The information processing perspective focuses mainly on

Saul McLeod, published in 2008On the very heart of cognitive psychology is the idea of processing information. Cognitive psychology treats a person as a processor of information, almost the same as a computer takes in information and follows a program to obtain output. Basic assumptions The approach to information processing is based on a number of assumptions, including: (1) information available to the environment is handled by a series of processing systems (e.g. attention, perception, short-term memory);(2) these processing systems transform or alter information in systematic ways;(3) The purpose of research is to identify the processes and structures that underlie cognitive performance;(4) processing information in humans resembles that in computers.Computer - Analogy of mindBuilding a computer in the 1950s and 1960s had an important impact on psychology and , in particular, was responsible for cognitive approach, becoming the dominant approach in modern psychology (taking over from behavior). The computer gave cognitive psychologists a metaphor, or analogy, with which they could compare human mental processing. Using a computer as a tool to think how the human mind processes information known as a computer analogy. In fact, computer codes (i.e. changes) of information, stores information, uses information, and produces output (receives information). The idea of information processing has been adopted by cognitive psychologists as a model for how human thought works. For example, the eye receives visual information and information codes into electrical neural activity, which is served back to the brain where it is stored and encoded. This information can be used by other parts of the brain related to mental activity such as memory, perception and attention. For example, output (i.e. behavior) can be, for example, to read what you might see on a printed page. Consequently, the approach to information processing characterizes thinking as an environment providing data entry that is then transformed by our feelings. Information can be stored, received and transformed through mental programs, with results being behavioral responses. Cognitive psychology has influenced and integrated with many other research approaches and directions for production, such as theory of social learning, cognitive neuropsychology and artificial intelligence (AI). Information processing and selective attention When we selectively attend one activity, we tend to ignore another stimulation, although our attention may be diverted by something else, such as a phone call or someone using our name. Psychologists are interested in what makes us present at one and not the other (selective attention); why we sometimes switch our attention to what used to be unattended (e.g., cocktail party syndrome), and how many things we can visit at the same time (attention capacity). One way to conceptualize attention is to people as information processors, which can only process a limited amount of information at the same time, are not overloaded. Broadbent and others in the 1950s adopted the brain model as a limited capacity information processing system by which external input is transmitted.Information processing models consist of a series of stages, or boxes that represent processing stages. Arrows indicate the flow of information from one stage to the next. Incoming processes are associated with the analysis of irritants. Storage processes cover everything that happens to irritants internally in the brain and can include coding and manipulating irritants. Outgoing processes are responsible for preparing an appropriate response to the stimulus. Critical assessment The number of attention models within information processing has been offered including: Broadbent Filter Model (1958), Trailman's Attenuation Model (1964) and Deutsch and Deutsch Late Selection Model (1963). However, there are a number of estimated points to keep in mind when studying these models, and the approach of information processing in general. These include:1. Information processing models involve consistent processing of stimulating inputs. Sequential processing effectively means that one process must be completed by the next run. Parallel processing suggests that some or all of the processes associated with cognitive tasks occur at the same time. There is data from experiments with a dual task that parallel processing is possible. It is difficult to determine whether a particular task is handled in a serial or parallel manner because it probably depends (a) on the processes required to solve the task and (b) the scope of the task practice. Parallel processing is probably more common when someone is highly skilled; for example, a qualified typist thinks that a few letters are ahead, the beginner focuses only on 1 letter at a time2. The analogy between human cognition and computer functioning, adopted by the information processing approach, is limited.Computers can be treated as information processing systems because they: (i) combine information presented with stored information to provide solutions to various problems, and (ii) most computers have a limited capacity CPU, and it is usually assumed that power constraints affect the human attention system. BUT -(i) the human brain has the capacity for great parallel processing, and computers often rely on serial processing;(ii) people are influenced by their cognition by a number of contradictory emotional and motivational factors.3 The evidence for theories/attention models that come under the approach to information processing is largely based on experiments in controlled, scientific settings. Most laboratory tests are artificial and, we can say, have no environmental validity. In everyday life, cognitive processes are often associated with purpose (for example, you pay attention to classes because you want to be tested), in the laboratory experiments are conducted in isolation form other cognitive and motivational factors. While these laboratory experiments are easy to interpret, the data may not be applied to the real world outside the lab. More knowledge of environmentally valid approaches (e.g., Perceptual Cycle, Neisser, 1976) was offered. Attention has been studied mainly in isolation from other cognitive processes, although clearly it works as an interdependent system with associated cognitive processes of perception and memory. The more successful we become when studying part of the cognitive system in isolation, the less our data is likely to tell us about cognition in everyday life.4 While it is agreed that the stimulus of managed (bottom up) information in cognition is important that a person brings tasks in terms of expectations/past experiences are also important. These influences are known as top-down or conceptually managed processes. For example, read the triangle below:Waiting (top-down processing) often over-ride information is actually available in the stimulus (bottom up) that we are supposedly involved in. How did you read the text in the triangle above? Download this article as a PDFAPABroadbent STYLE REFERENCE D. (1958). Perception and communication. London: Pergamon Press.Deutsch, J. A., & Deutsch, D. (1963). Warning: Some theoretical considerations. Psychological Review, 70, 80–90Neuser, U. (1967). Cognitive psychology. New York: Appleton-Centennial-Crofts.Treisman, A. (1964). Selective attention in humans. British Medical Bulletin, 20, 12-16.How to refer to this article:McLeod, S.A. (2008, October 24). Information processing. Just psychology. Download this article as PDFreport this ad by David Clachr, J.G. Wallace, in the processing of information in children, 1972Transe embarking on our methodical proposals, it seems appropriate to submit a summary statement on the current state of research on class inclusion as we see it. On the one hand, we have a theoretical account of Inhelder and Piaget and, on the other, a complex set of results derived from experimental research. There is a gap between hypothetical structures and processes that will form the basis of the theory, and the level of performance presented by experimental data. This comes from the fact that the theoretical account is presented at the general level, making it uncertain as to whether it is sufficient to account for the complex and varied behavior it aims to explain. Indeed, there is no way at all to determine what its effects would be at the performance level. A much more detailed accounting of the functioning of specific processes is needed before these uncertainties can be dispeled. The existence of a gap between levels of theory and performance is not limited to the work of Piaget and his collaborators. V.O. The current document will not allow for an extended discussion of this clause, but the same uncertainty about the implications in terms of execution and sufficiency for accounting behaviour surrounds theories emancipations emancipation from non-eegavistic sources such as the Berlin (1965) account of directed thinking. It is our contention that the approach to information processing that follows provides a methodology that moves the gap between theory and performance. Over the past decade, information processing analysis has gained wide currency as a method of approach to studying cognition. This approach implies that for a wide range of cognitive activities, people are presented as information processing systems. There are several rough characteristics of the system (e.g. speed of information transmission, immediate memory size, sequence) that are sufficient to cause problem solving to occur in what Newell and Simon (1971) call problem space. A problem spot is a set of symbolic representations and operations that are defined by the task environment, and the problematic location in turn identifies programs that can actually be used. The most specific theory for solving human problems (Newell & Simon, 1972) is entirely about adult subjects. Although the relevance of information processing models to the theory of construction in the development zone began to be recognized (Lunzer, 1969; Biggs, 1969; Flavell & Wohlwill, 1969), most of these applications of the information processing approach in cognitive development were at a metaphorical level. For example, Flavell & Wohlwill (1969) makes a general statement that intellectual development is essentially a matter of ontogenetic changes in the content and organization of very intricate programs ... When used in this way, information processing analysis represents just another rather than an improved approach to the study of cognitive development. Theoretical statements that use only a metaphorical level of information processing analysis suffer from the same shortcomings as those already referring to the theories of Piaget and Berlin. This was clearly demonstrated by Newell and Simon (1972), however, that the approach to information processing could go far beyond metaphorical levels. When information processing is combined with computer modeling, the result is a theorizing medium that provides both the ease of identifying mutual contradictions and ambiguity and an explicit method of examining the exact behavioral effects of theoretical assertions. These are the attributes that lack the basic theories of cognitive development. Simon (1962), but by now only a few studies of this type have been conducted (Gascon, 1969; Klahr & Wallace, 1970 a, Klahr & Wallace, 1970 b; Young, 1971). In previous work (Klahr & Wallace, 1970 b) we demonstrate that the set of tasks commonly used to assess the stage of specific operations calls for the collection of fundamental processes that, when appropriately organized for each task, are sufficient to solve the problem. Our initial look at the model of processing a child's execution information on a typical Pyagetsane task was this: We believe that the main task facing a child who has just been presented with an experimental task is to assemble, from his repertoire of fundamental information processing processes, a routine that is sufficient to pass the task at hand. We consider the requirements for processing information about tasks as similar compilation and execution of a computer program. [See Figure 8.6.] Incoming visual and verbal stimuli are first encoded into internal representations. The assembly system then tries to build, with its repertoire of fundamental processes, a specific task procedure that is sufficient to meet the requirements of oral instructions. Having collected such a routine, the system then performs it. Detailed descriptions of the three parts of the model were presented: internal representation of objects, a collection of fundamental processes and a set of procedures specific to tasks. Let's briefly tell you these elements below.Fig. Task execution information processing model. Christopher D. Wickens, John M. Flach, in Human Factors in Aviation, 1988This chapter reviews a representative study generated by the approach of information processing to human cognition and presents some of the implications of this study for designing safe, comfortable and efficient aviation systems. The approach to information processing was not without its critics. He was accused of playing 20 issues with nature and losing. The essence of this criticism is that science has become too segmented along the line of specific experimental tasks, meaning one group studies endless permutations on the choice of reaction time tasks, another group studies memory search tasks, and another focuses only on tracking tasks. Thus, science has released a huge catalog of information about several rather esoteric laboratory tasks; but it contributed very little to understanding how humans function outside the lab in real-world settings. It is likely that the future success of the approach to information processing will spring up in its ability to combat this criticism. There is a need for human factor experts to broaden their perspective beyond the relatively simple tasks that currently dominate research to increase the complexity of experimental tasks and incorporate more environmentally valid sources of information. The paradigm of information processing has contributed to both knowledge and tools relevant to understanding human performance in aviation systems. Studying human performance in aviation systems provides an excellent opportunity to better understand the general issues related to knowledge in difficult environments. Barry H. Cantowitz, James L. Knight Chr., in the processing of information in automotive control and training, 1978Then chapter discusses the attention requirements of simple voluntary traffic positioning. It presents an understanding of engine control and performance that can be through an information processing approach. Studying the movements of voluntary positioning is a potent topic in experimental psychology with anthents back in the nineteenth century. A simple positioning movement requires that a person sometimes referred to as a subject (psychology jargon) or operator (engineering jargon) move a pointer such as a stylus or finger by performing a spatial move to reach a clearly defined target position. The experimenter who encourages such voluntary movement is primarily interested in the speed and accuracy with which the pointer gets from here to there. Although the terminology has changed, current views of simple positioning movements have a strong resemblance to the position stated by Woodworth (1899). Ballistic or open loop the initial stage of movement, followed by a closed phase cycle in which handling feedback information controls the pointer position until the target is reached. The open loop part of the movement is often said to be under the control of the motor program. Automation frees up attention or capacity so that it is available to perform an additional task. Time-sharing paradigms are in some ways methodologically simpler than probe paradigms; they can't sweep time patterns of attention throughout the movement when analyzed. Edwin A. Fleischman, in Transfer Training: Modern Research and Application, 1987Chest timely for a number of reasons. First, there was a new increase in interest in learning transmission among researchers with a cognitive or information-processing approach to human learning. For years, cognitive psychologists seemed to reject the subject, and it was hard to find references to transmission in book indexes on cognitive psychology. The interests of these psychologists seemed not to be to transfer training, but to the structures and processes involved in coding and obtaining information during the initial collection and preservation of tasks. It is a far cry from the centrality that is consistent with the topic in previous days. Thus, McGeoch and Irione's classic 1952 book on human learning argues that learning transfer is one of the most common learning phenomena and, through its influence, almost all learned behavior is interconnected in a variety of complex ways. And Battig, in a 1966 review of the topic, concluded that the magnitude and totality of the effects produced by previous training in the implementation of new training tasks require that the transmission of phenomena be placed on or near the head of the list to the extent of general importance to psychology. Despite benign neglect by subsequent cognitive psychologists, suggest that the large amount of recent data from the learning and processing study has to do with our understanding of learning transmission, even if that wasn't its primary focus. And as this book demonstrates, interest among cognitive psychologists in transmission issues increases with significant enrichment in our conceptualization and application of research in this area. David Clachr, in Visual Information Processing, 1973 This section discusses the pattern of information processing, thy away in the form of a production system that can be used to explain different patterns of success and failure and the effects of learning. At the heart of the manufacturing system were some things called quantification operators. These quantification operators were good examples of what Walter Reitman meant when he once characterized the approach to information processing as a way to invent what one needs to know. They were important to the logic of the model discussed in the section, and therefore their existence was postulated. The overall research strategy is to formulate evolving body efficacy models at two different points in time and then formulate a transition model or developmental mechanisms. By adopting an extreme engineering approach to the information processing system, the changes can be viewed in terms of four main variable classes: (1) programs, (2) data structures, (3) capacities and (4) rates. Changes in the first two results from the software variant; changes in the last two results from the hardware version. Keith S. Hayes, Ronald G. Marteniuk, at Motor Control, 1976 This section discusses many of the issues that arise when trying to understand the management processes involved in various forms of complex motor behavior. One convenient way to embrace a fairly broad perspective of the complexity of the task is to revise it from two main approaches to understanding engine control. These two approaches, a preliminary model and information processing approach, may be thought of as different dimensions, each capable of providing insight into the nature of the complexity of tasks. In fact, the concept of motor programming embodies the idea that preserved sets of motor teams, both innate and studied, are available in the central nervous system, which should be called upon at will and synthesized into the right movement. Coordinating structures, reflexes of the body, are most familiar to clinicians, who often see how they manifest in the normal course of neonate development or in the motor expression of the damaged brain and mentally retarded. Spinal reflexes, such as stretch reflexes, are easily identified, but top-level reflexes, such as labyrinthine and right reflexes, are less well known. Philip Bray, Johnny Hartz Soraker, in Philosophy in Technology and Engineering Sciences, 2009Human-Computer Interaction (HCI) is below the field in computer science, linked to the study of interaction between (users) and computers, as well as the design, evaluation and implementation of user interfaces for computer systems susceptible to the needs and habits of the user. It is a multidisciplinary field that includes computer science, behavioral sciences and design. The central goal of HCI is to make computer systems more convenient and more convenient. Users interact with computer systems through a user interface that consists of hard and software that provides input tools that allows users to manipulate the system, and output by allowing the system to provide information to the user. Therefore, the design, implementation and evaluation of interfaces is the central activity of HCI. The HCI acknowledges that good interface design involves a good theory or model of human and computer interaction, and that such a theory should be largely based on the theory of human cognition to model the cognitive processes of users interacting with computer systems [Peschl and Stary, 1998]. Such human cognition theories tend to come from cognitive psychology or the multidisciplinary field of cognitive science. While philosophers rarely studied human-computer interaction specifically, they made a significant contribution to the theory about cognition, including the link between cognition and the external environment, and this is where philosophy refers to HCI. Studies at HCI initially relied extensively on classic cognition concepts developed in cognitive psychology and cognitive science. Classical concepts, alternatively called cognityism or approach to information processing, hold that cognition is an internal mental process that can be analyzed largely regardless of the body environment, and which involves manipulation by discrete, internal states (representations or symbols) manipulated by the rules or algorithms [Haugeland, 1978]. These internal representations are designed to fit structures in the outside world that are conceived as objective reality completely independent of reason. Cognitiveism has been influenced by a rationalist tradition in philosophy, from Descartes to Jerry Fodor, who interprets the mind as an entity separated from the body and the world, and cognition as an abstract rational, process. Critics have conditioned cognitiveness for these assumptions, and have argued that cognitivism cannot explain cognition because it actually occurs in real-world settings. In its place, they have developed embodied and arranged approaches to cognition that conception of cognition as a process that cannot be understood without an intimate reference to the human body and human interactions with their physical and social environment [Anderson, 2003]. Many approaches at HCI now cover an embodied and/or located view of cognition. Embodied and arranged approaches share many assumptions, and often no difference is made between them. Embodied approaches to cognition that cognition is a process that is impossible to understand without reference to the receptive and motor power of the body and the internal environment of the body, and that many cognitive processes arise from our body's interactions with the environment in real time. The arranged approaches to cognition believe that cognitive processes are co-recognized by local situations in which agents find themselves. Knowledge is built from direct interaction with the environment, rather than derived from previous rules and representations in the mind. Therefore, cognition and knowledge are radically dependent on context and can only be understood taking into account the environment in which cognition occurs and the agent's interaction with this environment. Embodied and positioned approaches were heavily influenced by phenomenology, especially Heidegger, Merleo-Ponti and the contemporary work of Uber Dreyfus (e.g., [Vinograd and Flores, 1987; Durish, 2001; Such, 1987]). Philosophers Andy Clark and David Chalmers developed an influential embodied/located theory of cognition, active externalism, according to which cognition is not the property of individual agents, but the connections of the agent environment. They argue that external objects play a significant role in helping cognitive processes, and so cognitive processes extend to both the mind and the environment. This means that they claim that the mind and environment together constitute a cognitive system, and the mind can be conceived as going beyond the skull [Clark and Chalmers, 1998; Clark, 1997]. Clark uses the terms wideware and cognitive technology to refer to structures in the environment used to expand cognitive processes, and he argues that because we have always expanded our minds using cognitive technology, we have always been cyborgs [Clark, 2003]. Active externalism was inspired and inspiring, spreading knowledge of approaches to cognition [Hutchins, 1995], according to which cognitive processes can spread over agents and external environmental structures, as well as over members of social groups. Distributed approaches to cognition were applied to HCI [Hollan, Hutchins and Kirsh, 2000], and were particularly influential in computer supported cooperative work (CSCW). Bray [2005] invoked cognitive appearance and distributed approaches to cognition to analyze how computer systems expand human cognition in interaction with man. He argues that people have always used special artifacts to support cognition, artifacts such as calendars and calculators, which HCI researcher Donald Norman [1993] called cognitive artifacts. Computer systems are extremely versatile and powerful cognitive artifacts that can support almost any cognitive task. They are able to engage in unique symbiotic relationships with humans to create hybrid cognitive systems in which a person and an artificial processor process information in tandem. Bray argues that not all computer system use is cognitive. With the advent of graphical user interfaces, multimedia and virtual environments, the computer is now often used to simulate environments to support communication, play, creative expression and social interaction. Bray argues that while such activities may involve distributed cognition, they are not primarily cognitive themselves. Interface design should consider whether the main purpose of applications is cognitive or syming, and there are different design criteria for both. Pierre Gumeen, Joseph Shalit, in The Handbook of Human-Computer Interaction, 1988In the early stages of the design process, drawings are the main vehicle used by architects to eanterate their current internal representations of the structure of the problem and potential design solutions. Early design drawings often look like a private designation system that can only be reported to others when supplemented by a verbal comment that Sean (1983), (1985) called the design language. As design develops, and as tentative ideas are combined into a solution to which the designer is increasingly striving (through shifts in positions, in Sean's terminology), the drawings become more explicit and able to be understood by others on their own. A qualified designer will constantly monitor his own performance and choose those design strategies that will most likely lead to the desired solution (it's about designing, in Sean's terminology). Thus, Sean emphasizes the designer's self-reflection when designing, what he calls reflection in action, and presents the design as a conversation with the materials of the situation (by venturing the design conjuncture derived from memory). While remaining attentive to feedback, positive and negative, the designer will re-cut the problematic situations, as well as adapt situations to the frames, using new design capabilities, hinting at the current design. This procedure is due to a sequence of design experiments, which, unlike scientific experiments, are immediately exploratory, move-testing and hypothesis-testing. During the process, representations such as drawings play the role of virtual worlds that allow for an accurate rehearsal of the alleged actions. The designer changes the understanding of the problem and its or its production solution, thereby interconnected throughout the process. This analysis of the design/drawing process may be parallel to the classifier structures proposed by Goumain (1973) to study the architectural design process. Within the framework of this, an information and processing approach was taken to analyze the design and constructor both at the level of an individual designer and at the level of the design and development organization. The sources of information used to carry out these activities can be traced to five levels of organizational complexity: (1) the memory of an individual designer; (2) Solution drawings and written lists produced by earlier design events; (3) a library of project offices, technical literature, design manuals, office procedure reference, previous completed jobs, standard details, etc., as well as consultations of professional colleagues in the office; (4) project coalition, which includes all agents who contribute to the design process (consultants, etc.); and (5) an external environment where the design will eventually be used. It includes the public at large, its democratically elected representative, and officers such as the city planner and construction inspector. Faced with any new design challenge, the designer brings the fullness of his previous experience and knowledge to perceive and understand the nature of the task and to present tentative solutions in advance. These observations are consistent with Lebahar's thesis (1983) that the architectural design process is one of reducing uncertainty over the use of graphic modeling and sketches. The graphical modeling model provides a temporary insight into the problem, which allows expressing, testing and modifying hypotheses about the object model until conclusions about these hypotheses are reached. To summarize, thanks to the constant implementation of modeling and imitation by drawing, the architectural designer develops the ability to think in three dimensions and manipulate the symbolic codes and conventions of architectural representation by drawing. This spatial abilities are also developed by making, manipulating and visualizing physical three-dimensional models. Thanks to the increased experience, the designer can call for expanding the arsenal of design strategies. By mastering them due to similar design issues, it can successfully accommodate them to reduce the uncertainty presented by the new challenges. If CAAD systems become smart, they should include explicit knowledge of the semantics of architectural symbols and drawings. At the same time, they should not circumvent the process of training and growth of the designer. It is clear that the task of design research is to provide such knowledge. One approach to exploring the semantics of architectural representations is to focus on remembering them in relation to the design experience. Mullen and Gumen (1973) along with Wood (1973) suggested that an experienced designer organizes the information content of an architectural drawing differently from the abode, just as chess grandmasters appear to structure information about positions on a chess board in different and large chunks than ordinary players (Chase and Simon, 1973). In a laboratory experiment, subjects were asked to copy the original drawing by studying it as long as they wanted (exposure time) and then turned around on a rotary chair to transfer the information to the drawing board (drawing time), and then repeat the process as many times as needed (Fig. 8 and Fig. 8). Videos and interviews allowed to identify pieces of information memorizing for each exposure/drawing cycle in sequence. To copy the architectural plan, it was shown that the pieces differ dramatically in experienced and inexperienced objects. For the first, both exposure and drawing time were very long for the initial cycles, while these times were evenly distributed across drawing cycles for the latter. Experienced architects have clearly brought their experiences to bear. For example, one of them was convinced to copy the original drawing when actually using his plumbing knowledge to overhaul bathroom planning. The control experiment involved memorizing a non-architectural original (Mondryevsky painting) and showed almost identical patterns between experienced and inexperienced subjects. Akin (1986) reports on a set of three similar experiments where subjects have been asked to interpret, trace or copy the church's plan (p.119-130). The conclusions are widely attributed to the above. In particular, they appear to confirm the hierarchically organized and nested structure of pieces of memory in the architectural project. In Figure 8. Perception and copying of the experiment: an experienced subject. (after Mullen and Gumen, 1973) In Figure 9. Perception and copying of the experiment: an inexperienced topic. (after Mullen and Humen, 1973) H.A. Simon, in the processing of information in children, 1972Consistent with a recent focus in cognitive psychology, in the works at this symposium mentioned long-term memory (LTM) is clearly rarer than they STM. However, they offer a role for LTM in development that differs in one fundamental respect from the role given to it classically. A vulgar view of LTM can photograph it as a large bunker or cartotheque in which a child accumulates new facts and knowledge during its development. I think no one will quarrel with the suggestion that this is part of what is happening. To acquire the skill of reading a logograph, a child must learn the value of the appropriate vocabulary of logographs. It is a matter of storing in the card correctly indexed pairs of partners. However, we saw that it was equally important that the child purchased the appropriate logograph processing programs in accordance with the reading instructions. In almost all references to LTM in this symposium, speakers talk about storing programs or strategies or rules, rituals and tricks of trade, i.e. processes, not information. This, of course, is the sensorystone of the point of view of information processing in psychology: Knowledge is largely knowing, as-ie skill. It is a point of view that led Bartlett, in Thinking (1958), to adopt motor skills as his metaphor for thinking abilities. The Genevaans in this symposium, Inhelder and Cellérier, have some interesting points to make about the link between the structural view that describes concepts that a child acquires as abstract structures, and an approach to information processing that describes them as programs- or, in the terminology of Inhelder and Cellérier, as schemata (see Part III). I am reminded of the structure-scheme of differences of a similar difference that linguists make between linguistic competence and performance. According to some, linguistic competence, formulated, say, as transformational grammar, provides an abstract description of what the native speaker knows, but does not describe the form in which this knowledge is kept in memory or used to process language. I hastened to add that I'm not at all sure that Inhelder and Cellérier will accept this analogy with the structure-circuit dichotomy. In its descriptions of some length preservation experiments, Inhelder offers an interesting hypothesis about what needs to be stored in LTM before a child can perform such tasks. Tasks involve building a line of some kind that corresponds to the length of the line presented by the experimenter. Lines, or roads built from matches, are an experimenter using sticks of a different length than those used by a child. So, as with all classical environmental experiments, the situation faces a child with conflicting signals: he can count matches, or he can estimate the length. The difficulty in the task, Inheder argues, is to downgrade the judgment of equivalence received on these different routes and choose a criterion that meets the requirements of the task. It offers a similar analysis of the standard corresponding test, which involves comparing the size of sets and the sub-polymer. Now this interpretation is not explicitly intended by Inhelder to superspeed conventional Geneva analysis, as it explicitly talks about resolving through the mutual assimilation of two different subsystems that do not necessarily belong to the same level of development. Thus, the basis of educational phenomena are structures stored in LTM, which are acquired at different stages of development. If so, we should assume that each of these structures is associated with (1) attention processes and receptive coding to obtain information pertaining to the structure (e.g., counting operations and lengthy operations for visual stimuli); and (2) internal representation for coding and storing in LTM information that characterizes the structure. The work of Clara and Wallace (part IV) can be interpreted as an effort to make absolutely explicit the processing of information related to these kinds of cognitive structures. These authors agree with other symposia in completing LTM mainly with programs; but they detail not only the programs, but also the coding of information in LTM - the nature of internal representation. They postulate that such information is stored as lists and description lists- the latter better known to modern psychologists as feature lists. A (In 2 or feature, it's just a two-year relationship between an object and one of its properties: for example, the color (relation) of an apple (object) is red (property or value). An interesting characteristic of this idea is that it makes LTM content fairly homogeneous in the organization, regardless of the touch channel through which the information was obtained. Thus, the mental picture is made of the same material (list of structures features) as the mental symphony. Of course, this is only the form of organization that they share in common; specific relationships encoded depend on touch mode - the red function must have been acquired through the eyes, and the fifth interval through the ears. The postulating of this joint incentive information coding organization highlights one of the central issues discussed (Part III) by Jacqueline Gudnow in her work: the issue of interconscionable conformity of irritants. Assume that a sequence of sounds is encoded as a list:Suppose, next, that a child has a list of pairs (associations) in LTM: tap→circle; suspend → space; tap2 after tap1→circle2 to the right of the circle1Thin a relatively simple program will allow it to translate the aural stimulus into a visual, which it can take over to draw:circle−space−circleWest explains homogeneous coding — this is the ability of anyone to even find a meaningful task of intermodial correspondence. This does not explain why the task can be difficult for children. In his work, Gudnow shows us what assumptions are involved in the assumption that a child should know which intermodal associations an adult implies (why not: push, pause → a large circle; touch → a small circle? why not, really?). It demonstrates that a child should purchase, and store in LTM, a range of conventions, many of them of a particular culture, about compliance that are appropriate. Steven M. CORMIER, in Transfer Training: Modern Research and Application, 1987Yo simulators for training trainees how to operate aircraft and other equipment was an area of research based on identical elements of the approach. For example, the airplane simulator should provide the kind of environment that a pilot will experience in a real plane. To the extent that the simulator has a high compliance (more identical elements) with the actual equipment, we can say that it has high physical accuracy. The effectiveness of the transfer of simulators is well established (for example, Lintern, 1980), and, as Geratevol noted (1969), high-accuracy simulators have specifically demonstrated their value. Unfortunately, high-physical precision simulators are expensive to build, and the amount is usually directly proportional to the degree of fidelity. As a result of this cost, a lot of effort has gone into determining how much need is needed, in other words, how far the simulator can retreat from actual equipment and yet produce high positive gearing. Consideration the links between tasks can help clarify some inconsistent research findings about the degree of fidelity that have proved refractory for analysis in the approach of identical elements. The movement was curated by a dimension that appeared to have an inconsistent effect on performance (e.g., Caro, 1979; Jacobs and Roscoe, 1975). One reason for this discrepancy is that different types of motion (e.g., cockpit movement, rough air simulations, etc.) have different effects (Ince, Williges, & Roscoe, 1975). Researchers at the National Air and Space Administration (Rathert, Creer, & Sadoff, 1961) found a significant correlation between increased movement and the performance of pilots with an unstable or sluggishly responsive aircraft. Ruocco, Vitale and

Benfari (1965) showed that cockpit movement on the simulated task of landing the aircraft carrier improved the performance of the task, as measured by successful landings, altitude error and time outside the flight path. Jacobs and Roscoe (1975) found that motion signals are not useful when transmitting to aircraft that are easy to fly, however (cf. Nautaupsky, Wag, Meyer, McFadden, & McDowell, 1979). Gundry (1977) notes that aircraft motion signals can occur either through pilot control (e.g., changes in direction or altitude) or through external forces (e.g., turbulence). He hypothesized that motion signals could be redundant in the event of changes initiated by the pilot, not only because the pilot has already been warned of the change, but also because the aircraft are designed to be as stable and easy to control with normal use. In this case, there is enough other incentive information to cue the appropriate response. On the other hand, motion signals caused by disruption may be more important for pilot response when other signals (e.g. visual) are inadequate (Perry & Naish, 1964). For example, Rickard and Parrish (1984) showed that cockpit movement was beneficial for helicopter pilots on a simulated guidance task on manoeuvres, but not for maneuvers initiated by pilots. Martin and Wag (1978) found that the movement of the maneuver pilot did not enhance transmission using a flight simulator. The motion studies mentioned above support two main findings relevant to the current approach to information processing. First of all, positive transmission was not a rigid function of the degree of identical elements in Tasks 1 and 2 (simulator and flight). Similar levels of positive transmission have been found despite variations in match level between Tasks 1 and 2. Second, some stimulus attributes of the learning environment were more important for obtaining TBR material than other attributes. The extent to which a particular stimulus attribute functioned as receiving a signal for the current response seemed to depend on the nature of the TBR material and how much other information was available to receive. Studying these relationships allows predictive analysis of transmission effects to actual task learning 2 (cf. Crook, Regan, Beverly, & 1983). For example, if the sequence of flight tasks required to perform landings with limited visibility should be recalled by the pilot (in Task 2), then Task 1 training should insure that consistency can be performed in the face of a recall. Learning tasks 1, which only provided learning to acknowledge a sequence of tasks, should lead to less positive transmission than recall training. In other words, knowledge of the task 2 signals should allow at least some prediction of the transmission of effects, taking into account the training on some tasks 1, since cuing correspondence is then analyzed in principle. Effective learning tasks can have superficial characteristics that are quite different from the target as long as important cue-response relationships are maintained. From this point of view, it is not physical loyalty per individual that contributes to high positive transmission; rather, it is the availability of information about getting in task 2, which has a high power for important tasks of 1 material. Low-precision devices should be effective in producing transmission as long as they provide the intern with the necessary links between task environment stimulus attributes and appropriate responses. Reducing simulator accuracy seems most easily achieved for tasks that require fixed procedures (e.g. Bernstein & Gonzalez, 1968). For example, Prophet and Boyd (1970) found that the cockpit layout of plywood and photographs was about as effective as the instruction in the aircraft itself on tasks such as pre-departure aircraft, launch launch and shutdown procedures. Tasks in which it is difficult to identify specific signals that control the response may require greater physical accuracy in a training situation. Salvendy and Pilitsis (1980) developed training simulators to teach sewing methods to medical students. Three teaching methods were used: electromechanical, susceptible and a combination of both. The standard instruction group (lecture) was used as controls. The electromechanical method taught students how to puncture tissues using a mechanical device that provided auditory and visual information about the correctness of the technique. The perceptic method involved reviewing the filmed performance of both expert surgeons and inexperienced medical students. The intern was tasked with analyzing the student's performance, comparing it to the surgeon's score. The third experimental method was simply a combination of both procedures. The results showed that electromechanical and combined electromechanically susceptible groups had the highest levels of transmission performance and were essentially equivalent. The performance of the perception-only group differed significantly from the control group in terms of the number of good seams, although instructors rate their performance as slightly higher. These results indicate that important information about transmission is provided by the actual performance of the alternative (lower accuracy) means. So far, we have looked at the impact of cuing relationships on positive transmission; However, you can (inappropriate) cuing connections exist between tasks 1 and 2, which can lead to zero or negative transmission. One such example may be when the relevant task 1 information has been encoded and retrieved using attributes that are not present on Task 2, such as extended feedback. Extended feedback or the use of special signals that provide additional or supplemented response information often facilitates task 1 performance (e.g. Briggs, 1969). However, its impact on task 2 performance is much more volatile and can lead to zero or negative gearing (e.g. Bilodeau & Bilodeau, 1961). As Welford points out (1968), extended feedback may not be expected to increase transmission when the subject relies on it to perform the correct answer instead of helping the subject observe and better use inalienable information about the task, which will also be available in task 2.Eberts and Schneider (1985) studied the impact of various types of supplemented signals on the second order task tracking. (In the system of the first order, the pointer moves in direct connection with the movements of the joy of the stick, while in the system of the second order the movements of the joy of the stick produce changes in the acceleration of the pointer).) While various increased signals increased performance while present, only one such cue, representing the expected parabolic path of the pointer produced with this stick joy movement, increased the transmission of the task without extended feedback. The parabolic cue was not only guided by behavior, as other signals did, but also clarified and increased the condescence of important cue connections between the joy-stick movement and the movement of the pointer. In other words, the mental model of the intern system more closely corresponded to its actual mode of operation. These and other findings discussed earlier underscore the importance of studying and specifying the exact relationship between information about receipt and coded materials present at Tasks 1 and 2.Although the importance of communication in determining transmission has been shown through taking into account phenomena such as coding specifics, we have not specifically discussed ways to manipulate the relationship between signals and TBR material that increase the likelihood of positive transmission. So we'll look at one line of research that will shed light on this issue. Question.

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