

Computers and computer networks as fostering alternative communities and creating common spaces for shared activities

What kind of communities? What kind of practices? What are the social and cultural consequences of such aggregations?

# Ritual



## Education

Engage students in the practices and activities of discovery and investigation

Seminar, Laboratory, and Learning Skills

Qualitative concerns – Create effective learning communities; teacher as a model student

Classroom and Distance Education

# Ritual



# Ritual

## Dualism

Denies bodily differences and effectively erases those elements that are considered to be essential to human identity.



# Ritual

## **Deus ex Machina**

Technology is determined to resolve human conflicts, create cohesive communities, and save us from ourselves.



# Ritual

## Part of the Problem

Technology does not repair social inequality; more often than not it exacerbates existing problems.



## 2 Caveats

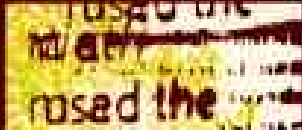
### 1) Transmission and ritual views are not mutually exclusive

Neither of these counterposed views of communication necessarily denies what the other affirms. A ritual view does not exclude the process of information transmission...It merely contends that one cannot understand these processes aright except insofar as they are cast within an essentially ritualistic view of communication and social order. Similarly, even writers indissolubly wedded to the transmission view of communication must include some notion to attest however tardily to the place of ritual in social life (James Carey).

## 2 Caveats

cyberSociety

COMPUTER-MEDIATED COMMUNICATION AND COMMUNITY



Media technologies that have been largely tied to the 'transportation' view of communication...were developed to overcome space and time. The computer, in particular, is an efficiency machine, purporting to ever increasing speed. But unlike those technologies, the computer used for communication is a technology to be understood from the 'ritual' view of communication, once time and space have been overcome the spur for development is connection, linkage. Once we can surmount time and space and 'be' anywhere, we must choose a 'where' at which to be. (Steve Jones)



## 2 Caveats

### 2) Transmission and ritual views are equiprimordial

On the one hand, the efficient transmission of messages appears to precede the formation of social organizations. In order for communication to facilitate the shared understanding that is definitive of a specific community, it must first be possible to connect potential members and transmit information between them.

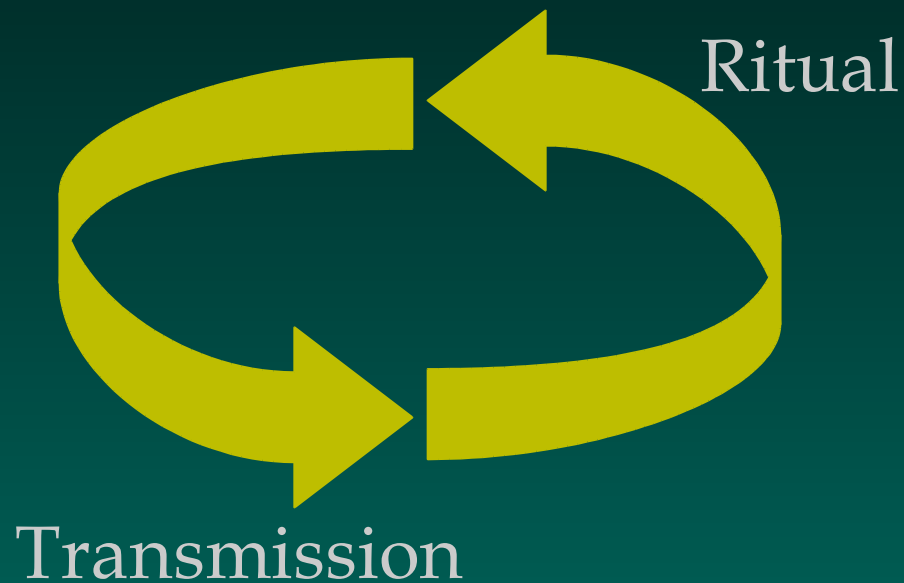
## 2 Caveats

### 2) Transmission and ritual views are equiprimordial

On the other hand, the ritual view seems to be presupposed by transmission. In order for a message to be conveyed from one point to another, from a sender to a receiver, there must be a common element, most notably a shared language or code, that serves as the condition for possibility of any information transfer whatsoever.

## 2 Caveats

2) Transmission and ritual views are equiprimordial



## Two views of communication

Transmission view and ritual view.

Each view point provides a different perspective for understanding the purpose and function of communication and education

Each view frames different sorts of questions and directs our attention to a different set of problems and concerns.

Two views are not mutually exclusive and both are equally primordial.

## Two views of communication

### Computer and communication

When the computer is employed and examined as a device of communication, it is understood in terms of transmission or ritual.

Viewed through the lens of transmission, the computer is utilized and investigated as means of message transport.

Viewed through the lens of ritual, the computer is utilized and investigated as a way to facilitate common understanding and social cohesion.

# Conclusion

1) Transmission and ritual view frame different perspectives and are useful for situating the computer as a device of communication.

2) These two perspectives enable and limit the kinds of questions that are asked of the computer and the kind of applications to which the computer may be applied.

3) We need to be critical of both perspectives. Use ritual view to critique the assumptions and consequences of transmission and use the transmission view to critique the assumptions and consequences of the ritual perspective.

4) These two perspectives will help us understand how we view and employ the computer in the classroom. Help us to understand how this technology is situated and what kinds of concerns are appropriate to its applications.

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