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### Comprehension in relation to explanation: theory and practice

**Abstract.** Comprehension is thought to become a new paradigm of cognitive psychology which describes the great role of comprehension in human life and work. As a process, comprehension can be described as a macrostructuring of information. Comprehension can be compared with an explanation in terms of theory and practice. Today the psychology of comprehension could serve as a theoretical base for practice of explanation in many practical fields, where readiness to act successfully is important. Among those fields could be comprehension of instructions, or instructive texts in technical, military, scientific or academic fields as well as in everyday life. According to the theory, the memory volume in the process of comprehension is limited by 4 components, this data has been confirmed by Norton and Kaplan, well-known American business analysts, who state that the management of most successful companies consider 4 main channels of collecting information. Implementation of psychology of comprehension into practice could be demonstrated by the new tool to vastly simplify explanation and understanding of complex systems. The method FLIPP Explainers was invented by David Cox during his employment at Procter and Gamble, Cincinnati, USA.

**Keywords:** comprehension, explanation, theory and practice.

The psychology of comprehension has been developed as a part of cognitive psychology. According to W. Kintsch [1], comprehension is thought to become a new paradigm of cognitive psychology which describes the great role of comprehension in human life and work.

As a process, comprehension can be described as a systemic structuring of information [2] or macro structuring of information [1]. The result of this process is a feeling of subjective assurance and therefore readiness to act. Explanation seems to be a process parallel to comprehension (explanation to oneself), while explanation seems more like making something understandable to others so they become able to act successfully.

Comprehension can be compared with an explanation in terms of theory and practice. In our opinion, the psychology of comprehension could serve as a theoretical base for practice of explanation in many practical fields, where readiness to act successfully and making decision is important. Among those fields could be comprehension of instructions, or instructive texts in technical, military, scientific or academic

fields as well as in everyday life. For example, as a rule it is expected that the text of the law is understood directly as opposed to text of art. However, it is not always true in practice. In the experiments we presented extracts from the «Law on the Languages of the Republic of Kazakhstan» and a practical situation, the understanding of which required recognition of rule of law. Theoretically right and proper understanding have been revealed among civil law specialists. Cognitive styles and personality mechanisms of understanding of text of law were revealed by experiments and grounded by theory [3].

It is of practical value to make comprehension of instructions as completely understandable as possible in terms of timing and avoiding mistakes. Sometimes, correct comprehension of instructions could mean survival. Imagine the situation where crowds of people have become trapped by an accident in an underground tunnel. Better instructions mean quicker rescue and more survivors. In practice, making instructions more understandable happens because practitioners in different fields know and use a variety of successful psychological prin-

ciples of human activity. For example, the psychology of comprehension of **Norton and Kaplan** [4], well-known business analysts, states that the management of most successful companies consider 4 main channels of collecting information.

The aim of our article is to present to Kazakstani readers another principle, way, or tool to vastly simplify explanation and understanding of complex systems. The method FLIPP Explainers was invented by David Cox during his employment at Procter and Gamble, Cincinnati, USA 1952-2008. The initial intent of the author was to enable people to better understand each other [5]. Mr. Cox's P&G experience includes developing new methods for manufacturing; industrial engineering work in several P&G plants; operations and planning in food manufacturing and product development; developing training for P&G change team facilitators; editing the P&G corporate publication which recognizes teams creating of changes and promotes reapplication. He did development work in P&G's corporate systems division.

FLIPP Explainers make complex instructions far easier to understand. 90% fewer pages of instructions is typical. The method's use at P&G was tracked over many years.

The method makes obvious all the logic connections that may matter to users of systems. What one sees is a nonverbal, non-symbolic picture of the logic which connects the parts of any given system. Users have simple game rules for moving through the structure. The rule for using all FLIPP Explainers is basically this: Start at the top. Move down to an endpoint without crossing through vertical lines.

D.Cox invented FLIPP Explainers while at Procter & Gamble in the late 1950s. Mr. Cox grew up in Williamsville NY. In 1952 he graduated from Oberlin College (Ohio) in Economics and began work with Procter & Gamble Cincinnati. He led manufacturing teams to deliberately discover and bring about important changes. He also administered personnel policy and designed production methods in manufacturing.

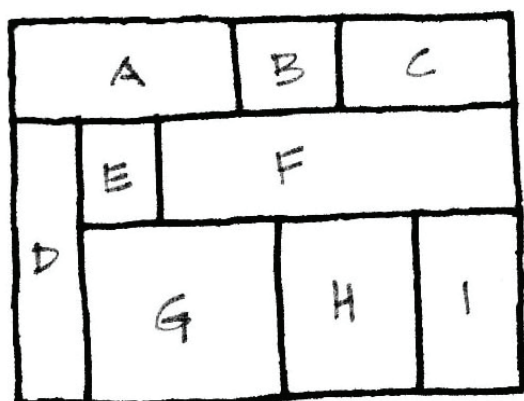
Later, as part of the corporate Information Systems organization, Mr. Cox led creative teams in research, product development, engineering, manufacturing, and marketing. As a facilitator, Cox helped 300 change teams to use other highly supportive, non-competitive game-like team plays. These were demonstrated, taught on the spot, and woven into different creative problem solving processes to fit the teams and the time available. In a separate ef-

fort, people in P&G's Information Systems organization made many applications of FLIPP Explainers to facilitate their clients' use of complex business systems. Mr. Cox describes FLIPP Explainers as a common foundation for making explanation clear wherever logic is complex as in education, science, medicine, communication, logic, mathematics, philosophy, and artificial intelligence. People see in one panorama all the navigational scenarios in any system as individual, self-connected pathway patterns even when millions of paths exist. The patterns show how parts of a system are connected in terms that matter to users. The patterns replace conventional written instructions, symbols, formula-forms, and often all the connecting 'wires' found in flow charts, tree structures, logic gates, and circuit diagrams. Users need to learn fewer things to succeed. It is well known from the theory of intelligence that thinking is a process of transition from one level of concept generalization to another one, from verbal to non-verbal (whole pattern) form. Cox's work seems to be a way of applying this theory.

Mr. Cox retired from P&G in 1988. Now, he volunteers help to people making FLIPP Explainers and creative change models freely and broadly available. The new format's main attribute is that it is *astonishingly* user friendly. It is also friendly for people doing the explaining – for example, the managers or owners or maintainers of systems. They become more successful as talented explainers.

FLIPP Explainers are *macrostructures* which can easily be directly connected to form even larger structures. In contrast, individual frames can be thought of as *microstructures* which are like tightly packed stepping stones arranged to form paths. Inside any frame, information can be in any language, any symbolic or mathematical format, and in any quantity. One might think of frames as being like different size mailing envelopes all having a common function – to hold any content – information, money, food, poetry, etc.

By *format*, Cox means a pattern of arrangement different from the information contained inside the blocks. Crossword puzzles, flow charts and baseball diamonds are easily recognized formats. Sentence form, while common, is *unfriendly* because *its single-path form does not show readers where lines of thought branch apart at the «ORs» nor merge together at the «ANDs.»* Linear text can only offer word descriptions of these nonlinear forms. Such forms and connections are the business of logic.



Scheme 1 – Field of 11 top-down patterns

More precise psychological analysis of this tool of comprehension can be done via related experiments aimed at the same type of comparison--text vs. patterned format--and the effect on learning and memory. This method is important because it would make, for example, **President Obama's** explanations of complex bailouts far clearer to more people far more quickly. It is important because it would make, for example, anyone's complex health care insurance policy far clearer to them. The format shows as patterns all--all--valid user paths in any system even for systems that have millions of valid user paths. Applications have been useful also in very simple systems--like how to use new phone systems. The FLIPP Explainer method is in the public domain and freely available to all at <http://www.flipp-explainers.org>. It is not convenient to create

diagrams of any type, but the extra effort can express one's «going well beyond» the usual concern for the success of one's information partners and associates. At P&G, this seemed to significantly enhance teamwork of system managers and system users.

The acronym FLIPP stands for *Format For Logical Information Planning & Presentation*). The diagrams produced with FLIPP are like *game boards*. Managers at P&G offered written comments on their experience with FLIPP. Additional comments were from a case study at a tax preparation company. FLIPP users found it an effective and efficient way to describing complex, interrelated pieces of information.

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### Түсінудің түсіндірумен байланысы: теория және тәжірибе

Түсіну психологиясы когнитивті психологияның жаңа парадигмасы ретінде қабылданып, адам өмірінде және оның кәсіби іс-әрекетінде өте маңызды орын алады. Түсіну процесі алынған ақпаратты макроқұрылымдау процесі болып табылады. Мұны түсіндірудің теорияға және тәжірибеге енгізуге қатысты процестерімен салыстыруға болады. Түсіну психологиясы шешім қабылдау процесі орын алатын тәжірибенің түрлі қолданбалы салаларында түсіндіру тәжірибесінің теориялық негізі ретінде, қолданыла алады, олар – нұсқаулық мәтіндер, заң мәтіндері, техникалық және ғылыми мәтіндер, және де күнделікті ақпараттарды түсінуді.

**Түйін сөздер:** түсіну, түсіндіру, ақпарат, теория және практика.

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### Понимание в связи с объяснением: теория и практика

Понимание рассматривается как новая парадигма когнитивной психологии, что отражает его огромную роль в жизни человека и его профессиональной деятельности. Процесс понимания представляет собой макроструктурирование информации. Этот процесс сравним с процессом объяснения как теоретически, так и в отношении приложения на практике. Психология понимания может выступать в качестве теоретической основы для практики объяснения в различных прикладных сферах, где имеет место процесс принятия решения. Среди них – понимание инструктивных текстов, текстов законов, технических и научных текстов, а также информации в повседневной жизни. Практическое приложение психологии понимания многообразно: понимание текстов закона, инструктивных текстов, понимание в сфере бизнеса.

**Ключевые слова:** понимание, объяснение, информация, теория и практика.