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NETWORK

T Ī K L S

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Abstract – the authors of the report reconsider the significance and complexity of the network systems nowadays in Information Technologies all over the world. Networks help to exchange the information faster, to communicate and develop business through Internet. The network makes it possible to control machines and other devices from remote locations, which is very useful nowadays. Such **methods** as comparison, contrasting, analysis and synthesis are used. The report is based on a review of different technologies, network protocol studies, network types, network hardware and network topology descriptions – published in the Internet.

Key words: LAN, WAN, protocols, network hardware, network topology, network operating systems.

Introduction

The computer networks – Internet, Intranet and etc. have become a part of our lives as it is hard to imagine contemporary community without the network – mainly the Internet. The global network is used for several purposes, the main are – business, communication, information and entertainment. As for casual user of the network it may seem as simple as click away, but in reality it consists of numerous hardware, cabling and of course of many people who make it all work as one. In the report we tried to summarize the basics and the features of the modern computer networks. The main network components, description of network types, topologies and operating systems – are included as the main issues describing network and also understanding of how it really works is given.

1. Network

Network consists of two or more computers linked in order to share resources (such as printers and CD-ROMs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or

infrared light beams. The three basic types of networks include: Local Area Network (LAN), Wide Area Network (WAN). [1]

2.1 Local Area Network

A Local Area Network (LAN) is a network confined to a relatively small area. It is generally limited to a geographic area such as a lab, school, or building. Rarely LAN computers are more than a 1km apart. In a typical LAN configuration, one computer is designated as the file server. It stores all of the software which controls the network, as well as the software that can be shared by the computers attached to the network. Computers connected to the file server are called workstations. The workstations can be less powerful than the file server, and they may have additional software on their hard drives. Mostly LANs, cables are used to connect the network interface cards in each computer. [1]

2.2 Wide Area Network

Wide Area Network (WAN) is a computer network covering a broad areas, such as counties, countries, or the world. WANs [a] are used to connect LANs and other types of networks together, so that the users and computers in one location can communicate with the users and computers in other locations. Many WANs are built for one particular organization and are private. Others, built by the Internet service providers, provide connections from an organization's LAN to the Internet. Dedicated transoceanic cabling or satellite uplinks may be used to connect this type of network. A WAN is complicated. It uses multiplexers to connect local and metropolitan networks to global communications networks like the Internet. [2]

3. Network Protocols

A protocol is a set of rules which governs the communications between computers on a network. These rules include guidelines regulating the following characteristics of a network: access method, allowed physical topologies, types of cabling, and speed of data transfer. The most common protocols well known in Latvia are: Ethernet, Local Talk, Token Ring. [3]

3.1 Ethernet

Ethernet is the most widely-installed local area network (LAN) technology in Latvia, the Baltics and in the world. Specified in a standard, IEEE 802.3, Ethernet was originally developed by Xerox from an earlier specification called *Alohanet* (for the Palo Alto Research Center Aloha network) and then developed further by Xerox, DEC, and Intel. Ethernet LAN typically uses coaxial cable or special grades of twisted pair wires. Ethernet is also used in wireless LANs. The most commonly installed Ethernet systems are called 10BASE-T and provide transmission speeds up to 10 Mbps. In practice devices are connected to the cable and compete for access using a Carrier Sense Multiple Access with Collision Detection

(CSMA/CD) protocol. Fast Ethernet or 100BASE-T provides transmission speeds up to 100 megabits per second and is typically used for LAN systems, supporting workstations with 10BASE-T cards. Gigabit Ethernet provides even higher level of backbone support at 1000 megabits per second (1 gigabit or 1 billion bits per second). 10-Gigabit Ethernet provides up to 10 billion bits per second. [4]

3.2 Fast Ethernet

Fast Ethernet refers to a set of network standards for data transfer speeds which exceed the original Ethernet speed of 10 megabits per second (mbps). Hardware and software supporting Fast Ethernet can provide speeds up to 100 mbps. Original Ethernet is sometimes referred to as *10Base-T*, for *10 mbps baseband data transmission over twist pair*. “Twisted pair” is one type of copper Ethernet cabling used in networking. Fast Ethernet is also known as *100Base-T*, though there are other designations as well for other types of cabling. [5]

3.3 Gigabit Ethernet

Gigabit Ethernet is built on top of the Ethernet protocol, it increases speed tenfold over Fast Ethernet to 1000 Mbps, or 1 gigabit per second (Gbps). Gigabit Ethernet allows Ethernet to scale from 10/100 Mbps at the desktop to 100 Mbps up the riser to 1000 Mbps in the data center. [6]

3.4 Local Talk

Local Talk is a network protocol developed by Apple Computer, Inc. for Macintosh computers. The method used by Local Talk is called CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance). It is similar to CSMA/CD except that a computer signals its intent to transmit before it actually does so. Local Talk adapters and special twisted pair cable can be used to connect a series of computers through the serial port. The Macintosh operating system allows the establishment of a peer-to-peer network without the need for additional software. With the addition of the server version of AppleShare software, a client/server network can be established. The Local Talk protocol allows for linear bus, star, or tree topologies using twisted pair cable. A primary disadvantage of Local Talk is speed. Its speed of transmission is only 230 Kbps. [29]

3.5 Token Ring

Token Ring uses a ring topology whereby the data is sent from one machine to the next and so on around the ring until it ends up back where it started. It also uses a token passing protocol which means that a machine can only use the network when it has control of the Token, this ensures that there are no collisions because only one machine can use the network at any given time. [7]

4. Network Hardware

Networking hardware includes all computers, peripherals, interface cards and other equipment necessary to perform data-processing and communications within the network: File Servers, Workstations, Network Interface Cards, Switches, Repeaters, Bridges, Routers. [8]

4.1 File Servers

In the client/server model, a file server is a computer responsible for the central storage and management of data files so that other computers in the same network can access the files. A file server allows users to share information over a network without having to physically transfer files by floppy diskette or some other external storage device. Any computer can be configured to be a host and act as a file server. In its simplest form, a file server may be an ordinary PC that handles requests for files and sends them over the network. In a more sophisticated network, a file server might be a dedicated network-attached storage (NAS) device also serves as a remote hard disk drive for other computers, allowing anyone on the network to store files on it as if to their own hard drive. A program or mechanism enables the required processes for file sharing can also be called a file server. On the Internet, such programs often use the File Transfer Protocol (FTP). [8]

4.2 Workstations

All of the user computers connected to a network are called workstations. A typical workstation is a computer configured with a network interface card, networking software, and the appropriate cables. Workstations do not necessarily need floppy disk drives because files can be saved on the file server. Almost any computer can serve as a network workstation. [9]

4.3 Network Interface Cards

The network interface card (NIC) provides physical connection between the network and the computer workstation. Most NICs are internal, with the card fitting into an expansion slot inside the computer. Some computers, such as Mac Classics, use external boxes which are attached to a serial port or a SCSI port. Laptop computers can now be purchased with a network interface card built-in or with network cards that slip into a PCMCIA slot. Network interface cards are a major factor in determining the speed and performance of a network. It is a good idea to use the fastest network card available for the type of workstation you are using. The three most common network interface connections are Ethernet cards, Local Talk connectors, and Token Ring cards. According to International Data Corporation study, Ethernet is the most popular, followed by Token Ring and Local Talk. [9]

4.4 Ethernet Cards

These adapters support the Ethernet standard for high-speed network connections via cables. Ethernet cards may operate at different network speeds depending on the protocol standard they support. Old Ethernet cards were capable only of the 10 Mbps maximum speed offered by Ethernet originally. Modern Ethernet adapters all support the 100 Mbps Fast Ethernet standard and an increasing number now also offer Gigabit Ethernet support. [10]

4.5 Local Talk Connectors

Local Talk is Apple's built-in solution for networking Macintosh computers. It utilizes a special adapter box and a cable that plugs into the printer port of a Macintosh. A major disadvantage of Local Talk is that it is slow in comparison to Ethernet. Most Ethernet connections operate at 10 Mbps (Megabits per second). In contrast, Local Talk operates at only 230 Kbps (or 23 Mbps). [9]

4.6 Token Ring Cards

Token Ring adapter card is the physical interface that a station uses to connect to a token ring network. There are token ring adapter cards for almost every computer bus type. Token Ring cards generally have a nine pin DIN type connector to attach the card to the network cable. [11]

4.7 Switch

A concentrator is a device that provides a central connection point for cables from workstations, servers, and peripherals. In a star topology, twisted-pair wire is run from each workstation to a central switch/hub. Most switches are active, that is they electrically amplify the signal as it moves from one device to another. Switches no longer broadcast network packets as hubs did in the past, they memorize addressing of computers and send the information to the correct location directly. [9]

4.8 Repeaters

A network or communications device, which propagates electrical signals from one cable to another, amplifying them, to restore them to full strength in the process. Repeaters are used to counter the attenuation which occurs when signals travel long distances (e.g. across an ocean). [12]

4.9 Bridges

A bridge is a device that allows to segment a large network into two smaller, more efficient networks. If adding to an older wiring scheme and want the new network to be up-to-date, a bridge can connect the two. A bridge monitors the information traffic on both sides of the network so that it can pass packets of information to the correct location. Most bridges can

"listen" to the network and automatically figure out the address of each computer on both sides of the bridge. The bridge can inspect each message and, if necessary, broadcast it on the other side of the network. The bridge manages the traffic to maintain optimum performance on both sides of the network. It might be said that the bridge is like a traffic cop at a busy intersection during rush hour. It keeps information flowing on both sides of the network, but it does not allow unnecessary traffic through. Bridges can be used to connect different types of cabling, or physical topologies. They must, however, be used between networks with the same protocol. [9]

4.10 Routers

A router translates information from one network to another; it is similar to a super intelligent bridge. Routers select the best path to route a message, based on the destination address and origin. The router can direct traffic to prevent head-on collisions, and is smart enough to know when to direct traffic along back roads and shortcuts. While bridges know the addresses of all computers on each side of the network, routers know the addresses of computers, bridges, and other routers on the network. Routers can even "listen" to the entire network to determine which sections are busiest -- they can then redirect data around those sections until they clear up.

If you have a school LAN that you want to connect to the Internet, you will need to purchase a router. In this case, the router serves as the translator between the information on your LAN and the Internet. It also determines the best route to send the data over the Internet. Routers can:

- Direct signal traffic efficiently
- Route messages between any two protocols
- Route messages between linear bus, star, and star-wired ring topologies
- Route messages across fiber optic, coaxial, and twisted-pair cabling. [9]

5. Network Cabling

Cable is the medium through which information usually moves from one network device to another. There are several types of cable which are commonly used with LANs. In some cases, a network will utilize only one type of cable, other networks will use a variety of cable types. The type of cable chosen for a network is related to the network's topology, protocol, and size. Understanding the characteristics of different types of cable and how they relate to other aspects of a network is necessary for the development of a successful network. [13]

5.1 Unshielded Twisted Pair (UTP) Cable

Short for *unshielded twisted pair*, a popular type of cable that consists of two unshielded wires twisted around each other. Due to its low cost, UTP cabling is used extensively for local-area networks (LANs) and telephone connections. UTP cabling does not offer as high bandwidth or as good protection from interference as coaxial or fiber optic cables, but it is less expensive and easier to work with. [14]

5.2 Unshielded Twisted Pair Connector

The twisted-pair connector interface, often referred to as an RJ-45, is an 8-position, 8-contact (8P8C) modular plug and jack that was originally patented in 1975 by Western Electric Company, the manufacturing arm of AT&T. Since that time, many technological improvements have overcome crosstalk as data rates have evolved from 16 MHz for Category 3 to 500 MHz for the latest Category 6A standard. Many in the industry believe 500 MHz to be the last "hurrah" for the unshielded version of the 8P8C connector, while shielded versions are undergoing innovative development to support Category 7 and 7A performance up to 600 MHz and 1000 MHz, respectively. But others are not quite ready to close the book on UTP. [15]

5.3 Shielded Twisted Pair (STP) Cable

Shielded twisted-pair (STP) cable combines the techniques of shielding, cancellation, and wire twisting. Each pair of wires is wrapped in a metallic foil. The four pairs of wires then are wrapped in an overall metallic braid or foil, usually 150-ohm cable. As specified for use in Ethernet network installations, STP reduces electrical noise both within the cable (pair-to-pair coupling, or crosstalk) and from outside the cable (EMI and RFI). STP usually is installed with STP data connector, which is created especially for the STP cable. However, STP cabling also can use the same RJ connectors UTP uses. Although STP prevents interference better than UTP, it is more expensive and difficult to install. In addition, the metallic shielding must be grounded at both ends. If it is improperly grounded, the shield acts like an antenna and picks up unwanted signals. [16]

5.4 Coaxial Cable

Coaxial cable (or "coax") is the most common cable used for transmitting video signals. The name "coaxial" refers to the common axis of the two conductors. [17]

5.5 Coaxial Cable Connectors.

The most common type of connector used with coaxial cables is the Bayone-Neill-Concelman (BNC) connector. Different types of adapters are available for BNC connectors, including a T-connector, barrel connector, and terminator. Connectors on the cable are the weakest points

in any network. To help avoid problems with network, it is good always use the BNC connectors that crimp, rather than screw, onto the cable. A coaxial cable has a solid copper or copper-clad-steel centre conductor surrounded by a non-conductive dielectric insulating material. The dielectric is surrounded by foil shield/s and/or copper braid/s which form the outer conductor and also shield against electromagnetic interference (EMI). The outer conductor / shield is encased in a PVC jacket. Most coaxial cables for video applications have a nominal impedance of 75 ohms. Their differing electrical and physical characteristics make it important to select the correct type of cable to suit the application. BNC connectors are bayonet type connectors, commonly used in CCTV systems. They are the most suitable connectors for use with RG59/U cable. BNC connectors are specified by IEC standard IEC60169-8.

The argument, over which the "BNC" in "BNC connector" means, will go on forever. It has been variously defined as: British Navy Connector, Bayonet Node Connector, Bayonet Nut Coupling, Baby Neil Connector, etc. The two Amphenol engineers who invented the BNC connector were named Paul Neil and Carl Concelman. It therefore seems logical that the "true" meaning of the "BNC" acronym is perhaps "Bayonet Neil-Concelman".

F-Type connectors are used for CATV, SATV and Digital TV in conjunction with either RG6 or RG11 cables. The copper-clad-steel inner conductor of the cable forms the inner "pin" of the connector. Although "twist-on" type connectors are available, they do not produce a reliable connection in comparison to a crimp-type connector that has been terminated with a good-quality ratchet crimping tool. F-type connectors are also known as F-81 connectors and are specified by IEC standard IEC60169-24.

F-type connectors are named according to the type of cable or the application that they have been designed for as shown in the table below. **PAL (Belling Lee)** connectors are a push-on connectors that have been traditionally used for TV antenna wall plates and connections. With the exception of TV/VCR hook-ups, PAL connectors are being replaced by F-Type connectors as required for CATV, SATV and DTV. PAL connectors are specified by IEC standard IEC60169-2 Adaptors. Where BNC connectors are required with RG6/U coaxial cable, it is recommended that an F-Type plug be crimped to the RG6/U and an F-Type to BNC adaptor used. [17]

5.6 Fiber Optic Cable

Fiber optics (optical fibers) are long, thin strands of very pure glass about the diameter of a human hair. They are arranged in bundles called **optical cables** and used to transmit light signals over long distances.

If to look closely at a single optical fiber, it has the following parts:

- **Core** - Thin glass center of the fiber where the light travels
- **Cladding** - Outer optical material surrounding the core that reflects the light back into the core
- **Buffer coating** - Plastic coating that protects the fiber from damage and moisture

Hundreds or thousands of the optical fibers are arranged in bundles in optical cables. The bundles are protected by the cable's outer covering, called a jacket. [18]

5.7 Fiber Optic Connector

The most common connector used with fiber optic cable is an ST connector. It is barrel shaped, similar to a BNC connector. A newer connector, the SC, is becoming more popular. It has a squared face and is easier to connect in a confined space. [13]

6. Wireless Networks

Wireless network refers to any type of computer network that is wireless, and is commonly associated with a telecommunications network whose interconnections between nodes is implemented without the use of wires. Wireless telecommunications networks are generally implemented with some type of remote information transmission system which uses electromagnetic waves, such as radio waves, for the carrier and this implementation usually takes place at the physical level or "layer" of the network. [19]

6.1 Wireless PAN

Wireless Personal Area Network (WPAN) is a type of wireless network interconnecting devices within a relatively small area, generally within reach of a person. For example, Bluetooth provides a WPAN for interconnecting a headset to a laptop. ZigBee also supports WPAN applications. [19]

6.2 Wireless LAN

Wireless Local Area Network (WLAN) is a wireless alternative to a computer Local Area Network (LAN) that uses radio instead of wires to transmit data back and forth between computers in a small area such as a home, office, or school. Wireless LANs are standardized under the IEEE 802.11 series.

- **Wi-Fi:** Wi-Fi is a commonly used wireless network in computer systems to enable connection to the internet or other devices that have Wi-Fi functionalities. Wi-Fi networks broadcast radio waves that can be picked up by Wi-Fi receivers attached to different computers or mobile phones.
- **Fixed Wireless Data:** This implements point to point links between computers or networks at two locations, often using dedicated microwave or laser beams over line of sight

paths. It is often used in cities to connect networks in two or more buildings without physically wiring the buildings together. [19]

6.3 Wireless MAN

Wireless Metropolitan area networks are a type of wireless network that connects several Wireless LANs. WiMAX is the term used to refer to wireless MANs and is covered in IEEE 802.16d/802.16e. [19]

7. Network Topology

Think of a topology as a network's virtual shape or structure. This shape does not necessarily correspond to the actual physical layout of the devices on the network. For example, the computers on a home LAN may be arranged in a circle in a family room, but it would be highly unlikely to find a ring topology there. [20]

7.1 Bus Topology

A bus network uses a multi-drop transmission medium, all nodes on the network share a common bus and thus share communication. This allows only one device to transmit at a time. A distributed access protocol determines which station is to transmit. Data frames contain source and destination addresses, where each station monitors the bus and copies frames addressed to itself. Ring Topology. A bus topology connects each computer (nodes) to a single segment trunk (a communication line, typically coax cable, that is referred to as the 'bus'. The signal travels from one end of the bus to the other. A terminator is required at each end to absorb the signal so as it does not reflect back across the bus. A media access method called CSMA/MA is used to handle the collision that occurs when two signals are placed on the wire at the same time. The bus topology is passive. In other words, the computers on the bus simply 'listen' for a signal; they are not responsible for moving the signal along. [21]

7.2 Ring Topology

Also known as a ring network, the ring topology is a type of computer network configuration where each network computer and device are connected to each other forming a large circle (or similar shape). Each packet is sent around the ring until it reaches its final destination. Today, the ring topology is seldom used. Below is a visual example of a simple computer setup on a network using a ring topology. [22]

7.3 Star Topology

Star Topology is the most common type of network topology that is used in homes and offices. In the Star Topology there is a central connection point called the hub which is a computer hub or sometimes just a switch. In a Star Network the best advantage is when there is a failure in cable then only one computer might get affected and not the entire network. The

Star Network Topology typically needs more cable to be networked than the usual Bus topology. A common cable that is used in Star Network is the UTP or the unshielded twisted pair cable. Another common cable that is used in star networks is the RJ45 or the Ethernet cables. In a Star Network the entire network is dependant on the hub so if the entire network is not working then there could be a problem with the hub. This feature makes it easy to troubleshoot by offering a single point for error connection and at the same time the dependency is also very high on that single point. [23]

7.4 Tree Topology

A Tree topology consists of a Co-ordinator, to which other nodes are connected as follows:

- The Co-ordinator is linked to a set of Routers and End Devices - its children.
- A Router may then be linked to more Routers and End Devices - its children. This can continue to a number of levels.

This hierarchy can be visualised as a tree structure with the Co-ordinator at the top, as illustrated in the diagram below.

Structural Rules

The structural rules and terminology of the Tree topology are as follows:

- The Co-ordinator and Routers can have children, and can therefore be parents.
- End Devices cannot have children, and therefore cannot be parents.

Communication Rules

The communication rules in a Tree topology are as follows:

- A child can only directly communicate with its parent (and with no other node).
- A parent can only directly communicate with its children and with its own parent.

In sending a message from one node to another, the message must travel from the source node **up the tree** to the nearest common ancestor and then **down the tree** to the destination node. [24]

7.5 Mesh Topology

Mesh network topology is one of the key network architectures in which devices are connected with many redundant interconnections between network nodes such as routers and switches. In a mesh topology if any cable or node fails, there are many other ways for two nodes to communicate. While ease of troubleshooting and increased reliability are definite pluses, mesh networks are expensive to install because they use a lot of cabling. Often, a mesh topology will be used in conjunction with other topologies (such as Star, Ring and Bus) to form a hybrid topology. Some WAN architecture, such as the Internet, employ mesh routing. Therefore the Internet allows sites to communicate even during a war.

There are two types of mesh topologies: full mesh and partial mesh. [25]

7.6 Full Mesh Topology occurs when every node has a circuit connecting it to every other node in a network. Full mesh is very expensive to implement but yields the greatest amount of redundancy, so in the event that one of those nodes fails, network traffic can be directed to any of the other nodes. Full mesh is usually reserved for backbone networks. [25]

7.7 With Partial Mesh, some nodes are organized in a full mesh scheme but others are only connected to one or two in the network. Partial mesh topology is commonly found in peripheral networks connected to a full meshed backbone. It is less expensive to implement and yields less redundancy than full mesh topology. [25]

8. Network Operating Systems

Unlike operating systems, such as DOS and Windows, that are designed for single users to control one computer, network operating systems (NOS) coordinate the activities of multiple computers across a network. The network operating system acts as a director to keep the network running smoothly. The two major types of network operating systems are: Peer – to – Peer, Client / Server. [26]

8.1 Peer – to - Peer

On the Internet, peer-to-peer (referred to as P2P) is a type of transient Internet network that allows a group of computer users with the same networking program to connect with each other and directly access files from one another's hard drives. Napster and Gnutella are examples of this kind of peer-to-peer software. Major producers of content, including record companies, have shown their concern about what they consider illegal sharing of copyrighted content by suing some P2P users. Meanwhile, corporations are looking at the advantages of using P2P as a way for employees to share files without the expense involved in maintaining a centralized server and as a way for businesses to exchange information with each other directly. The user must first download and execute a peer-to-peer networking program. (Gnutellanet is currently one of the most popular of these decentralized P2P programs because it allows users to exchange all types of files.) After launching the program, the user enters the IP address of another computer belonging to the network. (Typically, the Web page where the user got the download will list several IP addresses as places to begin). Once the computer finds another network member on-line, it will connect to that user's connection (who has gotten their IP address from another user's connection and so on). Users can choose how many member connections to seek at one time and determine which files they wish to share or password protect. [27]

8.2 The Client Server Architecture

The Internet revolves around the client-server architecture. The computer runs software called the client and it interacts with another software known as the server located at a remote computer. The client is usually a browser such as Internet Explorer, Netscape Navigator or Mozilla. Browsers interact with the server using a set of instructions called protocols. These protocols help in the accurate transfer of data through requests from a browser and responses from the server. There are many protocols available on the Internet. The World Wide Web, which is a part of the Internet, brings all these protocols under one roof. It is possible to use HTTP, FTP, Telnet, email etc. from one platform - your web browser. [28]

Terms

A list of the most essential terminology in the field for beginners was elaborated.

1. **Network** ['netwe: k] - A group of interconnected computers, including the hardware and software used to connect them. **Tīkls.** Datoru un ar tiem saistīto perifērijas ierīču grupa, kas savstarpēji savienotas ar sakaru kanāliem un kas nodrošina datņu un citu resursu kopīgas izmantošanas iespējas vairākiem lietotājiem.
2. **Internet** [internet] - The biggest internet in the world. This worldwide information highway is comprised of thousands of interconnected computer networks, and reaches millions of people in many different countries. **Internets.** Pasaules lielākais intertīkls, kas sākotnēji izveidojies uz pētnieciskā tīkla ARPANET bāzes un sevī apvieno dažādus individuālos datoru tīklus.
3. **Hardware** ['ha: dwee] - The hardware is the physical part of a computer system; the machinery and equipment. **Aparatūra.** Datu apstrādes sistēmas fizikālā daļa, kurā ietilpst elektriskās, elektroniskās un elektromehāniskās shēmas, iekārtas un to savienojumi (t. sk. dažādas ievadizvades ierīces, rādītājierīces u. c.), kā arī konstruktīvie elementi (piemēram, statnes).
4. **CD-ROM drive** [si: di: rom draiv] - A disk drive that reads CD-ROMs and audio CDs. It may be installed in the computer or removable. Recordable CD-ROM drives can also record onto the CDs. **Lasāmatmiņas kompaktdiska diskdzinis.** Ierīce, kas ietilpst CD-ROM atskaņotājā un parasti veic kompaktdiskā ierakstītās informācijas nolasīšanu un pārsūtīšanu datoram. Atskaņotājs nodrošina diskdziņa griešanos un lāzera stara izveidi kompaktdiskā ierakstīto datu nolasīšanai. Daži šī diskdziņa paveidi (piemēram, CD-R diskdzinis) nodrošina arī informācijas ierakstīšanu.

5. **LAN (Local Area Network)** [ˈleukl ˈeria ˈnetwe: k] - A network that connects computers that are close to each other, usually in the same building, linked by a cable. **Lokālais tīkls.** Datoru tīkls, kas izvietots nelielā teritorijā un atrodas lietotāja pārziņā. Lokālais tīkls sastāv no sakaru līnijām, kas savieno personālos datorus un citas elektroniskās koplietošanas iekārtas (printerus, ploterus, datu uzkrāšanas un glabāšanas ierīces).

6. **WAN (Wide Area Network)** [waɪd ˈeria ˈnetwe: k] - A network in which computers are connected to each other over a long distance, using telephone lines and satellite communications. Contrast with Local Area Network (LAN). **Teritoriālais tīkls.** Datoru tīkls, kas savieno attālus lietotājus, kuri var atrasties citās pilsētās vai valstīs un kuri parasti izmanto vispārējās lietošanas vai speciālus sakaru līdzekļus.

7. **Server** [ˈse: ve] - Server is a computer or other network device that stores all necessary information and is dedicated to provide a particular service. **Serveris.** Funkcionāls datoru tīkla bloks (dators, stacija), kas nodrošina citām tā stacijām koplietošanas pakalpojumus (piemēram, datņu serveris, drukas serveris, pasta serveris).

8. **Software** [ˈsoftwee] - Software is the computer program that tells a computer's hardware what to do. System software is the operating system that controls the basic functioning capabilities of the computer, network software enables multiple computers to communicate with one another, and language software is used to develop programs. **Programmatūra.** Datoru programmas, procedūras un ar tām saistītā dokumentācija un dati, kas nepieciešami datoru sistēmas darbībai.

9. **Workstation** [we: k ˈsteišen] - Workstation is a type of stand alone computer for powerful applications such as publishing, software development, etc. Workstations typically have a large, high-resolution graphics screen, large RAM, built-in network interface, and a graphical processor in addition to normal CPU. The most common operating systems for workstations are LINUX, UNIX and Windows. **Darbstacija.** Datu apstrādes vai komunikāciju sistēma, kas parasti apgādāta ar kāda noteikta tipa uzdevumu risināšanai nepieciešamajām iekārtām, programmatūru un sakaru līdzekļiem. Darbstacija var tikt izmantota autonomi vai kā datoru tīkla sastāvdaļa.

10. **ISP (Internet Service Provider)** [internet ˈse: vis preˈvaide] - A company that provides Internet accounts. **Tīkla Internet pakalpojumu sniedzējs.** Juridiska persona, kas nodrošina tiešu lietotāja piekļuvi tīklam Internet.

11. **Network protocol** [ˈnetwe: k ˈpreutekol] - A protocol is a set of rules which governs the communications between computers on a network. These rules include guidelines regulating the following characteristics of a network: access method, allowed physical topologies, types

of cabling, and speed of data transfer. **Protokols.** Semantisku un sintaktisku noteikumu kopums, kas nosaka datoru tīkla funkcionālo bloku darbību datu pārraides procesā. Datoru tīklos, kas veidoti atbilstoši atvērto sistēmu arhitektūras prasībām, protokols nosaka dažādu viena un tā paša slāņa entītiņu uzvedību datu pārraides laikā.

12. **Ethernet** [ezernet] – the network protocol type. **Tīkls Ethernet.** Viens no protokola tipiem.

13. **Fast Ethernet** [fa: st ezernet] – the network protocol type. **Tīkls Fast Ethernet.** Viens no protokola tipiem.

14. **Gigabit Ethernet** [gigabit ezernet] – the network protocol type. **Tīkls Gigabit Ethernet.** Viens no protokola tipiem.

15. **Local Talk** ['leukl to: k] - the network protocol type. **Tīkls Local Talk.** Viens no protokola tipiem.

16. **Token Ring** ['teu:ken rin] - the network protocol type. **Tīkls Token Ring.** Viens no protokola tipiem.

17. **Coaxial cable** ['keu'aeksiel 'keibl] - A transmission line for high-frequency signāls. **Koaksiālais kabelis.** Kabelis, ko veido divi ar izolāciju atdalīti vadītāji. Viens no tiem ir centrālais vads, kuru apņem ar izolācijas slāni atdalīts otrs lielāka diametra cauruļvads vai vadu pinums. Lai gan koaksiālais kabelis ir dārgāks par vīto pāru kabeli, tas nodrošina lielāka datu apjoma pārsūtīšanu. Koaksiālo kabeli izmanto pamatjoslas un platjoslas datu pārraides, kā arī kabeļu televīzijas tīklos.

18. **Adapter** [e'daepte] – A part that connects two devices or systems, physically or electrically, and enables them to work together. It can be a plug that allows two wires to be connected, for example, or a printed circuit board that modifies the computer so it can work with certain hardware or software. **Adapters.** Ierīce, kas nodrošina sadarbību starp atšķirīgām iekārtām un sistēmām, kuru konstruktīvās un funkcionālās īpatnības neļauj izmantot tiešu savienojumu.

19. **Serial port** ['sieriēl po: t] - Serial port, also known as serial interface, is a port on the computer that transmits data in serial form (bit by bit), as opposed to a parallel interface which sends a number of bits at the same time. Within the computer, data is transmitted over parallel lines. The serial interface converts data from a parallel to a serial form for sending to the serial devices such as a modem, mouse, scanner or some serial printers. **Seriālā pieslēgvietā.** Ievadizvades pieslēgvietā, kas nodrošina secīgu (bitu pēc bita) informācijas pārsūtīšanu starp datoru un tā ārējām ierīcēm (piemēram, modemiem, pelēm, skeneriem, seriāliem printeriem u. c.).

20. **Operating System** [‘opereitin ‘sistem] - An operating system is the main control program of a computer that schedules tasks, manages storage, and handles communication with peripherals. An operating system presents a basic user interface when no applications are open, and all applications must communicate with the operating system. Examples of operating systems are Windows, DOS, MacOS, Linux, UNIX, OS/2, RISC OS, etc.

Operētājsistēma. Programmu komplekss, kas vada datu organizēšanu un programmu izpildi datorā, nodrošina aparatūras un programmatūras kopdarbību, resursu racionālu izmantošanu, kā arī sadarbību ar lietotāju. Pazīstamākās personālo datoru operētājsistēmas ir MS-DOS, OS/2, Microsoft Windows, Linux u.c.

21. **Twisted pair** [twisted peir] – The cabling is a form of wiring in which two conductors (are twisted together for the purposes of canceling out electromagnetic interference from external sources, for example, electromagnetic radiation from unshielded twisted pair (UTP) cables. **Vītais pāris** - Divi savīti izolēti vadi, kas samazina indukciju un ar to saistīto elektrisko signālu interferenci. Vītais pāris izveido samērā lētu informācijas pārraides vidi.

22. **Peer-to-peer** [pie-tu-pie] - A type of transient Internet network that allows a group of computer users with the same networking program to connect with each other and directly access files from one another's hard drives. **Vienādranga tīkls** - lokālais tīkls, kurā katra personālā datora diskdziņiem, datnēm un printeriem var piekļūt no jebkura cita šim tīklam pieslēgtā datora. Šādas arhitektūras tīklos īpaša datņu servera izmantošana nav obligāta.

23. **Peripheral** [pe’rifrel] - A device attached to a host computer behind the chipset whose primary functionality is dependent upon the host, and can therefore be considered as expanding the hosts capabilities, while not forming part of the system's core architecture. **Periferijas ierīce.** Pievienota tieši tīklam, nevis kādam no tīklā ieslēgtajiem datoriem vai darbstacijām.

24. **Network interface card (NIC)** [‘netwe: k ‘intefeis ka: d] - A computer hardware component designed to allow computers to communicate over a computer network. It allows users to connect to each other either by using cables or wirelessly. **Tīkla saskarnes karte.** Personālā datora izvērse karte, kas kopā ar tīkla operētājsistēmu vada informācijas plūsmu datoru tīklā. Tīklam darbojoties, šī karte ir tieši saistīta ar datu pārraides vidi (vīto pāri, koaksiālo vai optisko kabeli), kas, savukārt, saista savā starpā visas tīkla saskarnes kartes. Dažkārt šo karti sauc arī par tīkla adapteri.

25. **Network switch** [‘netwe: k switš] - communications device that controls the operation and routing of a signal path. **Komutators.** Komunikācijas ierīce kura kontrole informācijas signāla maršrutu un darbību.

26. **Repeater** [ri'pi: te] - An electronic device that receives a signal and retransmits it at a higher level and/or higher power, or onto the other side of an obstruction, so that the signal can cover longer distances without degradation. **Atkārtotājs.** Datoru tīkla ierīce, ko izmanto, lai reģenerētu pārraides procesā izkropļotos analogsignālus un ciparsignālus. Analogsignālu atkārtotāji tikai pastiprina saņemto signālu, bet ciparsignālu atkārtotāji parasti atjauno saņemto signālu tā, lai tas būtu iespējami tuvs oriģinālam. Datu pārraides tīklos atkārtotāji var arī retranslēt ziņojumus starp apakštīkliem, kuros izmantoti dažādi protokoli vai kabeļu tipi. Centrmezgli, retranslējot saņemtos ziņojumus visiem tiem pievienotajiem datoriem, izpilda arī atkārtotāju funkcijas.

27. **Bridge** [bridž] - A device that connects multiple network segments, however, with bridging, traffic from one network is managed rather than simply rebroadcast to another network segments. **Tilts.** Funkcionāls bloks, kas savieno divus lokālos tīklus, kuriem ir vienādi loģiskā posma vadības protokoli, bet kuriem var būt dažādi vides piekļuves protokoli.

28. **Router** [ru: te] - A device or a piece of software in a computer that forwards and routes data packets along networks. A router connects at least two networks, commonly two LANs or WANs. **Maršrutētājs.** Datu pārraides tīkla ierīce, kas nodrošina datu pārraides maršruta izvēli tīklos, kuriem var būt atšķirīga arhitektūra un protokoli.

29. **Host** [heust] - A computer connected to a network, that provides data and services to other computers. Services may include data storage, file transfer, data processing, e-mail, bulletin board services, World Wide Web. **Saimnieks.** Dators vai programma, kas nodrošina informatīvos pakalpojumus citiem tīkla datoriem vai programmām.

30. **Expansion card** [iks'paenšn ka: d] - A printed circuit board that can be inserted into an **expansion slot** of a computer motherboard to add additional functionality to a computer system. One edge of the expansion card holds the contacts that fit exactly into the slot. They establish the electrical contact between the electronics on the card and on the motherboard. **Paplašināšanas plate.** Drukātā plate, ko pievieno datora kopnei, lai paplašinātu datora funkcionālās iespējas un palielinātu veiktspēju.

31. **Unshielded twisted pair (UTP) cable** ['an'ši: ldid twisted peir 'keibl] - A popular type of cable that consists of two unshielded wires twisted around each other. Due to its low cost, UTP cabling is used extensively for local-area networks (LANs) and telephone connections. UTP cabling does not offer as high bandwidth or as good protection from interference as coaxial or fiber optic cables, but it is less expensive and easier to work with. **Neekranētais vītāis pāris.** Vītāis pāris neekranētā kabelī.

32. **Shielded Twisted Pair (STP) cable** [ˈʃi: ldiid twisted peir ˈkeibl] - Each pair of wires is wrapped in a metallic foil. The four pairs of wires then are wrapped in an overall metallic braid or foil, usually 150-ohm cable. As specified for use in Ethernet network installations, STP reduces electrical noise. **Ekranēts vītais pāris.** Vītais pāris ekranētā kabelī, ko parasti izmanto gredzentīklos ātrai datu pārraidei lielos attālumos.

33. **Fiber Optic Cable** [faɪb ˈaptɪk ˈkeibl] - Fiber optics (optical fibers) are long, thin strands of very pure glass about the diameter of a human hair. They are arranged in bundles called optical cables and used to transmit light signals over long distances. Hundreds or thousands of the optical fibers are arranged in bundles in optical cables. The bundles are protected by the cable's outer covering, called a jacket. **Optiskais kabelis.** Kabelis, kas izveidots no optiskajām šķiedrām. Optiskajos kabeļos informācijas pārsūtīšanai izmanto gaismas impulsus. Šī tipa kabeļi ļauj pārsūtīt lielu datu daudzumu un ir nejūtīgi pret elektriskajiem traucējumiem. Tos parasti izmanto datu pārraides pamattīkla veidošanai.

34. **Wireless network** [ˈwaɪeles ˈnetwe: k] - Type of computer network that is wireless, and is commonly associated with a telecommunications network whose interconnections between nodes is implemented without the use of wires. Wireless telecommunications networks are generally implemented with some type of remote information transmission system that uses electromagnetic waves, such as radio waves. **Bezvadu tīkls.** Lokālais tīkls, kurā datu apmaiņai starp mezgliem tiek izmantoti nevis vadi, bet gan augstfrekvences radioviļņi.

35. **Bluetooth** [blu: tu: s] - Open wireless protocol for exchanging data over short distances from fixed and mobile devices, creating personal area networks (PANs). It was originally conceived as a wireless alternative to data cables. It can connect several devices, overcoming problems of synchronization. **Bluetooth tehnoloģija.** Radiotehnoloģija, kas izmanto mazas jaudas raidītājus un kas nodrošina pārnēsājamu datu pārraides ierīču savienošanu savā starpā vai to pievienošanu datoram vai internetam. Bluetooth ļauj pievienot mobilos telefonus datoriem un citām pārnēsājamām ierīcēm un nodrošina to savienojumu ar internetu.

36. **Laptop** [laɛptop] - Personal computer designed for mobile use small enough to sit on one's lap. A laptop includes most of the typical components of a desktop computer, including a display, a keyboard, a pointing device, speakers, as well as a battery, into a single small and light unit. The rechargeable battery required is charged from an AC/DC adapter and typically stores enough energy to run the laptop for two to three hours in its initial state, depending on the configuration and power management of the computer. **Klēpjdators.** Viegls, pārnēsājams personālais dators ar atvāžamu plakanu displeju, kas parasti izmanto autonomu barošanas avotu. Tas ir piemērots darbam nestacionāros apstākļos.

37. **WiMAX** [wimaks] - telecommunications technology that provides wireless transmission of data using a variety of transmission modes, the technology provides up to 3 Mbit/broadband speed without the need for cables. The technology is based on the IEEE 802.16 standard. **WiMAX tehnologija.** Vairaku bezvadu tehnologiju apvienojums kurš parklaj lielas platības un spēj parraidit datu 3MBitu/s atruma neizmantojot vadus.

38. **Network topology** ['netwe: k topologi] - Think of a topology as a network's virtual shape or structure. This shape does not necessarily correspond to the actual physical layout of the devices on the network. For example, the computers on a home LAN may be arranged in a circle in a family room, but it would be highly unlikely to find a ring topology there. **Tīkla topoloģija.** Shematisks datoru tīkla staciju (mezglu) un sakaru posmu (saišu) izvietojums. Tīkla topoloģiju var izmantot par klasifikācijas pazīmi, pēc kuras tīklus iedala lineāros tīklos, gredzentīklos, zvaigžņtīklos, koktīklos, režģtīklos.

39. **Bus Topology** [bas topologi] - uses a multi-drop transmission medium, all node on the network share a common bus and thus share communication. This allows only one device to transmit at a time. A distributed access protocol determines which station is to transmit. **Maģistrāles topoloģija.** Lokālais tīkls ar koplietojamu pārraides vidi, kur jebkurai stacijai pārraidāmie dati kļūst pieejami visām stacijām, kas pievienotas šai pārraides videi. Kā maģistrāles tīkla piemēru var minēt tīklu Ethernet. Maģistrāles tīklā var tikt izmantoti vairāki maģistrālie kabeļi, un tā topoloģija var būt lineāra, zvaigžņveida vai kokveida

40. **Ring topology** [rin topologi] - Also known as a ring network, the ring topology is a type of computer network configuration where each network computer and device are connected to each other forming a large circle (or similar shape). Each packet is sent around the ring until it reaches its final destination. Today, the ring topology is seldom used. Below is a visual example of a simple computer setup on a network using a ring topology. **Gredzentopoloģija.** Tīklu topoloģijas paveids, kurā katrs mezgls ir saistīts tikai ar diviem zariem un starp jebkuriem diviem mezgliem ir tikai divi ceļi.

41. **Star Topology** [sta topologi] - Star Topology is the most common type of network topology that is used in homes and offices. In the Star Topology there is a central connection point called the hub which is a computer hub or sometimes just a switch. In a Star Network the best advantage is when there is a failure in cable then only one computer might get affected and not the entire network. **Zvaigznes topoloģija.** Tīkla topoloģijas paveids, kurā ir vairāki terminālmezgli un tikai viens starpmezgls.

42. **Tree Topology** [tr: topologi]

A Tree topology consists of a Co-ordinator, to which other nodes are connected as follows:

- The Co-ordinator is linked to a set of Routers and End Devices - its children.
- A Router may then be linked to more Routers and End Devices - its children. This can continue to a number of levels. **Koka topoloģija.** Topoloģijas tips, kur tīkls veido koka formu ar daudziem zariem, kuru galos ir darbstacijas.

43. **Mesh Topology** [meš topologi] - Mesh network topology is one of the key network architectures in which devices are connected with many redundant interconnections between network nodes such as routers and switches. In a mesh topology if any cable or node fails, there are many other ways for two nodes to communicate. There are two types of mesh topologies: full mesh and partial mesh. **Režģtīkls.** Tīkla topoloģijas paveids, kurā ir vismaz divi mezgli, starp kuriem ir ne mazāk kā divi ceļi.

44. **Internet Protocol (IP) address** [] - A numerical identification and logical address that is assigned to devices participating in a computer network utilizing the Internet Protocol for communication between its nodes. Although IP addresses are stored as binary numbers, they are usually displayed in human-readable notations, such as 208.77.188.166 (for IPv4), and 2001:db8:0:1234:0:567:1:1 (for IPv6). The role of the IP address has been characterized as follows: "A name indicates what we seek. An address indicates where it is. A route indicates how to get there." **IP adrese.** Skaitliska adrese, kas viennozīmīgi identificē katru datoru tīklā Internet un kas izveidota kā četru ar punktiem atdalītu skaitļu virkne, piem.: 192.100.81.101

Conclusion

Researchers and students involved in computer control regard themselves being more practitioners than researchers or even scientists therefore the authors have examined the given information and initially elaborated available basis of full information on the latest technological achievements in the field of information technologies, network types and hardware topology.

Novelty of the research on networks allow the practitioners to broaden their understanding of present days variety of means and possibilities of application of networks for different purposes. The developed picture highlights and provides the possibility for scholars as well as for the practitioners to recognize opportunities for further extensions of networks. The list of the most essential terminology in the field for beginners is elaborated.

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FATHER`S INVOLVEMENT IN PRESCHOOL CHILDREN UPBRINGING TĒVA LĪDZDALĪBA PIRMSSKOLAS VECUMA BĒRNU AUDZINĀŠANĀ

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We live in a changing world, changing society, which has to be flexible to accommodate to new trends all the time. It also refers to a person, which is influenced by changing values and surrounding environment. An individual creates a society and a microcosm of a society is a family.

Family has never been a consequent volume, but now the traditional family has been reformed more than ever. The term of a norm is not so absolute anymore.

Modern societies have been called developed because they are characterized by high levels of industrialization, urbanization, education, wealth, and gender equality in public life. The post-modern world is shaped by pluralism, democracy, religious freedom, consumerism, mobility, and increasing access to news and entertainment. Residents of this post-modern world are able to see that there are many beliefs, multiple realities, and an exhilarating but daunting profusion of world views - a society that has lost its faith in absolute truth and in which people have to choose what to believe. (O'Hara, Anderson, 1991)

We can talk about the post-modern family within the framework of a post-modern society. Modern families have been called non-traditional because they are characterized by individualism, structure reorganization and revolutionary social movements. (Yount, 2005)

Notable changes have been made in a family and it also has changed the intensity of family's influence to a child. It is more difficult for a family as a system to last in up to date functioning forms. It has to adapt to fast environmental planned and unscheduled changes, has to last and develop. That is why there are less homogeneous, unified models of family and also traditional opinions about the right and wrongs things, good and bad. The essential thing is to produce conditions for the system, so it could function normally. (Vecgrāve, 2005)

It is very important to declare a family as a value in society context, showing a father as a stabile part of a kernel of the family and children upbringing.

It is necessary to realize what is understood by the family nowadays to study the father's role and involvement.

Most changes have shaped the structure of a family, but also values and attitudes. Since the zenith of the traditional family in 20th century 50s, economical and moral changes have given the opportunity to change the model of a father, mother and a child completely.

It is seen in new versions now more than ever: voluntary single mothers with adopted child or donor child, friend families, gay and lesbian which create children together and integrated families in different and uncountable combinations (nuclear family, extended family, [single parents](#), [stepfamilies](#), [adoption](#), unisexual families, surrogate parent a.s.o.). (Stēnsgorda, 2004)

There are discussions in society about the right and wrong things, about values, whether it is amorality or discrimination. It is about love, gender roles, child upbringing and education...

A question of upbringing starts in family, which is the most important environment for a child. A family has always been and apparently will always be the most important environment for the development of the identity. It is the most important institute of upbringing, which carries responsibility not only for reproduction of population, but also for creating a definite way of living. (Myстаева, 2003)

Social pedagogy defines definite functions of a family in the process of socialization:

- family functions as socially – psychological support;
- family has the leading position in the evolution of gender roles;
- family has the leading position in mental and emotional development;
- family has an important role in the acquirement of social and family norms;
- family forms a fundamental orientation;

(Myстаева, 2003)

What is understood by a notion “family”?

A family is a primary social group, a small community, in any society, typically consisting of a man and a woman, or any two individuals who wish to share their lives together in a long-term committed relationship with one another, raising offspring and usually reside in the same dwelling. (Pinsof, Lebow, 2005)

21st century meets different attitude to changes in a family. Various groups have interpreted these changes as evidence of “progress” and “decline” in the quality of family life. I will refuse to take up the cudgels for somebody. (Yount, 2005)

We are definitely not claiming to give an answer, but we would like to encourage thinking about these things and expressing an opinion.

An upbringing is the base of a human's life. It is a never-ending process, which is implemented by an individual and environment: family, society a.o. That is why so important to face the father's involvement in the context of upbringing. These changes influence the diversity of a father. Who was a father? Who is he now?

All the experts are at one with the opinion that a fundament of the upbringing is teamwork. (Einsvorta, Bareta, Keja, 2003) We can debate about the contents of the team nowadays. There are lots of family structure types, which tend to be a norm. The fact that traditional family is getting fragile and otherness follows at its heels also changes the meaning of a father's role. There is no doubt that a father is an upbringing team member. But there are variable opinions about definition of a father.

This seems to a simple question, but it is not. Is the father child's biological father, a man who becomes invested in the child as a stepfather or adoptive father, a relative who oversees the development of the child, or any and all of the above? Who do we study to assess the impact of fathers on children? As researchers, we can move beyond a traditional view of "father" as biological, living with the child, and married to the mother and instead use a definition more open to the many fathering functions in various contexts to influence children. Demographic changes in families are making traditional definitions less useful. It is useful to define fathering in terms of particular functions, such as caregiving, playing, teaching, providing support, or acting as role models or authority figures. (Tamis-LeMonda, Cabrera, 2002)

The significance of a father's involvement in co-parenting and children upbringing has increased, because of growing women employment in a work outside the home, because of a liberalization of centuries long sexual stereotypes, because of a feminism measures and also men wish to take part into their children upbringing and education in co-parenting and longing for a closer contact with their children.

The meaning of a father in family is no longer a financial support only. It has been extended from passive role to real involvement.

The balance between both parents in upbringing is particularly fundamental, especially in first years – preschool period. That shows the model of a family, the way a man relates to a woman, which helps to create healthy relationship and secure the values.

Significant project: "Men Equal – Men Different" was carried through in 2005-2006 by Latvian, Bulgarian, French and Danish partners.

The aims of the "Men Equal – Men Different" project was to examine, how fathers are able to create better balance between work and family life, by sharing family obligations and thereby contribute to gender equality. The main activities within the project are:

- Indicating of the main obstacles impeding active fatherhood and promote male involvement in the family life, child care.
- Changing of the gender stereotypes in society and educating about possibilities of men involvement in the family life.

(Veitners, K., Sedlenieks, K., Vasiļevska, K., 2006)

It is clearly visible from the conclusions of the project, that obstacles to increased participation in Latvia are rooted in general stereotypes about what family duties are specifically male or female.

It is also revealed in the research of Aivita Putniņa “Men in Latvia. Situation Outline. Demographic Situation: Present and Future.” that mostly men describe masculinity using characterization of the traditional form of a family in which a man functions as a financial support, but a women duties are household and children upbringing. (Putniņa, 2005)

Usually a man in public environment is described as a person, who has naturally less inclination to take part into family questions, except providing materials which are needed for surviving.

If a man shows his care for children and other members of the family, that is usually interpreted as non-standard occasion. And women frequently describes that kind of behavior as unmanly or weakness. (Veitners, Sedlenieks, Vasiļevska, 2006)

Here we can see the contradiction between women wish to involve fathers in children upbringing and family processes in general and the stereotype that men should tolerate such behaviour.

In both of the researches we can find possible roots of creating such stereotypes. (Veitners, Sedlenieks, Vasiļevska, 2006) (Putniņa, 2005)

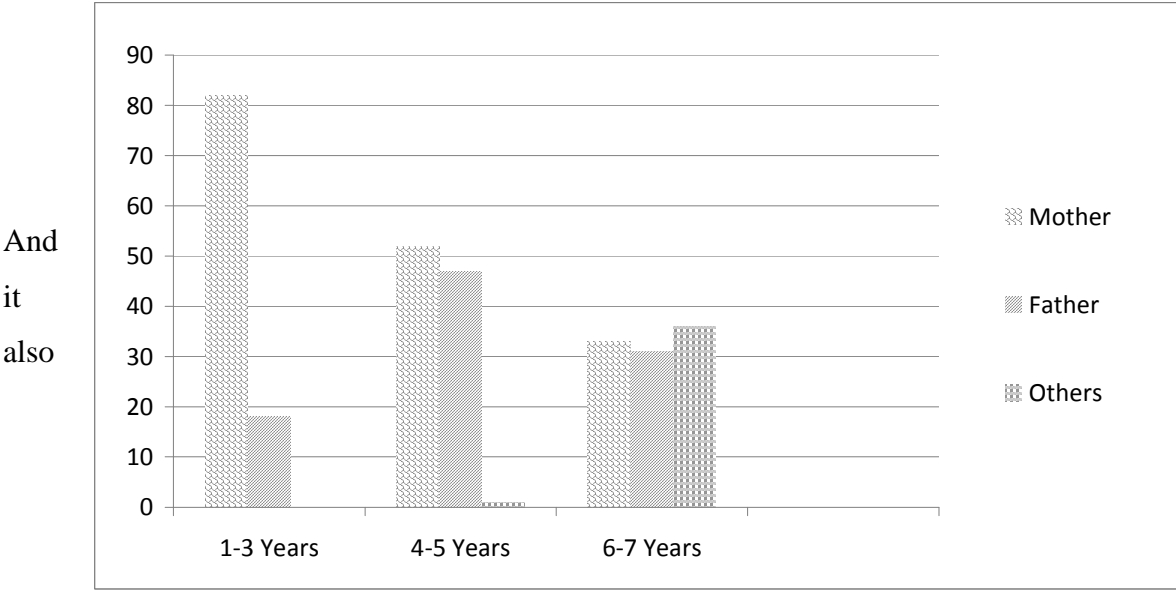
This can be well observed at the level of school and kindergarten education that offers for example segregated household and gym classes and in general conditions girls and boys for gender-specific life trajectories. A girl is raised to be a future mother and wife and a boy has to be a breadwinner and provision guarantor.

It is seen in methodological materials about parent relations with children that a term “parents” are often replaced by a term “mother” in. Accordingly the father connection with a child is moved aside. (Caune, 2002)

Studying attachment theories in psychology, we can find that it`s based mainly on mother`s role in upbringing in early childhood. A father is showed basically starting from preschool period. A child turns to a father or other relatives, when the most important person – mother is busy or not available. (Bowlby, 1988)

A German research shows that father's involvement is connected to a child's age. The older a child gets the more a father is involved in his upbringing. At the age of 1 – 3 father involvement is very poor, but it grows at the age of 6 years. (Picture 1) It is explained by the fact that a child can play more knowingly, can think more reasonable and is not so fragile. Many fathers are just afraid of a child while he is a baby. Fathers show an interest when a child starts answering consciously to a world. It becomes more interesting. Many fathers think that a child doesn't understand anything while he is a baby, so it is not necessary to pay more attention to the upbringing. (Baacke, 1999)

Picture: 1 *Father's, mother's and other relatives involvement in the upbringing depending on a child's age.*



connected to playing with children. We can see from the researches that father's functions involves playing. Mothers are often described as day care providers and fathers as "good" parents who play with a child. It is described in German scientist's Dieter Baacke research in a year 1989, which was performed with children (3 – 6 years old) parents – biological mothers and fathers.

Table 1

Action division between mothers and fathers

Action	Father	Mother
Care providing	10%	90%
Playing with a child	40%	60%

(Baacke, 1999)

We can see that percentages show mothers as care providers and fathers as those who play more with their children. Mothers often complain that it is good from the one hand, but not so from the other hand. They explain that fathers should also take part in decision making and show less passivity in the questions of upbringing. But they also confess that it is difficult to change the former order, which has to let fathers take a part and be involved, because mothers are used to be the main.

Important conclusions about parent roles can be found in the research "Father's involvement in preschool children upbringing". There was made a pilot research in a year 2009 with an aim to give an introduction in nowadays father's attitude, values, opinion about their involvement, importance of parent roles, gender stereotypes which are connected to an upbringing of a child and the functions of a "good" father.

The base of investigation was 300 hundred respondents (at the age of 19-46). Respondents were fathers who have children in preschool age. Almost all of the respondents (88%) live in nuclear family, which consists of a mother, father, and their biological or adoptive descendants, often called the traditional family. 96% of the fathers live with their children, have one or two children in family. All the fathers admit that a father is very important for wholesome development of a child. And they are agree that a father's role is one of the best they had in life.

If we try to examine the gender stereotypes, which include man and women duties in family and society in general, we can come to a conclusion that there are definite differences in reality and viewpoints. Men, asked about their duties in children upbringing mentioned disciplining and being an authority figure, financial support, doing practical things at home more often than helping children, loving them taking care. Main stereotypes were found that a father is involved in upbringing at holidays or sometimes, when a mother has to go somewhere, but basically upbringing duties are done by a child's mother. Playing with a child was also mentioned as a father's duty, which we saw in previous research already. (Baacke, 1999)

Men mentioned that a father is an important source of love for a child, but it is not shown in the question about father duties in which that takes the last place. Discrepancy of an ideal and reality could possibly be the reason of this difference.

Father's duties

PROVIDING LOVE	6.
TEACHING LIFE SKILLS	5.
PROVIDING PROTECTION	4.
PROVIDING FINANCIAL SUPPORT	3.
PROVIDING DIRECT CARE	2.
DISCIPLINING AND BEING AN AUTHORITY FIGURE	1.

It is shown in table 1, that from the father's point of view their main duty is to discipline, provide direct practical care and financial support. Those are mainly practical needs which are connected to upbringing only the context of a household.

Men disagree that a mother is better parent than a father and want to take an active involvement, but still sees themselves in the second place as an assistant. Women still assume more of the day-to-day responsibilities of raising children than men do. Even though have expanded their role as income providers, relatively few men have significantly increased their household and child care efforts.

We face the dual situation in which women wish a father to be involved and take a great part of upbringing duties, but they are still not sure whether they are ready to share authority with a man. (Putniņa, 2005)

We can not blame only fathers for not wanting to be involved in upbringing and family. It should be a process of co-parenting, shared responsibility. It is not so much about the country politics or practical activities, but the main role is played by stereotypes of society – what should a men and a women do and do not. We still face the ideology of discrimination in a society. And it is being instilled in children from early age using family relations including an example.

Conclusions

1. Fundamental changes in traditional family's values and structure orders family to be flexible and changing.
2. Changes of family structure affect the gender role changes and children upbringing.
3. Discriminating stereotypes of the society affect family upbringing and co-parenting role division.

4. The essence of upbringing is cooperation of the parents, that is why father`s active involvement is so important.

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**SPECIFICS OF METHODS OF FORMATION VALUES IN STATE GOVERNMENT
PARTICULARITES DE LA FORMATION DU SYSTEME DES VALEURS DANS LA
GESTION DE L'ETAT**

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Key words: public administration, public service, moral issues, public servants' ethic, wellness of citizens, social accountability.

Aux moments des crises économiques communauté humaine se trouvent toujours des personnes qui sont capables de prendre à elles-mêmes les décisions importantes. Ce sont leurs capacité, esprit, attitude, fermeté qui aident à la société de résoudre des problèmes. Traditionnellement une telle mission doit être faite par l'élite politique qui doit diriger professionnellement des affaires de la société, régler des conflits, résoudre des contradictions, assurer le bien-être des citoyens. Et de plus dans les sociétés informatiques. L'indépendance et le rôle humilieux d'élite deviennent de plus en plus grands.

Mais la société n'a pas le droit de compter sur ce que les personnes responsables et compétentes arrivent toujours au pouvoir; les personnes qui peuvent prendre soin des citoyens, de la prospérité de la Patrie, du prestige de l'Etat ukrainien.

Au fond il s'agit du rôle des orientations de valeur des cadres supérieurs dirigeants. A notre avis ce sont celles qui déterminent le portrait politique de l'élite dirigeante et assez peu dépendent de la forme de la gestion, de la proportion des forces et de la configuration du pouvoir. De plus, le système des valeurs du pouvoir lui-même détermine ces paramètres politiques de la vie d'Etat mais dans la science d'Etat et de gestion de notre pays l'interprétation systématique de ce problème est absente. Ça nécessite la recherche scientifique suivante de ce sujet.

Le but de l'article est de mettre en évidence les particularités de l'action réciproque de sujet-objet des mécanismes de la formation du système des orientations politiques nationales comme la base de l'évolution suivante des rapports démocratiques d'Etat et de gestion. La réalisation du but de recherche désigné prévoit la réalisation d'une série de devoirs

analytiques de recherches, notamment : déterminer des particularités de l'état moderne du système des orientations professionnelles et de valeur de l'élite politique et son influence aux processus de la gestion d'Etat en Ukraine ; indiquer le trait spécifique à l'action réciproque des valeurs de l'élite politique nationale et la société ukrainienne en general ; séparer les mécanismes de l'influence constructive et destructive à la formation du système des valeurs politiques, d'Etat et de gestion de la société démocratique.

Il est probable qu'aucune circonstance extérieure ou les obligations de statut des fonctionnaires de gouvernement ne peuvent pas avoir une telle influence aux décisions qu'ils adoptent comme leurs propres intérieurs conditions et les valeurs, l'idée de ce qui est admissible et inadmissible dans la politique. Cela concerne des méthodes traditionnelles de l'exécution des fonctions de rang, des normes des rapports intersociaux qui prédominent dans le milieu politique et administratif, des standards et des technologies de gestion qui étaient faits pendant le période long, c'est-à-dire tout cela concerne tous les éléments du système des valeurs du pouvoir et de la gestion.

On sait que les bases de valeur de l'existence de la société sont caractérisées par la fermeté extraordinaire, ils ne peuvent pas avoir des transformations précipitantes et la mobilité. Mais le système des valeurs sociaux des mécanismes du pouvoir qui ont été faits par les générations des politiciens et administrateurs, dirigés plutôt fixer que facher de faire des l'expérience avance. Bien sûr les traditions peuvent être troublées sous l'influence de la politique actuelle. Mais ce n'est que le système des valeurs politiques qui cristallisent et fait le tirage des exemples de la conduite politique. C'est pourquoi peu probable d'espérer que même la nouvelle et optimale répartition des fonctions et du plein pouvoir entre la Verkhovna Rada, le gouvernement et le Président de l'Ukraine (ce qui est important et rationnellement) est capable de prévenir des conflits des politiciens qui stimulent des structures de gestion dépendance d'eux d'intercepter de l'une à l'autre du plein pouvoir de gestion, qui sont tout son possible pour soumettre des structures de force de l'Etat aux intérêts de corruption, qui ont un penchant pour l'utilisation publique des matières compromises, la vente des postes d'Etat, l'élimination des concurrents etc.

Il s'en suit à souligner que l'élite de gestion se présente une petite et assez non typique partie de la population, elle a des certaines valeurs politiques et culturels, des standards et des traditions dans la sphère du pouvoir. De plus ces orientations politiques représentent non seulement des méthodes modernes de la gestion d'Etat mais et les traditions du période soviétique du développement et même l'expérience des étapes plus précoces de l'histoire nationale quand, par exemple, les couches supérieures étaient n'autant qu'une force

prédominante de la société mais « des serfs » fidèles des monarques. Il suffit de rappeler de la prédominance absolue pendant presque toute l'histoire politique nationale des traditions d'Etat et autoritaire de la gestion. Il n'est pas étrange que dans la conscience culturelle et professionnelle de l'élite politique les points de une restaient pratiquement inviolables, qui satisfaisaient l'aspiration des dirigeants à l'élargissement constant de leur plein pouvoir.

Outre cela, l'histoire politique de longue durée de notre société a montré assez évidemment que dans la conscience de la plupart des représentants des milieux d'élite de tels importants mécanismes de l'influence de gestion comme le droit et la loi perdent non seulement leur importance de valeur mais et toute une essence sociale et la netteté. On leur remplace par le pragmatisme politique et économique qui ne prête pas attention ni aux droits des citoyens, ni aux intérêts nationaux etc.

Comme résultat, la culture du pouvoir de l'élite ukrainienne a pour but l'utilisation constante et principale des leviers administratifs du pouvoir indépendamment du degré du légitimisme et etc par la loi. Donc, le droit comme la valeur de gestion était et politique. Mais dans la société démocratique le droit « dicte » à la conduite politique de certaines règles. Tout ça à son tour, est lié à l'incertitude de ses conséquences pour des leaders concrets, des partis, des politiciens. On peut permettre de dire qui ont eu le pouvoir auparavant et ceux qui l'ont aujourd'hui partagent l'utilisation n'importe quelles, notamment, les méthodes qui ne sont pas fondées sur le droit qui leur garantiront des privilèges de pouvoir. A notre regret, dans l'article possibilité d'élucider tout le spectre des questions de la recherche du problème de la formation des mécanismes de valeur du fonctionnement de l'élite politique de l'Ukraine d'aujourd'hui. Mais de l'exposé plus haut on peut faire de telles conclusions :

1. Ce sont des orientations de valeur de la conduite professionnelle qui, à notre point, déterminent « le portrait » politique de l'élite de gestion. Mais elles dépendent assez peu de la forme de la gestion, de la proportion des forces et la configuration du pouvoir. De plus, le système des valeurs du pouvoir, lui-même, détermine ces paramètres politiques de la vie d'Etat. En tant que, comme l'expérience historique montre, aucune circonstance extérieure ou les obligations de statut des fonctionnaires de gouvernement insolubles avoir une constante influence aux décisions qui sont adoptées par eux comme leurs propres intérieurs convictions et valeurs, présentation de ce qui est admissible dans la politique. Ce n'est que le système des valeurs politiques qui cristallise et fait le tirage des exemples de la conduite politique.

2. En Ukraine d'aujourd'hui les orientations de valeur de l'élite politique élucident non seulement des méthodes progressives de la gestion d'Etat mais des traditions du période

savietique du développement et, même, l'expérience des autres, plus jeunes étapes de l'histoire nationale. Ce n'est pas surprenant que dans la conscience culturelle et professionnelle de l'élite politique on des points de vue éthiques se laissent pratiquement inviolables qui satisfont l'attente des dirigeants à l'élargissement constant leur plein pouvoir

3. L'un des paradoxes du système de valeur moderne de l'élite politique nationale consiste en attitude méprisante envers le droit (comme vers une valeur principale de gestion) on observe une solidarité d'esprit des couches supérieures et des masses populaires de société. L'action des masses populaires est sentie d'autant plus que la négation intérieure de la valeur du droit est renforcée par l'existence constante de doubles standards de la responsabilité qui étaient habitudes des dirigeants de différents niveaux au manquement de la responsabilité réelle devant la société.

4. Aux mécanismes prioritaires pour mettre au point l'action réciproque constructive, subjective et objective de l'élite politique ukrainienne et le système de ses valeurs professionnelles appartiennent : le balancement rationnel des intérêts sociaux et politiques le changement du paradigme de la politique comme telle. La compréhension de la politique comme technologie pour obtenir de bons résultats dans les buts déterminés sociaux déterminent l'établissement de nettes règles comprises par tous de la participation des citoyens à la gestion de l'Etat, le changement principal de la culture de gestion, de la philosophie de la gestion d'Etat elle-même, le développement des mécanismes sociaux de la séparation « de meilleures personnes », l'augmentation du système efficace de l'enseignement politique de la population et de la formation professionnelle des cadres de gestion etc.

5. Le nouvel modèle de la gestion d'Etat dans le contexte de la gestion du développement stable et social doit se baser sur les principes de la transparence sous lequel on comprend le droit de chaque personne de savoir où et par qui sont résolues les décisions politiques et de gestion, combien et sur quoi on dépend les ressources de l'Etat puisque c'est le gage de la construction de la société civile. C'est pourquoi l'importance de l'utilisation des orientations de valeur dans la gestion d'Etat doit servir aux intérêts de la formation et du fonctionnement de la société civile, à l'adoption des décisions adéquates, d'Etat et de gestion.

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THE QUALITY MATTERS IN THE EU PROJECTS DESIGN IN THE FRAME OF THE PROJECT CYCLE MANAGEMENT METHOD

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Par raksta kvalitāti atbild pats autors.

The author is responsible for the quality of the article

Introduction

The name of present article is “The quality matters in the EU projects design in the frame of the project cycle management method”.

The quality in the project design and management is important issue that defines project implementation and achievement of the objectives (solution of the problem or product/service) in terms of resource, cost and time.

Author’s master paper name is “The project design in the frame of the project cycle management method”. The author in the master paper will not analyze deeply the matters of the quality therefore this article could be as chapter or as appendix of the master paper. Therefore the aim of this article is to express the author’s opinion about quality in the EU project cycle management

Methods of Research

For researching of the object of the present article, author applied the quantitative research method - content analysis. The object of the method of content analysis is different texts. This method is applied for the quantitative analysis of texts and is towards master and analysis of the content of different sources of the information – books, recommendations, publications on the internet and other (Socioloģisko pētījumu metodoloģija...1981:95). The sources of the information mentioned before were used because of their comprehensive information concerning the theme of the article.

The author carried out research in following manner:

1. Author analyzed the content of the EC recommendations in project cycle management;
2. Author analyzed the content of the legislation about the project management (implementation);
3. Author analyzed the content of the publications on the internet.

Results

1. This is important to define what is the European Union fund project. Applying method mentioned above, the author of the article found two definitions of the EU funds project:

1) definition of the project by European Commission: A project is a series of activities aimed at bringing about clearly specified objectives within a defined time-period and with a defined budget (European Commission, Projects Cycle Management Guidelines, 2007).

In the context of the Logical Framework Matrix, a project is defined in terms of a hierarchy of objectives (inputs, activities, results, purpose and overall objective) plus a set of defined assumptions and a framework for monitoring and evaluating project achievements (indicators and sources of verification).

2) definition of the project by law “Law On Management of European Union Structural Funds and the Cohesion Fund”: European Union fund project – a submission of a European Union fund project, which complies with the criteria for the evaluation of a project submission and which is approved by the institution involved in the management of the European Union fund (“Latvijas Vēstnesis” 33 (3609) 23.02.2007.).

2. The *quality* in the project cycle design and management is the characteristics of a process or/and a product (service) that satisfies a defined and accepted set of requirements, is assessed using defined and accepted measures and criteria, and is performed using a defined and accepted process.

This definition of the quality in the project cycle management was taken partly from the following link http://www.maxwideman.com/pmglossary/PMG_Q00.htm and modified by the author of this article.

3. The EU project quality consists of three key quality attributes.

The first quality attribute is relevance, the second quality attribute is feasibility, the third quality attribute is effectiveness and good management (European Commission, Projects Cycle Management Guidelines, 2007).

4. The project cycle quality control plan also defines project cycle management quality.

Discussion

In the first definition of the project is given the essence of the project that describes the project itself. There are clearly defined components that describe the project – project’s objective, activities, costs of the resources and project implementation time.

In the second definition is given important indication of the EU funds project - the criteria for the evaluation of a project submission and, sequentially, for the whole project as well, as the project (project cycle) consists from several phases, scope, impact and others components.

The presented balanced quadrangle describes an aim or an objective of the project. Please see Figure 1 below.

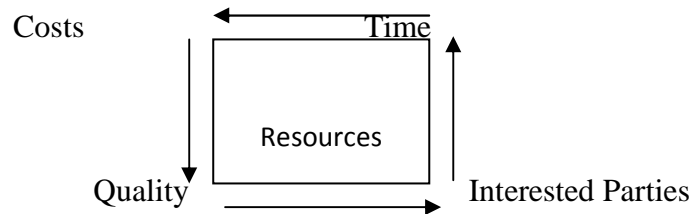


Figure1 Description of the aim or objective of the project.

The picture explains that the objective of the project is achieved in terms of interaction of the resources, costs, time, quality and interested parties (stakeholders) and as the result of this interaction the target group is given sustainable benefits or solution of the problem.

Sequentially, the quality in the project cycle design and management is all processes which run inside the project cycle or/and a product (service) that meets certain needs of the project target group. The quality of the project is defined implementating it according to the plan and an evaluation of the product (service) by the target group, or accordance of the product (service) to the standarts which are issued by Government or international organizations (laws, rules, ISO standards etc.) or by other bodies.

In the EU project cycle management a set of quality assessment attributes and criteria are provided to support structured and consistent analysis and decision making.

There are three quality attributes and criteria that define if the project is high quality or the project is designed and implemented weak. Project's manager and others involved in the projects group, applying these quality attributes and criteria, therefore must to determine which criteria are more or less important in relation to the project objective and scope within which projects group are working.

Under each of these three main quality attributes are many key criteria which indicate the key issues that need to be assessed in order to make an evaluation of and judgment about project quality.

Project is relevant if it meets demonstrated and high priority needs of the projects target group. This attribute is indicated by following criteria:

1. The project is consistent with, and supportive of, National Strategic Reference Framework and Operational Programs and relevant sector programs;

The problem of the target group is well and properly analyzed and the objectives of the project are defined according to the Operational Programs and rules of the Cabinet of Ministers. These documents are the main documents which the project manager must follow up.

2. Key interested parties (stakeholders) and target groups are clearly identified;

Due analysis and definition of the problem, the managers of the project must define the projects target group that needs the improvements of the situation or solution of the problem. This stage is important in terms of projects consistency with Operational Programs.

3. Problems have been appropriately analyzed;

4. Lessons learned from experience and linkages with other projects and programs have been assessed and incorporated into strategy of the proposed project.

The experience of previous projects realization should be included in the proposed project design and implementation if the organization already implemented projects and project group members have already gained some skills and some experience. The learned experience will not be such a useful as this experience is gained from other projects implementation using just descriptions (publications) or reports and in details could not be corresponding to the present project. Often this is only the description of the problems that arose during implementation of the projects, according to this article author's thoughts, as consequence of planning weakness (mistakes).

Project is feasible if the project is well designed and will provide sustainable benefits to target group - project is qualitative designed if it balances those factors that mainly explain the interaction of the project objective achievement– resources, time, costs and interested parties. High quality project delivers the benefits or solutions or certain results within project's scope, on time, and within budget. The relationship among these factors is such that if any one of them changes, at least one other factor is affected and project scope is changed and there appear risks for the project feasibility and objective.

The presented misbalanced quadrangle describes an aim or an objective of the project which scope has been changed due changes in the project implementation time. As consequences of those changes the project costs have increased.

Please see Figure 2 below.

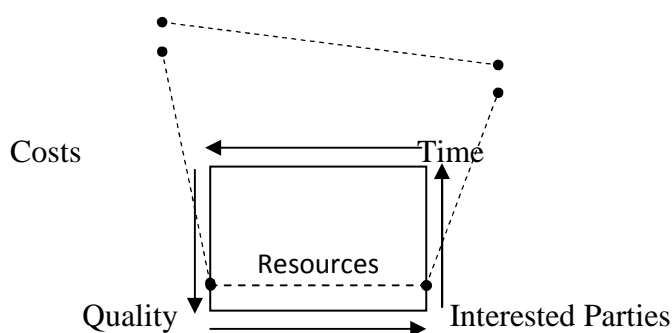


Figure 2 Description of the aim or objective of the project which scope was changed.

This attribute is indicated by following criteria:

1. The objectives (overall objective and purpose) and the activities are clear and logical;
The project's overall objective is linked to a National Strategic Reference Framework and Operational Programs and relevant sector programs and demonstrates a long term development outcome. Activities must be according to the rules of the Cabinet of Ministers. The project's purpose specifies direct benefits that the target groups will have from the implementation of the project, and is consistent with the analysis of problems of target groups. The project's results as results of a feasible set of activities describe tangible improvements that will directly support the achievement of the project's purpose.
2. The resources and costs are calculated and set up, and the project is provided financially;
The resources - such as personnel, equipment, materials - required for the implementation of the project are clearly described and the plan of the assignment is prepared. Project costs are defined and detailed analysis of the costs and a financial analysis were made, which show that the project is provided financially. If it is necessary and possible the project must earn the income (cost-recovery mechanism) in order to provide sustainability of the project.
3. Coordination, management and financing (finance management) are set up;
Management organization and responsibilities are defined and set up, build on the analysis of institutional arrangements and capacity. The arrangements for coordinating the activities of interested parties (stakeholders) are described and practical to implement. Operational work planning and budgeting with fit legislation and good practice and support the ability of manager to implement the project cycle. Financial management is clearly specified (in order to provide an internal control also) and shows accountability and transparency.
4. The monitoring (controlling) and evaluation system are clear and practical;

The project's Logframe Matrix includes a set of indicators and sources of verification, which will allow management information to be collected and used for purposes of controlling and evaluation of the project and its progress. Roles and responsibilities for collecting, recording, reporting and using the information are clearly described. The information needs of target groups in order to provide public control are given priority, and include means by which they can express their opinions and concerns.

5. Assumptions (risks) are identified and risk management procedures are defined;

Assumptions in the Logframe Matrix show key factors outside the direct control of project manager which have the potential to impact negatively on the project implementation (risks). The manager must assess importance of different risks, including the degree of negative impact that they might have on to objectives achieve. The risks management procedures are clear and defined.

6. The project is sustainable.

The analysis of the project impact often is carried out and the project is technically feasible, meets relevant industry (sector) standards and uses technology that is appropriate to the needs of target groups. The project has a clear strategy to ensure that benefits are appropriately targeted at identified target groups.

To provide projects feasibility, the main attention of the projects manager and other members must be paid to the project design as well as on the projects implementation itself in order to create the exact plan of the implementation. All necessary schedules - activity schedule, resource and cost schedule, budget, time and terms schedule, controlling and reports plan, quality plan, responsibilities plan and others must be prepared in a good order in terms of logic, sequence, correspondence to regulations, and relevance. This will help to achieve the objective on time and within defined budget. All necessary resources for the activities and tasks must be assigned according to principles of efficiency and must be evaluated according to the market prices. Costs of the project cycle must be calculated precisely and must not exceed the sponsor's demands for the certain project. The analysis of the project's environment using "SWOT analysis matrix" and set of true evaluated assumptions will help the project manager define the potential risks for the project feasibility.

Project is effective and well managed if project is delivering to target group planned benefits and is being well managed. This attribute describes the actual efficiency and effectiveness of the project during implementation, while the impact of the project can only be assessed after the project is completed. This attribute is indicated by the following criteria:

1. The project remains relevant and feasible;

The project remains consistent with current program priorities. The project objectives remain relevant to the needs target group.

2. Project objective are being achieved;

Results (process, solution and services or product) are being delivered as planned, are of good quality and the project's target group find them relevant and good to their needs. The project cycle achieves the overall objective, and there is evidence that the project's target group will benefit from the project.

3. The project is being well managed by those directly responsible for implementation; Inputs are being provided on time and within budget and the activities are being implemented on time. Relevant information on project achievements/results is being collected and used for evaluation of the project's progress. Operational plans and budgets, including risk management plans, are reviewed and updated on a regular. Financial management is independent and effective in identifying corrupt practices.

4. Sustainability issues are being effectively realized;

Sustainability is a continuation of benefits produced by the project and a continuation of the project itself after the external financing has ended. Financial sustainability matters like affordability and skills adopted by project's group members and cost-recovery mechanism (income) are being realized. Institutional strengthening and capacity building activities (organization development, training of trainers etc.) are being effectively carried out.

Project cycle is qualitative if there is drawn a quality control plan to control the indicators of the project quality. The quality control plan is a frame (table) which contains the main indicators of quality which must be controlled (what the manager needs to control), defined time of control, responsible for the control men, procedures of control and other methods and matters that according to the project manager could be reasonable. There are several main steps how to do control of quality:

- 1) to define the main indicators according to the project plan;
- 2) to control practically and physically defined indicators that ensure project progress according to the plan;
- 3) to compare analytically gained results with planned results;
- 4) to evaluate the final results of the quality controlling.

The object of quality control is any matter of the project that ensures project progress. For example, such an object can be budget expenditures or certain tasks realizations.

Conclusions

1. The quality in the EU project management is very important factor for the implementation of the project (as a process) and achievement of the project objectives (as a product/service), delivering sustainable benefits to the projects target group.
2. The quality in the project cycle design and management is the characteristics of all processes which run inside the project cycle or/and a product (service) that meets certain needs of the project target group
3. The set of attributes of the quality – *effectiveness and good management, relevance and feasibility* and criteria describing these attributes ensure quality of the EU project cycle design and management.
4. The project quality control plan defines the quality of the project cycle also. The quality of the project must be controlled according to the plan of quality control in order to make sure that quality indicators of project progress are according to the project plan – the main document of the project cycle.

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DRAMATURĢISKĀ PIEEJA: ERVINGS GOFMANS

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Atslēgas vārdi: dramaturģija, teātris.

Ievads

Izcilā sociologa Ērvinga Gofmana dzīves gadi iezīmējas no 1922.-1982. gadam. Viņš ir viens no etnometodoloģijas pamatlicējiem. Viņa popularitāte socioloģijā sāka augt līdz ar Otrā Pasaules kara beigām. No viņa pirmās publikācijas 1952. gadā līdz viņa nāvei 1983. gadā viņš veica unikālu un veiksmīgu empīrisku pētījumu programmu un konceptuālos atklājumus socioloģijā. Šīs programmas pamatā bija „interakcijas kārtības” analīze, kad „divi vai vairāki indivīdi ir viens otra klātbūtnē”. Viņš pašrocīgi izstrādāja empīriskā pētījuma programmu, kurā vēlējās analizēt, kā cilvēki izturās sabiedrībā un kā citi saprot viņu darbību (Williams: 1998).

Gofmanis balstījās uz Dirkheima un Zimmela klasiskajiem darbiem. No abiem viņš aizņēmas idejas un intereses, pārveidoja tās un aprakstīja savos darbos. Galvenās no tām bija:

- 1) interese par ideālu centrālo lomu un sociālās dzīves morāli;
- 2) mēģinājumi pilnībā formulēt individuālo personu socioloģiskajā versijā;
- 3) cenšanās atklāt socioloģiju kā empīrisku disciplīnu (Wallace: 1991).

Ē. Gofmaņa būtiskākie darbi ir „Sevis izrādīšana ikdienas dzīvē” (1959), „Struktūras analīze” (1974), „Patvērums”, „Stigma”, „Lomu distance”, „Analīze par dzimumu”.

Lai gan starp Zimmela un Dirkheima metodoloģiskajām pieejām ir liela atšķirība, Gofmaņa socioloģija apvieno tās abas. Īpaši Gofmanis ietekmējās no Dirkheima jēdziena „sociālais fakts”.

Grāmatā „Sevis izrādīšana ikdienas dzīvē” E. Gofmanis aplūko sabiedrības dzīvi kā teātra izrādi un piemin virkni piemēru un novērojumu, kas liecina par šādiem procesiem savstarpējās cilvēku attiecībās. Piemēram, viens un tas pats cilvēks viegli spēj mainīt lomas vienu pēc otras, vienu personības šķautni var rādīt vecākiem, citu - darbā un vēl kādu - draugiem. Tas parasti notiek automātiski un bez domāšanas, bet nevar noliegt, ka analogija ar teātri ir visai precīza. Lai sekmīgi iekļautos kādā no sociālajām grupām, ir nepieciešams zināt, ko no tevis sagaida, ir jāzina virkne nerakstītu uzvedības likumu (Gofmanis: 2001).

Sociālā dzīve kā izrāde un lomu spēlēšanas noteikumi

Cilvēkam tiek iedalītas divas lomas viņa dzīvē, un tās ir – aktiera loma noteiktā izrādē, otra loma ir skatītājs. Ē. Gofmans velk ciešas analogijas starp cilvēku dzīvi un teātra atmosfēru. Autors tieši tā ir vēlējis raksturot cilvēka uzvedību sabiedrībā, un to kā viņš sevi atklāj citiem. Mūsu uzvedība un kontaktēšanās ar līdzcilvēkiem ir liels darbs, ko mēs plānojam un veidojam (Williams: 1998).

Gofmans skaidro arī to, ka loma, kas mums piemīt, jau būtībā arī ir mūsu patība. Spēlētā loma tiek uztverta kā tās īpašniekam piederoša. Patība tiek skatīta kā tēls, kuru indivīds uz skatuves un lomā cenšas izrādīt citiem, lai viņi to pieņemtu attiecībā uz viņu. Ja šis tēls tiek pieņemts attiecībā uz indivīdu, tad šī viņam piedēvētā patība nav atvasināta no tās saimnieka, bet gan no darbības vides kopumā, ko rāda skatītājiem. Pareizi inscenēta un uzvesta dzīves aina panāk, ka publika izpildītājam piedēvē lomu, bet piedēvējums –patība - ir dzīves ainas produkts, nevis tās cēlonis. Patība ir dramatisks efekts, ko veido izrādītā aina, un galvenais jautājums un bažas ir par to vai patība un aina tiks pieņemta no skatītāju puses. Lai izzinātu patību, tā ir jāskata ārpus patības īpašnieka. Cilvēka ķermenis ir tikai kā forma, kurā tiek ielikts saturs. Patības radīšanas iespējas ir cieši saistītas ar sociālo veidojumu. Ir aizkulišu zona ar saviem instrumentiem ķermeņa radīšanai un fasādes apgabals – ar noteiktām butaforijām. Būs cilvēku komanda, kuras darbība uz skatuves kopā ar pieejamajām butaforijām veidos ainu, no kuras izšķirsies izrādītās lomas patība, un vēl būs komanda, publika, bez kuras interpretējošās darbības nav iespējamās. Patību rada visi priekšdarbi, un visos tās aspektos saskatāmas tās radīšanas pēdas (Wallace: 2001).

Cilvēki izmanto teātra struktūru savā ikdienas dzīvē, lai spētu izturēt savas reālās sociālās situācijas.

Plaši izplatīts ir uzskats, ka indivīds piedāvā izrādi un uzved pārējiem sabiedrības locekļiem priekšnesumu. Tāpēc, kad indivīds spēlē kādu lomu, viņš netieši pieprasa, lai novērotāji to uztver nopietni un notic visam, kas tiek rādīts.

Viena galējība ir tā, ka izpildītājs tik ļoti ir noticējis savai izrādei, ka ir patiesi pārliecināts, ka viņa paša radītais iespaids par realitāti arī ir realitāte. Otrā galējība- spēlētājs savai rutīnai netic nemaz. Šajā gadījumā mēs varam viņu saukt par ciniķi. Cinisks indivīds var publiku maldināt (Gofmanis: 2001).

Mūsu priekšstats par savu lomu kļūst par mūsu personības otro dabu un būtisku tās sastāvdaļu.

Iespaida atstāšanas mākslas paņēmieni

Negribēti žesti, ienākšana nelaikā un *faux pas* rada neērtas situācijas un neatbilstības izjūtu, ko parasti vainīgā persona nav gribējusi panākt un no kuras būtu iespējams izvairīties, ja indivīdi paredzētu savas rīcības sekas. Tomēr ir arī tādas situācijas, ko sauc par scēnām, kurās indivīds tā rīkojas, lai iznīcinātu vai nopietni apdraudētu pieklājīgo konsensa šķitumu, viņš tā rīkojas, apzinoties, ka tas novedīs pie nesaskaņām. Lai novērstu šādus incidentus, ir vajadzīgs, lai mijiedarbības dalībniekiem, kā arī tiem, kas to vēro no malas, piemistu zināmas īpašības un, lai viņi spētu tās paust praksē, ja tas nepieciešams izrādes saglabāšanai (Williams: 1998).

Aizsargājošās īpašības un prakses.

1) Dramaturģiskā lojalitāte. Ja komanda grib noturēt savu pozīciju, tās locekļiem jārīkojas tā, it kā viņi būtu uzņēmušies zināmas morālas saistības. Izrāžu starplaikā viņi savtīguma, principu vai takta trūkuma dēļ nedrīkst atklāt komandas noslēpumus. Lai uzturētu komandas locekļu lojalitāti, ir nepieciešams nepieļaut, lai tie simpatizētu publikai tik lielā mērā, lai kaut kādā veidā liktu komandai samaksāt par šīm simpātijām. Viens paņemiens, ko komanda var izmantot, ir spēcīgas solidaritātes attīstīšana komandas iekšienē. Otrs paņemiens, lai nepieļautu simpātijas rašanos starp spēlētājiem un publiku, ir periodiska publikas nomaiņa (Wallace: 1991).

2) Dramaturģiskā disciplīna. Disciplinēts izpildītājs ir tas, kurš zina savu lomu un, to spēlējot, neizdara negribētus žestus vai *faux pas*. Viņš ir diskrēts, neizjauc izrādi, nevilšus atklājot noslēpumus. Viņam piemīt savaldība, viņš spēj saglabāt situāciju, ja pārējie komandas locekļi pēkšņi spontāni rīkojas izrādei neatbilstīgi, vienlaikus saglabājot iespaidu, ka viņš tikai spēlē savu lomu. Disciplinētam spēlētājam piemīt arī „paškontrolē”. Viņš spēj apspiest emocionālo reakciju uz savām personīgajām likstām, pret saviem komandas biedriem, kad viņi izdara kļūdas un pret publiku, kad tā pauz nepamatotu draudzīgumu vai naidīgumu. Īstā emocionālā reakcija ir jāslēpj, bet jāizrāda situācijai atbilstīgā emocionālā reakcija (Gofmanis: 2001).

3) Dramaturģiskā piesardzība. Komandas interesēs ir, lai spēlētāji būtu piesardzīgi, un uzvedot izrādi, jau laikus sagatavotos iespējamām nejaušībām un izmantotu atlikušās iespējas. Dramaturģiski piesardzīgs spēlētājs piemēros savu izrādi tiem informatīvajiem apstākļiem, kuros viņam tā jāuzved (Gofmanis: 2001).

Biznesa dramaturģija

Mēs dzīvojam kultūras produkcijas laikmetā, kurā industriālo nomaina radošais un biznesu biežāk raksturo, izmantojot nevis ar darbu, bet gan ar teātri saistītus terminus. Uzņēmumi, kuri darbojas visdažādākajās nozarēs, maina savu darba vidi, lai tā būtu savienojama ar radošām un mākslinieciskām tendencēm. Darbinieki vairs nav strādnieki, bet gan "spēlētāji", darba vide tiek teatralizēta, tiek radīta brīva, rotaļīga atmosfēra, lai veicinātu radošās izpausmes (Williams: 1998).

Dramaturģiskā skatījuma uz biznesu pamatā ir pieņēmums, ka cilvēku saskarsme līdzinās izrādei, kurā visu nosaka tie paši principi, kas tiek izmantoti teātrī. Galvenais ir lugas "darbība", kas norisinās starp cilvēkiem, "skatuve" kā situācija, kurā darbība norisinās, cilvēki, kuri iesaistās darbībā ir "aktieri", "līdzekļi jeb rekvizīti nosaka, kā un ar ko šī darbība tiek veikta un ir nepieciešams "mērķis", lai saprastu, kāpēc darbība tiek veikta (Wallace: 1991).

Saskaņā ar Ērvingu Gofmanu katrs sevi izrāda ikdienas dzīvē, cilvēka apzinātā uzvedība pēc būtības ir teatrāla, cilvēks līdzīgi kā aktieris pārvietojas no aizkulisēm, kur tiek izmēģināta loma, uz skatuvi, kur loma tiek tēlota. Ē. Gofmanis raksta "Vienalga, vai komandas locekļi uzved līdzīgas individuālas izrādes vai arī atšķirīgas izrādes, kas veido vienu kopēju veselumu, rodas kopējais priekšstats par komandu, ko ir iespējams uztvert kā pašu par sevi pastāvošu faktu"(Gofmanis: 2001).

Bizness, it īpaši pakalpojumu sfēra, pārdošana un mārketinga pēc savas būtības ir teātris. Līdzīgi kā teātra aktieriem, kam pilnasinīgi jānododas savai lomai, lai izrāde liktos ticama, arī biznesa aktieriem jācenšas, lai atstātu uz auditoriju vēlamu iespaidu. Tas, vai pakalpojumu sniedzēja biznesā dramatiskā uzstāšanās patiks klientam un auditorijai, atkarīgs no daudziem faktoriem- stila, izturēšanās, žestiem, manierēm, rīcības veida, zināšanām, spējas kontaktēties. Dramatiskais potenciāls ir īpaši nozīmīgs situācijās, kurās pakalpojuma sniedzējs un klients personīgi sadarbojas- piemēram ārsts un pacients, pārdevējs un pircējs (Williams: 1998).

Studentu dramaturģiskās iekļaušanās tehnikas semināros

Seminārs, raugoties no studenta viedokļa, ir tā komunikācija ar pasniedzēju un kursabiedriem, kura sniedz informācijas apmaiņu un kuras mērķis ir studentus pārbaudīt, grupēt un raksturot katra studenta spējas. Semināra dalībnieku uzdevums ir diskutēt par noteikto tēmu, un tas studentam liek justies kā uz skatuves. Semināru var uzskatīt par savdabīgu izrādi, jo tā mērķis un prasība ir uzstāties ar savām zināšanām auditorijas priekšā. Ja semināra kārtība (programma, reglaments, noteikumi) tiek izjaukta un netiek ievērota studiju kursa sākumā noteiktā vienošanās par noteiktu saistību izpildi, disciplīnas uzturēšanas labad tiek izpildīts

disciplinārais sods, „(kura) funkcija ir samazināt novirzes”. Studentu parasti neuztrauc tas, ka „sodīt nozīmē vingrināt”(Fuko: 2001).

Lai Izdzīvotāji veiksmīgi izvairītos no soda un izdzīvotu seminārā, viņiem jāpārvar disciplinārās varas sistēma, to apmānot. “Ja indivīds vēlas izrādes laikā radīt priekšstatu par nevainojamiem standartiem, tad viņam nāksies viltot vai slēpt šiem standartiem neatbilstīgās darbības” (Gofmanis: 2001). Izdzīvotājam jācenšas kontrolēt pārējo indivīdu uzvedību. „Šī kontrole lielā mērā ir sasniedzama, ietekmējot citu formulēto situācijas definīciju, un indivīds var iespaidot šo definīciju tā, lai radītu citos tādu iespaidu, kas panāktu, ka tie brīvprātīgi rīkotos saskaņā ar viņa plānu” (Gofmanis: 2001). Citiem vārdiem sakot, Izdzīvotājam lieliski jāpārzina pasniedzēja formulētā semināra definīcija, lai brīvi ietekmētu tā gaitu sev par labu.

Pasniedzējs ir tas, kurš nosaka semināra plānu jeb rituālu. Tāpēc ir vēlamas priekšzināšanas gan par pasniedzēja temperamentu, prasībām, īpatnībām, viņa iemīļotajām tēmām, gan par kursa vidi un tajā valdošo atmosfēru. Tādējādi Izdzīvotāja galvenais ierocis ir situācijas izjūta. Nelasījušo izdzīvotgribētāju īpašību klāstā jābūt noteiktām iezīmēm, kas viņiem ļautu izvairīties no soda.

Pirmkārt, students ar izteiktu panikas iestāšanos krīzes situācijās parasti nekļūst par Izdzīvotāju, tāpēc studentam jāpiemīt paškontrolei un augstai pašapziņai, kas palīdz maskēties uzraudzības situācijā.

Otrkārt, nepieciešamas iemaņas aktiermeistarībā, kas ļauj pārliecināti spēlēt “izlasījušā studenta” lomu.

Treškārt, Izdzīvotājam ir nepieciešama mērenības izjūta, kas balstīta elastīgā domāšanā. “Disciplinārās institūcijas ir izstrādājušas kontroles mašīnēriju, kas darbojusies kā uzvedības kontroles mikroskops; smalki un analītiski sadalījumi, ko tās realizējušas, ir izveidojuši ap cilvēkiem novērošanas, reģistrēšanas un dresēšanas aparātu”(Fuko: 2001). Atrodoties nemitīgā kontrolē, studentam jāpakļauj sevi intensīvai apziņas darbību improvizācijai jeb domu sintēzei.

Ceturtkārt, nelasījušajam studentam jāievēro formālie uzraudzības aparāta noteikumi. Tā kā “varēt būt redzamiem ir noteikums, kas uztur pakļautībā disciplināro indivīdu”(Fuko: 2001), tad Izdzīvotājam ir jāļauj sevi semināra laikā redzēt, nedrīkst slēpties aiz zinošo kursabiedru mugurām, bet jāizvēlas pēc iespējas neitrālāka vieta auditorijā. Jāsaka, ka iemesli, kāpēc studenti izvēlas riskēt un piedalīties seminārā, kaut arī nav lasījuši, ir dažādi. Par galveno tiek uzskatīta vēlme ar mazāko piepūli iegūt labākos rezultātus, neraugoties uz to, ka studiju programmas godprātīga izpilde ir ieguldījums studentu attīstībā.

Pat visapzinīgākais students kaut reizi mūžā sastopas ar situāciju, kad nav izlasīta uz semināru uzdotā literatūra.

Tālākais pārskats atklās cilvēka piemērošanās spējas un talantus attiecībā uz vēlmi izdzīvot studiju vidē.

Ja Izdzīvotājs ir nolēmis piedalīties seminārā, viņam ir divas iespējas, kā izdzīvot. Pirmā - lasīt pēc iespējas neuzkrītošāk semināra auditorijā uz vietas un censties uztvert svarīgāko informācijas pavadienus, kam pakārtota visa tēma. Šādai pieejai ir nepieciešamas iemaņas ātri uztvert tekstu, lasot "pa diagonāli". Tā ir sava veida teksta fotografēšana, ko iespējams veikt laikā, kamēr runā pasniedzējs vai kursabiedri. Aktiermeistarību var izmantot kā uzdotās vielas atkārtošanas imitēšanu. Izsakoties citādi, Izdzīvotājam teksts jālasa ("jāfotografē") tā, lai izskatītos, ka viņš to tikai atkārto. Tas prasa lēnas ķermeņa kustības, kas nekādā gadījumā nepauž paniku un steigu. Liekākā kļūda būtu histēriski šķīrstīt lasāmo literatūru, cerībā atrast "atslēgas frāzes", tādējādi nododot savu nezināšanu. Viltus pakļaušanās disciplīnai ir vienīgais ceļš, lai neradītu pasniedzējā aizdomas par nezināšanu.

Izdzīvotājs reizēm piedzīvo sarežģītākus apstākļus, kad literatūra semināra laikā nav pieejama. Šādā gadījumā vienīgā iespēja ir klausīties, ko runā pārējie un censties uztvert galveno domu, lai vēlāk būtu, ko teikt. Brīdī, kad semināra laikā dzirdama jau zināma informācija, šāda iespēja ir jāizmanto un jārunā par šo tēmu, lai gadījumā, ja semināra laikā iestājas klusums un pasniedzējam nākas vērsties pie kādas personas, tas nebūtu Izdzīvotājs. Šī pieeja prasa labu dzirdi un izcilas informācijas sintezēšanas spējas, kā arī attīstītu domāšanu un jau apgūtu informāciju. Bez šīm īpašībām vajadzīgas arī visas iepriekš minētās. Kopumā Izdzīvotāja tēlu tas padara šādu – viņš ir kompetents, drošs par sevi, "neskraidelējošu" skatienu, ar labu dikciju. Viņš var būt gan smaidošs, gan neapmierināts – svarīgākais ir dabiskums un iekļaušanās kopējā gaisotnē. "Reizēm indivīds rīkosies ar skaidru aprēķinu, izpaužoties noteiktā veidā, tikai lai atstātu uz citiem tādu iespaidu, kas varētu izsaukt attiecīgās reakcijas, kuras viņš grib panākt" (Gofmanis: 2001). Proti, Izdzīvotājs izpaudīsies veidā, ko pasniedzējs sagaida no lasījuša studenta, tāpēc par izdzīvošanas tehnikas pamatu uzskatāmas zināšanas par lasījušā studenta tēlu pasniedzēja apziņā. Turklāt "aizvien vairāk katrs nepārtraukti tiks salīdzināts ar visiem"(Fuko: 2001), tāpēc semināros vērojamā varas realizēšana jāpārvar, saplūstot ar visiem, vienlaicīgi nezaudējot manevrēšanas spējas. Tā saucamā Lielā dzīve jeb Darba tirgus reti piedāvā semināru "siltumnīcas apstākļus". Izdzīvot seminārā, ja nav lasīta uzdotā literatūra, ir savdabīgs pārbaudījums, kas vingrina koncentrēšanos, informācijas sintēzes spējas, aktiermeistarību un jutību pret gaisotni telpā. Studenta un pasniedzēja attiecības, definētas kā varas attiecības, paver dimensiju, kurā studiju

process atklājas kā smalki ritualizēta izrāde. Izdzīvot gribētājam tādējādi nepieciešams spēlēt improvizētu izrādi izrādē. Šāda tipa sevis izrādīšana notiek ik brīdī ikdienas dzīvē, kur bieži vien izdzīvošanas tehniku prasme palīdz sasniegt mērķus.

Secinājumi

1. Ņemot vērā augstākminētos faktus, vecāki var vislabāk palīdzēt saviem bērniem, ieaudzinot viņos tās īpašības, kas ir nepieciešamas, lai veiksmīgi tiktu galā ar dzīves izaicinājumiem. Šīs īpašības ir – **piederība, spēja rūpēties par sevi un uzņemties atbildību par savu dzīvi, savas nozīmes apziņa un drosme rīkoties.**

2. Piederības izjūta, “mēs izjūta” ir ļoti svarīga jebkuram cilvēkam, lai viņš justos drošībā. Pati bērna spēja izdzīvot ir atkarīga no tā, vai ir kāds, kas par viņu rūpējas, jo viņš pats nespēj sevi aprūpēt. Viens no svarīgākajiem audzināšanas galvenais mērķiem ir attīstīt bērnam sociālo interesi kā pamatu bērna laimei un viņa turpmākai fiziskai un psihiskai piemērotībai dzīvei sabiedrībā.

Arī esot pieaugušam, cilvēka labklājība ir lielā mērā atkarīga no viņa attiecībām ar citiem cilvēkiem – piemēram, parasti karjera ir veiksmīgāka tam, kuram ir labāk attīstītas komunikācijas prasmes. Tuvu attiecību veidošana un saglabāšana, atbalsta sniegšana un saņemšana, sadarbšanās, produktīva konfliktu risināšana arī nosaka cilvēka spēju veiksmīgi un laimīgi dzīvot. Pamats šo prasmju attīstīšanai ir attiecības ar vecākiem un starp vecākiem. Bērnam ir svarīgi just piederību pie savas ģimenes, citādi viņš jūtas nedrošs, izolēts un meklē kādu citu grupu, kas viņam var nodrošināt piederības izjūtu, un galu galā viņš kļūst no tās atkarīgs un, iespējams, nonāk vienaudžu nelabvēlīgā ietekmē.

3. Spēja rūpēties pašam par sevi sāk attīstīties jau agrā bērnībā. Neviens bērnam neliek mācīties noturēt galviņu vai staigāt, tomēr bērns katru dienu cītīgi cenšas apgūt jaunas iemaņas un prasmes. Ja bērns spēju par sevi rūpēties un patstāvību apgūst vidē, kas iedrošina, un sapratnes pilnā gaisotnē, viņš kļūst patstāvīgs un spēj uzņemties atbildību par sevi un savu dzīvi. Lai šī spēja attīstītos, vecākiem ir svarīgi pamazām nodot kontroli par dažādām bērna dzīves jomām viņa paša rokās. Ja šīs spējas attīstība bērnam ir traucēta, viņš vai nu kļūst atkarīgs un baidās uzņemties atbildību par sevi, pieņemt patstāvīgus lēmumus, vai arī sāk aktīvi pretoties vecāku (un turpmāk – skolotāju, priekšnieku un jebkuru citu autoritatīvu personu) mēģinājumiem viņu kontrolēt un iekļaut komandā. Šāda pretošanās jeb cīņa par varu par katru cenu var būt ļoti destruktīva un izraisīt daudz problēmu nākotnē gan darba attiecībās, gan privātajā dzīvē. Māka rūpēties pašam par sevi ir pamats pašdisciplīnai, spējai kontrolēt savas emocijas un uzvedību, apziņai, ka “mana dzīve ir manās rokās, un es to varu veidot tādu, kādu vēlos”.

4. Savas nozīmes apziņa ir nepieciešama, lai vispār sāktu rīkoties. Tā ir pamats veselīgam pašvērtējumam. Tad, kad zinām, ka esam nozīmīgi savā ģimenē, mēs vēlamies iet “lielajā pasaulē” un sasniegt izvirzītos mērķus. Uz apziņas, ka no mums daudz kas ir atkarīgs, balstās atbildības izjūta, kas savukārt ir priekšnosacījums līdera spējai un augstam ražīgumam. Izjūta, ka viņam nav nozīmes, cilvēkam ir ārkārtīgi sāpīga, un, ja cilvēks neatrod konstruktīvu veidu, kā izjust savu nozīmīgumu, viņš to sameklē citādi – ar destruktīvām metodēm. Kad jūtamies nenozīmīgi, mums ir kvēla vēlēsšanās atriebties un sāpināt citus, jo pašiem ļoti sāp. Ceturtā īpašība, kurai cilvēka likteņa veidošanā ir ārkārtīgi svarīga nozīme, ir **drosme** – drosme rīkoties, par spīti tam, ka pastāv neizdošanās risks, un drosme neizdošanās gadījumā saņemties un sākt visu no sākuma. Tā ir arī drosme izteikt savu viedokli un, ja nepieciešams, nepakļauties vairuma viedoklim. Drosme nav bezbailība – tā ir spēja tikt galā ar savām bailēm un nedrošību un iet uz priekšu, darot savu darbu. Drosme ir optimisma pamats, tā ir vēlme saprātīgi riskēt un mēģināt ko jaunu.

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TEENAGERS AND TUTORS ATTITUDE TO VITAL VALUES IN THE CHILDREN SOCIAL ASSISTANCE CENTRE

Отношение подростков и воспитателей к жизненным ценностям в социальном центре защиты и опеки детей

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Ключевые слова: жизненные ценности, нравственное воспитание, жизненные ценности в подростковом периоде.

Введение

Потребность в определении личностных ценностей, приоритетов и смысла жизни возникает у каждого человека. Это одна из важнейших потребностей личности. В подростковый период эта необходимость ощущается особенно остро. Особенности становления личности зависят от экономического и культурного уровня развития общества, в котором находится воспитанник. Развитие личности и формирование шкалы жизненных ценностей определяется также и тем, что ожидают от него общество, какие ценности и идеалы ему предлагают, какие задачи стоят перед ним в разные возрастные периоды.

Актуальность проблемы отношения к жизненным ценностям воспитателями, а также воспитанниками в подростковом периоде, сохраняют свою значимость на протяжении длительного времени. Особенно важным этот вопрос становится в кризисные для общества периоды, дезорганизирующие его социально-экономическую и морально-этическую основу. Именно поэтому целью данного исследования является определить сущность жизненных ценностей воспитанников в подростковом периоде. Формирование личностной ценностной структуры индивида, в данном случае воспитателя и воспитанника, выступает важнейшим фактором процесса социализации, посредством которого подросток становится полноправным членом общества во всей полноте социальных взаимоотношений.

В современной педагогике с каждым днем все больше внимания уделяется изучению сложных феноменов существования человека. К числу таких феноменов относятся, например, дружба, любовь, свобода, нравственность (*Rokeach, 197, Гуревич, 1991, Алексеев, 2003*).

В настоящее время известен феноменологический подход к изучению жизненных ценностей, ценностной ориентации и нравственных представлений человека. Исходя из этого, можно выделить особенности исследование ценностей в рамках различных наук. В современной философии жизненные ценности, имеют общечеловеческий или же глобальный характер, поскольку представляет собой систему ценностных ориентации, нормативных требований, способов формирования личности, а также рассмотрение жизненных ценностей в различных контекстах: историческом, культурном. Этот подход раскрывает, в основном, сущность, природу возникновения жизненных ценностей как общечеловеческих (Алексеев, 2003). С точки зрения педагогической психологии, жизненные ценности, с одной стороны, детерминированы факторами среды и воспитания, с другой - индивидуальностью и уровнем развития личности.

Мировая культура во всех своих аспектах становится относительной; неизменные и абсолютные представления о ценностях, пришедшие к нам из прошлого, кажутся тривиальными (Ядов, 2003). Но, может быть, еще важнее тот факт, что современного человека, как подростка, так и воспитателя, со всех сторон теснит противоречивое отношение к жизненным ценностям. Один из естественных результатов этой противоречивости состоит в том, что появляется особый интерес к поиску основательного или осмысленного подхода к жизненным ценностям, который мог бы выстоять в современном мире.

В среднем и старшем подростковом возрасте может возникать растущий интерес к социальным, политическим и моральным вопросам. Подростки начинают создавать целостную концепцию общества, а также этические принципы, выходящие за пределы тех, с которыми они сталкивались в знакомых близких отношениях. Они создают свои собственные убеждения о системе жизненных ценностей в социальном, культурном и историческом контекстах. Их понимание мира становится все сложнее по мере накопления опыта, и они могут составлять представления о более сложных теориях и сценариях. Когда происходят общественные конфликты, меняются их представления о системе жизненных ценностей, включая понятие о нравственности и таких феноменах как дружба, любовь, свобода, нравственность.

Многие исследователи придавали большое значение сформированности у индивида системы его ценностных ориентаций. Так, например, Кольберг Л., занимаясь развитием индивида, исследовал стадии морального развития личности и связывал их со стадиями умственного развития по Пиаже. Процесс мышления подростков изменяется в связи с их развивающимся чувством морали. К подростковому возрасту большинство

подростков выходят за пределы доконвенционального (ниже общепринятого, условного среднего) уровня морального развития (Kohlberg, 1966), и достигают конвенционального (общепринятого, условного среднего) уровня (основанного, главным образом, на социальной конформности). Большинство мотивированы избегать наказаний, ориентированы на послушание и готовы принять общепринятые моральные нормы. Во многих повседневных ситуациях такая позиция позволяет избежать конфликтов с обществом. Они могут никогда не достичь заключительной стадии морального развития, на которой мораль рассматривают как возникающую из личных этических принципов (Grace J. Craig, Don Baucum, 2001). Согласно Кольбергу, некоторые люди никогда не достигают высшего уровня моральных убеждений.

Эриксон большое внимание в своих исследованиях уделял проблемам подростков. Согласно Эриксону, формирование идентичности часто является длительным и сложным процессом самоопределения. Оно обеспечивает непрерывность прошлого, настоящего и будущего индивида. Формирование идентичности определяет структуру организации и интеграции поведения в различных областях жизни. Помогая человеку понять свое место в обществе, оно предоставляет также основу для социального сравнения. В итоге чувство идентичности способствует обеспечению направления, цели и смысла жизни (Erikson, 1959, 1963, 1968; Waterman, 1995).

Франкл приходит к выводу, что жизнь человека по сути своей никогда не может быть бессмысленной. И пока сознание не покинуло человека, он постоянно может реализовывать те или иные ценности. И даже если возможностей для этого у него немного, реализация собственных ценностей остается для него доступной всегда (Франкл, 2000).

Большинство авторов выделяют две важнейшие характеристики ценности: первой является значимость (Тугаринов, 1988, Фролов, 2008,.) и вторая характеристика - вторичный, производный от человеческого бытия характер (Рубинштейн, 1989, Ядов, 2003).

Так, к примеру, Ядов В.А. разработал диспозиционную концепцию регуляции социального поведения индивида (Ядов, 2003). Основная идея этой концепции заключается в том, что человек обладает сложной системой различных диспозиционных образований, организованных иерархически, которые регулируют его поведение и деятельность. Каждый уровень этой системы включает три компонента: потребность, классифицированную с точки зрения включенности индивида в различные сферы социальной деятельности; ситуацию, в которых действует индивид и

которые “встречаются” с определенными потребностями; и диспозиционное образование, регулирующее поведение и деятельность индивида. Система личностных ценностей складывается в процессе деятельностного распределения индивидами содержания общественных ценностей, объективированных в произведениях материальной и духовной культуры. Как правило, для личностных ценностей характерна высокая осознанность, они отражаются в сознании в форме *ценностных ориентаций* и служат важным фактором социальной регуляции взаимоотношения людей и поведения индивида (*Риккерт, 1998*).

Якобсон П.М., выделяя психологические аспекты созревания личности и исследуя критерии ее социальной зрелости, отмечал важную роль динамических сдвигов в ядре личности, связанных с открытием и усвоением ценностей, норм, требований и правил общества (*Якобсон П.М., 1982*).

В подростковом возрасте начинает формироваться устойчивый круг интересов, который является психологической базой ценностных ориентаций подростков. Происходит переключение интересов с частного и конкретного на отвлеченное и общее, наблюдается рост интереса к вопросу мировоззрения, религии, морали и этики. Развивается интерес к собственным психологическим переживаниям и переживаниям других людей. Процесс формирования ценностей – внутренний, интимно-личностный процесс ценностного становления человека, путь его личностного самоопределения (*М.Čehlovs, 2008*). Чаще всего период подросткового возраста приходится переход от детства к взрослости и связанная с ним необходимость самоопределения и выбора жизненного пути после ухода из социального центра осложняется тем, что для воспитанника остается актуальной проблема формирования самосознания (центрального новообразования подросткового возраста) (*Erikson, 1968*).

Важнейшими детерминантами процесса формирования личности подростка, регулирующими процесс включения его в социум и содержание системы его ценностных ориентаций, которые включают в себя жизненные ценности, являются потребность в общении и потребность в индивидуализации. Здесь имеет смысл говорить о взаимосвязи индивидуализации и деологизации, как об эффективных компонентах нравственного воспитания подростка.

Процесс воспитания подростка – это процесс формирования его личности, его характера, чувств, этических и эстетических идеалов, культуры поведения (*Лихачев, 1995*) и определения личностных жизненных ценностей воспитанника. Методы воспитания и воздействие воспитателей на развитие личностных жизненных ценностей

воспитанника – целая наука. От содержания воспитания его методов и форм зависят конечные результаты. Формы такой работы могут быть следующими: беседа, метод круга, диспут, обсуждение материалов периодической печати, конкретного случая, результатов интервью, индивидуальные консультации социального и психологического характера. Воспитатель учит воспитанников анализировать, оценивать нравственные явления, воспринимаемые ими, соотносить их со своими поступками, осуществлять выбор нравственных решений. Таким образом, он переводит внимание воспитанников с общих представлений о нравственности и моральных понятий на действительность. Роль воспитания как «посредника» между личностью и культурой самая важная. Воспитание имеет две основные цели. Во-первых, задача его состоит в передаче части культурных ценностей, созданных обществом, личности в индивидуализации их. Во-вторых, немаловажной задачей воспитания является создание определённых способностей для восприятия культурных и эстетических ценностей (*Лихачев, 1995*).

Работа воспитателя в социальном центре неразрывным образом связана с проблемой жизненных ценностей. Неудивительно, что в этой ситуации отношение воспитателя к жизненным ценностям, наследуемым из прошлого, оказывается в состоянии дезинтеграции. Воспитатели и подростки задаются вопросом, существуют ли и могут ли существовать универсальные ценности. Зачастую возникает ощущение, что люди в современном мире утратили саму возможность выработать какое-либо общее межкультурное основание для ценностей (*Rogers, 1951*).

Осознание воспитанниками сущности жизненных ценностей непосредственно зависит от нравственного воспитания подростка, что является сложным и многогранным процессом формирования у воспитанника нравственных идеалов, понятий и убеждений, привычек нравственного поведения, осуществляемый под воздействием социальных институтов с целью подготовки её к активному участию в общественной, производственной и культурной жизни, выполнения различных социальных ролей, т.е. это введение объективных условий в субъективный мир личности на уровне сознания и отношения к жизненным ценностям (*С.Я. Батышев, 1980, Лихачев, 1995, Rogers, 1951, Якобсон, 1982 и др.*).

Нравственная культура жизненных ценностей проявляется в способности воспитанника сознательно и добровольно реализовать требования моральных норм, осуществлять такое целенаправленное поведение, которое характеризуется гармоническим соответствием личных и общественных интересов. Нравственно-свободный человек – не просто носитель моральных достоинств, а их неумолимый создатель (*Čehlova,*

1995). Таким образом, формирование системы ценностных ориентаций личности, включая в себя сущность жизненных ценностей, является для различных исследователей предметом пристального внимания и изучения. Исследование подобных вопросов особое значение приобретает в подростковом возрасте, поскольку именно с этим периодом онтогенеза связан тот уровень развития жизненных ценностных ориентаций, который обеспечивает их функционирование как особой системы, оказывающей определяющее воздействие на направленность личности и ее активную социальную позицию в мире новизны и трансформаций.

Обобщая все сказанное, отметим, что проблема нравственного воспитания, воспитания жизненных ценностей представляет собой один из вечных вопросов, постоянно требующих поиска и обновления. Жизненные ценности личности - одна из основных проблем гуманитарного знания, а воспитание жизненных ценностей на основе примера отношения воспитателя к жизненным ценностям - одна из приоритетных задач современной социальной педагогики.

Поэтому исследование отношения к жизненным ценностям воспитателей, позволит нам более точно определить их влияние на отношение к жизненным ценностям воспитанников в подростковом периоде.

Методы исследования: наблюдение, наротивные интервью и тестирование. В связи с большим количеством эмпирических данных ограничимся описанием одного метода исследования – тестирование в описательном виде без таблиц и сравнительных графиков.

Результаты

Целью данного исследования является изучение системы жизненных ценностей подростков и воспитателей в социальном центре защиты и опеки детей. В исследовании приняли участие 15 воспитанников в возрасте от 12 до 16 лет, проживающих в социальном центре защиты и опеки детей и 15 воспитателей, непосредственно работающих или же работавших с подростками. Автором исследования была использована методика М. Рокича "Ценностные ориентации". Диагностировались только терминальные ценности. По Рокичу, терминальные ценности-цели отражают приоритетность жизненных стремлений человека.

При организации исследования автор исходил из двух основных предположений, непосредственно вытекающих из сложившихся в психологии представлений о структуре и закономерностях формирования системы индивидуальных ценностей человека. Во-первых, ценности человека организованы иерархически, т. е. в их составе

выделяются наиболее и наименее значимые; уровень значимости поддается сознательной самооценке и дифференцированию. Во-вторых, проживание в социальном центре защиты и опеки детей должно оказывать влияние на структуру и иерархию ценностей воспитанников и воспитателей в двух направлениях: в плане формирования ценностей, адекватных субкультуре социальном центре защиты и опеки детей и адекватных ранее сложившимся представлениям личностных жизненных ценностей.

В ходе исследования респонденты выполняли два задания. Во-первых, ранжировали 18 ценностей по степени их жизненной значимости для человека. Ранг ценности выступал в качестве показателя ее значимости: чем меньше ранг, тем выше значимость ценности для студента. Во-вторых, были выбраны 3 доминирующие терминальные ценности подростков и 3 доминирующие терминальные ценности воспитателей.

В процессе исследования были получены следующие результаты. Лидирующее положение среди подростков занимают следующие терминальные ценности: *наличие друзей, любовь, активная деятельная жизнь*. Доминирующие ценности воспитателей - *жизненная мудрость, любовь и активная деятельная жизнь*. Итак, две доминирующие ценности воспитателей и воспитанников совершенно идентичны - *любовь и активная деятельная жизнь*. Полученные данные ещё раз заставляют вспомнить тот факт, который неоднократно был упомянут в данной статье - осознание воспитанниками сущности жизненных ценностей непосредственно зависит от отношения к жизненным ценностям воспитателя, что является связующим звеном нравственного воспитания подростка.

Интересно заметить, промежуточное положение на шкале значимости ценностей, как у воспитателей, так и у воспитанников, занимают: материально обеспеченная жизнь, общественное признание и свобода. Кроме того, свобода как ценность воспитателями оценивается в целом ниже, чем воспитанниками.

Среди непринятых ценностей подростки называют: жизненную мудрость и счастье других (возможно, это является своеобразным отражением социальной ситуации, общественного мнения в целом), красоту природы и искусства. Здесь мы можем заметить существенное различие, т.к. подростками непринятая жизненная ценность - жизненная мудрость воспитателями поставлена на первое место. Общественное признание у испытуемых подростков также в структуре ценностей находится на одном из последних мест. Наверное, на данном возрастном этапе друзья и есть общественное признание, а слова "уважение окружающих" пока еще звучат абстрактно.

Парадоксально, но счастливая семейная жизнь занимает предпоследнее место в системе ценностей и подростков и воспитателей. Может это связано с кризисным положением в нашей стране и стремлением иметь хоть небольшую финансовую стабильность, страх потерять место работы или что это?

Итак, проведенное исследование показывает, что понимание жизненных ценностей подростков развивается на реалистической основе. Они достаточно критично относятся к личностным жизненным ценностям, понимают, какие ценности могут быть реализованы в процессе жизнедеятельности, а какие нет.

Перспективой данного исследования является сравнительное изучение системы ценностей воспитанников и воспитателей нескольких социальных центров и общеобразовательных школ для создания модели воспитания, в которой процесс социализации будет основан в соответствии с жизненными ценностями воспитанников и ценностями общества.

Дискуссия

Б.Т. Лихачев отмечает, что прежде всего подрастающему поколению необходима экологически чистая духовно-нравственная общественная среда (*Лихачев, 1995*). Что на Ваш взгляд является экологически чистой духовно-нравственной общественной средой в столь кризисное время?

Исходя из результатов данного исследования назревает следующий вопрос: «Стоит ли менять систему ценностей воспитателей и воспитанников?» Во-первых, это совсем не просто. На формирование системы ценностей оказывает влияние множество факторов: семья, ближайшее окружение, в целом общество. Кроме того, воспитатели, да и воспитанники по своей сущности - это уже сложившиеся личности. Поэтому, влияние должно быть не прямым, а косвенным (это, может быть, пример воспитателей; активное участие в жизнедеятельности социального центра; процесс общения между воспитателями и воспитанниками - диалогизация). Во-вторых, ценностные ориентации - это выбор каждого из нас, следовательно, мы сами можем нести за него ответственность, корректировать его или оставлять неизменным...

Выводы:

1. Пример отношения к жизненным ценностям воспитателя социального центра и отношение к жизненным ценностям самого воспитанника подросткового периода и будет определять палитру и разнообразие его жизненных ценностей, что без сомнений положительно повлияет на его поведение в массе конкретных случаев и ситуаций, с

которыми он сталкивается в жизни и которые, разумеется, нельзя предусмотреть до мельчайших деталей в процессе воспитания.

2. Воспитатели, работающие с подростками, самим фактом сосуществования рядом и вместе с ними транслируют им определенные ценности. Более того, конкретное содержание общения с ними (предметное, ситуативное) уходит, а их жизненные ценности остаются и закрепляются в виде внутренних духовных ориентиров воспитанников.

3. Самое главное нравственное качество, которое должно быть сформировано у каждого растущего человека, - действенность его мировоззрения, морально-нравственных идеалов, убеждений. Воспитанник, подросток должен не только думать, но и действовать по совести, в соответствии со своими жизненными ценностями.

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ENVIRONMENT AND CULTURE IN ANTHROPOLOGY OF CULTURE: EXPERIENCE OF AMERICAN INDIANS

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Key words: environmental determinism, cultural ecology, traditions.

Cultural anthropologists argue whether the environment determines the form of a culture (so called environmental determinism) or whether it provides a set of conditions under which culture can develop along more than one predetermined path (called „cultural ecology”). So, we will operate with two terms here with the following definitions:

1. **Environmental determinism**, also known as *climatic determinism* or *geographical determinism*, is the view that the physical environment, rather than social conditions, determines culture. (Andrew, 2003).

2. **Cultural ecology** studies the relationship between a given society and its natural environment, the life-forms and ecosystems that support its lifeways. (Turner, 2002)

The term „**culture**” (from the Latin *cultura* stemming from *colere*, meaning "to cultivate") is a term that has different meanings. In this essay, we would note that in the twentieth century, "culture" emerged as a concept central to anthropology, encompassing all human phenomena that are not purely results of human genetics. Specifically, the term "culture" in American anthropology has two meanings: (1) the evolved human capacity to classify and represent experiences with symbols, and to act imaginatively and creatively; and (2) the distinct ways that people living in different parts of the world classified and represented their experiences, and acted creatively. (Turner, 2002).

The terms will be observed in context of three American cultures: the southeast, the subarctic and the southwest, each represented by a popular American natives' tribe – Cherokee, Hopi and Chipewyan.

Significant symbol of Cherokee culture is the Cherokee rose. The legend of it tells that when gold was found in Georgia, the government drove the Cherokees to Oklahoma, forgetting all its treaties. One fourth of them died during the journey west. But the Great Spirit decided to commemorate the brave Cherokees, looking down from heaven, and when the blood of the braves and the tears of maiden dropped to the ground, the Great Spirit turned them into stone

in the shape of a *Cherokee Rose*. This is why they are so many in Oklahoma - at the end of the Trail of Tears. The State Flower of Georgia is also "Cherokee Rose." (Power, 2007)

The Cherokees believe that they have always lived in Western North Carolina. Of course, finely crafted stone tools and fluted spear-points confirm that ancient people lived here more than 11,000 years ago, at the end of the last Ice Age. Ancient Cherokee tales describe hunts of the mastodons that once foraged through the upland spruce and fir. (Power, 2007)

This was life that realized harmony with nature, personal freedom, sustainability, and balance between work, play, and praise. The land secured everything: food in abundance; materials for clothing, shelter and utensils; visual grandeur is obvious still today, and herbs to cure every known illness – until the Europeans came. (Power, 2007)

The Cherokees in Western North Carolina today descend from those who were able to hold on to land they owned, those who hid in the hills, defying removal, and others who returned, many on foot. Gradually and with great effort, they have created a vibrant society, an independent nation of 100 square miles where people in touch with their past and alive to the present preserve timeless ways and wisdom. (Power, 2007)

Hopi traditional knowledge is encoded in this way and contains messages on many different levels. Hopi traditional knowledge begins with the emergence story. The world we live in now is the fourth way of life that the Hopi have lived. Different Hopi clans and animals emerged from the third into this fourth way of life. Hopis tell how the people of the world were offered ears of corn by *Ma'saw*. Many jumped in ahead of the Hopi and picked large ears of corn and left Hopis the smallest ear. This symbolizes the difficult but enduring life the Hopi live in the arid Southwest. Along with each ear of corn, the various peoples of the world inherited homelands, cultures, and responsibilities from the rest of creation. The Hopi fulfill their responsibilities through their daily life and ceremonies. Hopi life revolves around agriculture, in particular, corn. The Hopi way of life is the corn -- humility, cooperation, respect, and universal earth stewardship. (Clemmer, 1995)

After occupying almost all of northern Arizona, from California to parts of Southern Nevada, the Hopis are now living on the Hopi reservation in Black Mesa, Arizona near the Painted Desert. (Clemmer, 1995)

The Hopis are thought to have migrated north out of Mexico around 500 B.C. They were a hunting and gathering group that lived in small bands in pit houses. Almost 1200 years later, the main staple of the Hopi diet switched to the small, blue ears of corn they were able to grow, using runoff from the mesas. Many of the small bands began to come together, and large villages started to grow on top of these mesas. As the population grew agriculture

became more and more important. Clans formed within the villages, and each clan had its own field that it was responsible for. Hopi society was matrilineal, which meant that the mother determined field inheritance and social status. Women owned the field, but only the men of their clan worked in them. Each clan was also in charge of certain religious ceremonies throughout the year. A society within each clan would perform the ceremonies, with societies of women taking charge of certain ceremonies as well. The Hopis enjoyed this peaceful way of life, until around 1540, when a group of Spanish explorers led by Coronado first came to this region. Spanish missionaries tried to convert the natives, while the soldiers and explorers looked for any way to exploit them. During this time, the neighboring Navajo tribe began to come under pressure from the Spanish as well, and they began attacking the Spanish as well as the Hopi and other neighboring tribes. The Hopi people were forced to fight for their survival. This long period of fighting lasted until 1824 when Spain recognized Mexico and the Hopi lands were given to the new Mexican government. Although Spain now left them in peace, the Navajo continued to attack and take lands away from the Hopi. In 1870, the U.S. government laid claim to the lands of the Hopi, and they were forced to fight, until finally being forced onto the reservation in Black Mesa, where they live today. Today, the Hopi continue their struggle to maintain their own unique way of life. They battle the U.S. government as well as the Navajo tribe for the return of their native lands. The Hopi people are trying to teach their children to maintain their traditional way of life as well getting an education. (Clemmer, 1995)

Chipewyan is a term of Cree derivation meaning "pointed skins," but Chipewyan call themselves DENE or "people," and use more specific names for regional social communities. The Denesuline of the Athabaskan Basin hunt over a vast area, often extending their winter range of hunting camps northward into the Northwest Territories. The northern Athabasca Basin consists of four Denesuline bands, and the northwestern Churchill River Basin accommodates the remaining four. The Athabaskan region comprises the Fond-du-Lac, Hatchet Lake, Black Lake, and Stoney Rapids First Nation bands; and the Churchill River Basin includes the Buffalo River, English River, Birch Narrows, and Clearwater River First Nations.(J. Helm, ed, 1981)

From all the collected materials we can conclude that culture of ancient Indians was predicted by environmental, climatic and geographic conditions. They used opportunities that were offered by nature, although there was socially determined division of labor: by gender, by age and other social terms including coming of conquistadors. We can talk about labor here as about culture for in ancient times everything was functional. We have to consider also

consequences that produced fluctuation from environmental determinism to cultural ecology and vice versa. The main task of labor was the food question. Significant deforestation has resulted from cattle pastures. To produce it, millions of acres of land that were previously covered with forest or in farmland have been turned into pasture. The devastation of wildlife and biological diversity is bad enough – it is often cause of impoverishment and starvation of local people. Thus in some cases cultural beliefs on food can dramatically affect the world environment. The same can be said about production of other parts of material culture. But whatever it was, it can be considered our riches now being history and experience.

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APPLICATIONS OF BIOCHEMICAL NETWORKS DISCOVERING CONTROL MECHANISMS IN SYSTEMS BIOLOGY

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Abstract: Systems biology is a branch of computational biology which studies biological organisms. A goal of systems biology is to understand living organisms at the systems level, combining quantitative information on individual components in order to understand the emergent behaviors that result. Because the mathematic-analytical part of systems biology is not perfect, therefore as new methods of researches come simulations, modeling, computations and other methods. To understand biology at the system level, we must examine the structure and dynamics. Important item studying systems behavior is to find the structure of possible control loops (positive or negative feedback). Prerequisite of a control loop is an oriented cycle in the structure. The approach we used to mapping the structure is graph-based. The network is represented as a directed graph with labeled edges. In this study we examine structure of unique and evolutionary highly conserved process Heat shock response (HSR) with goal to find possible control loops. Thus structural analysis can give insights about control mechanisms, alternatively possible ways of their execution as well as predict possible ways of control alteration.

Keywords: systems biology, bioinformatics, mathematical model, biological system, structure of biological system, biochemical network, metabolic networks, control loop, positive (negative) feedback, Heat shock response.

Systems biology and information technologies

Systems biology (SB) is a branch of computational biology which studies biological organisms in their essence and the relationships between the components that make up an organism. SB is not the biology of systems, nor is it the chemistry / physics / molecular genetics of molecules in biological systems (Alberghina and colleagues, 2005). System biology studies biological systems by systematically perturbing them (biologically, genetically, or chemically); monitoring the gene, protein, and informational pathway responses; integrating these data; and ultimately, formulating mathematical models that describe the structure of the system and its response to individual perturbations (Klipp and colleagues, 2005).

A goal of systems biology is to understand living organisms at the systems level, combining quantitative information on individual components in order to understand the emergent behaviors that result (Kholodenkov and colleagues, 2005). System biologists build a system-level

understanding of how the biological world works and solve problems by understanding systems and then applying that knowledge to control them (Paxson and colleagues, 2007).

Because the mathematic-analytical part of systems biology is not perfect, therefore as new methods of researches come simulations, modeling, computations and other methods. While these techniques have great potential in systems biology, biologists have not yet applied them as efficiently (as engineers in traditional disciplines) - both because of the complexity of biological systems and because systems biology research requires contributions from a diverse group of researchers (Paxson and colleagues, 2007) (modelers, mathematics, biologists).

Available data

The last several years' biological research produces increasing volumes of data describing genome sequence of biological organisms, cellular components, their interactions, and states of biological networks for model organisms (Herrgard and colleagues, 2006). This available information about biological entities and their interactions enable us to consider different organisms as molecular systems which control the genetic information

Usually the first available information about a cellular process comes as a prediction of a structure – interconnections between the elements that take part in the process. Numerical characteristics of reactions take much more experimental work and time. Thus extracting of knowledge from structure of networks is the first task that can be completed.

Important item studying systems behavior is to find the structure of possible control loops (positive or negative feedback). Prerequisite of a control loop is an oriented cycle in the structure.

Biochemical networks of the biological system

The identification of most genes encoding the metabolic enzymes of some organism has enable methodologies for the systematic mapping of metabolic networks (Westerhoff and colleagues, 2005). The method first identifies the genes that encode enzymes then identifies the chemical reactions these enzymes catalyze, and then writes for each enzyme which chemical compounds it produces and consumes, and at which stoichiometry (Westerhoff and colleagues, 2005). Component and interaction data including genome sequences, protein complexes and protein – DNA interactions can be used to establish the connectivity of the biochemical networks inside the cell. System-state data types including gene expression, metabolite level, metabolic flux, and high-throughput deletion strain phenotyping data present the states and outputs of these networks (Herrgard and colleagues, 2006). These network models can be used to predict changes in the system states in response to genetic and environmental perturbations.

To understand biology at the system level, we must examine the structure and dynamics of cellular and organismal function (Kitano) (Alberghina and colleagues, 2005). At the first we construe the structure of biological system that we have chosen.

The relevant literature and information for metabolic and transcription factor gene (for *Saccharomyces cerevisiae*) is available in the SGD, YPD and MIPS databases. The Metabolic network model consists of the stoichiometric matrix describing all the interconversions between metabolites in the network, maximum flux capacity constraints on all reactions, and a cellular objective function (Herrgard and colleagues, 2006).

The approach we used to mapping the structure is graph-based. The network is represented as a directed graph with labeled edges. The nodes of the graph represent the enzymes, transcriptional factors or elements and edges – reactions or processes.

An example of biological system

Heat shock response (HSR) is a unique and evolutionary highly conserved process found through living beings from prokaryotes to eukaryotes (El-Samad and colleagues, 2005; Kurata and colleagues, 2001; Pockley and colleagues, 2003). Basically HSR is a protection system of the cells against different harmful conditions, including chemical stress (ethanol, heavy metals, etc.), biological stress (inflammation, virus infection, mutant proteins, etc.) and physical stress (elevated temperature, radiation) [El-Samad and colleagues, 2005; Jolly and colleagues, 2000; Pockley and colleagues, 2003; Rieger and colleagues, 2005]. A huge effort has been attended to HSR by research area because of high importance in medicine - especially oncology (Jolly and colleagues, 2000). Recently computational biologists have paid attention to HSR. Nevertheless only few researchers have used control theory of engineering to analyze HSR (El-Samad and colleagues, 2005; Kurata and colleagues, 2001).

Different harmful conditions mentioned above in the cells can initiate misfolding and uncoiling of the proteins (Kurata and colleagues, 2001). That will lead to malfunction of the proteins and even more such misfolded proteins are used to form huge aggregates which are harmful to the cells (Petre and colleagues, 2008). The HSR will be turned on by the cells to escape malfunctioning of the system and to fix misfolded and uncoiled proteins (see Fig.1.).

The main elements of the HSR are heat shock proteins (HSP). HSP are categorized in several families according to molecular weight (small HSPs, HSP40, HSP60, HSP70, HSP90, HSP110). However functionality of HSP can occur by two different pathways. Some HSP function as molecular chaperons some as proteases. Chaperons take part in the assembly, stabilization and folding of oligomeric proteins whereas proteases mediate the degradation of damaged proteins. (Kurata and colleagues, 2001; Pockley and colleagues, 2003)

At the stress conditions expression amount and intensity of HSP is smoothly regulated by transcription factors (also known as heat shock factor - HSF). Family of HSF consists of HSF1, HSF2, HSF3 (unique avian transcription factor) and HSF4 (Pirkkala and colleagues, 2001; Lindquist and colleagues, 1988). Nevertheless HSF is able to activate and inactivate expression of HSP by interactions with heat shock elements (HSE) in the HSP gene promoter regions (Pockley and colleagues, 2003).

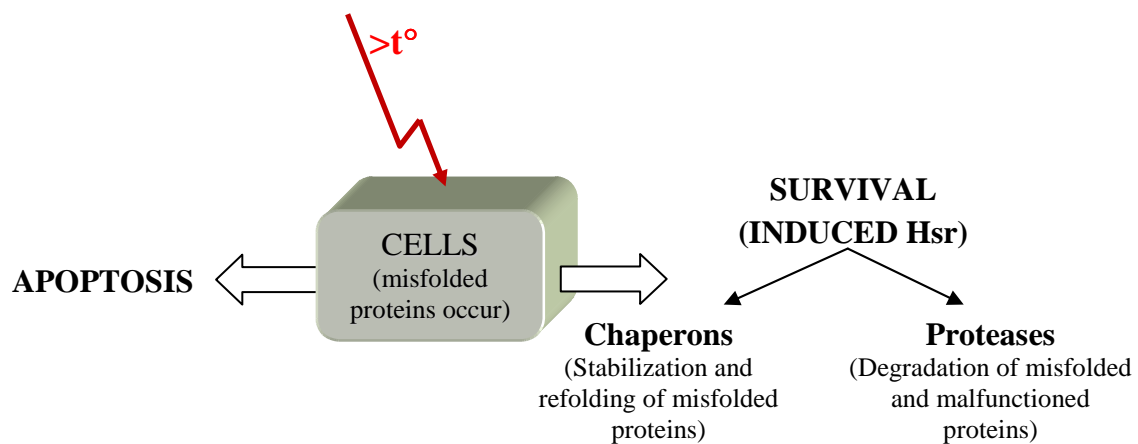


Fig.1. Stress induced HSR.

At the normal conditions HSF is presented at monomer stage. As soon as stress occurs monomers of HSF dimerize and trimerize (see molecular reactions 1 and 2 mentioned below). Only trimers of HSF can form conjunction between HSE (see molecular reaction 3 mentioned below). Newly formed complex will activate transcription of the HSP gene which results in newly synthesized HSP. Destruction of trimers and complex between HSF and HSE will inactivate the system (Petre and colleagues, 2008).

Biochemical network

Several researcher groups (Ion Petre and co-workers (Petre and colleagues, 2008), H. Kurata and co-workers (Kurata and colleagues, 2001), Theodore Rieger and co-workers (Rieger and colleagues, 2005)) have presented mathematical model of HSR. Mathematical model of Eukaryotic HSR presented by Ion Petre and co-workers was used as basic to analyze control loops of HSR. Originally model presented by Ion Petre and co-workers consists of 18 molecular reactions (see below) (Petre and colleagues, 2008).

1. $2 * hsf \leftrightarrow hsf2$
2. $hsf + hsf2 \leftrightarrow hsf3$
3. $hsf3 + hse \leftrightarrow hsf3:hse$
4. $hsf3:hse \rightarrow hsf3:hse + mhsp$

Explanation of abbreviations:

hsf – monomer of heat shock factor;

hsf2 – dimer of heat shock factor;

hsf3 – trimer of heat shock factor;

5. $\text{hsp} + \text{hsf} \leftrightarrow \text{hsp:hsf}$
 6. $\text{hsp} + \text{hsf2} \rightarrow \text{hsp:hsf} + \text{hsf}$
 7. $\text{hsp} + \text{hsf3} \rightarrow \text{hsp:hsf} + 2 * \text{hsf}$
 8. $\text{hsp} + \text{hsf3:hse} \rightarrow \text{hsp:hsf} + 2 * \text{hsf} + \text{hse}$
 9. $\text{hsp} \rightarrow \emptyset$
 10. $\text{prot} \rightarrow \text{mfp}$
 11. $\text{hsp} + \text{mfp} \leftrightarrow \text{hsp:mfp}$
 12. $\text{hsp:mfp} \rightarrow \text{hsp} + \text{prot}$
 13. $\text{hsf} \rightarrow \text{mhsf}$
 14. $\text{hsp} \rightarrow \text{mhsp}$
 15. $\text{hsp} + \text{mhsf} \leftrightarrow \text{hsp:mhsf}$
 16. $\text{hsp:mhsf} \rightarrow \text{hsp} + \text{hsf}$
 17. $\text{hsp} + \text{mhsp} \leftrightarrow \text{hsp:mhsp}$
 18. $\text{hsp:mhsp} \rightarrow 2 * \text{hsp}$
- hse – heat shock element;
 hsp – heat shock protein;
 prot – protein
 mfp – misfolded protein;
 mhsf – misfolded heat shock factor;
 mhsp – misfolded heat shock protein

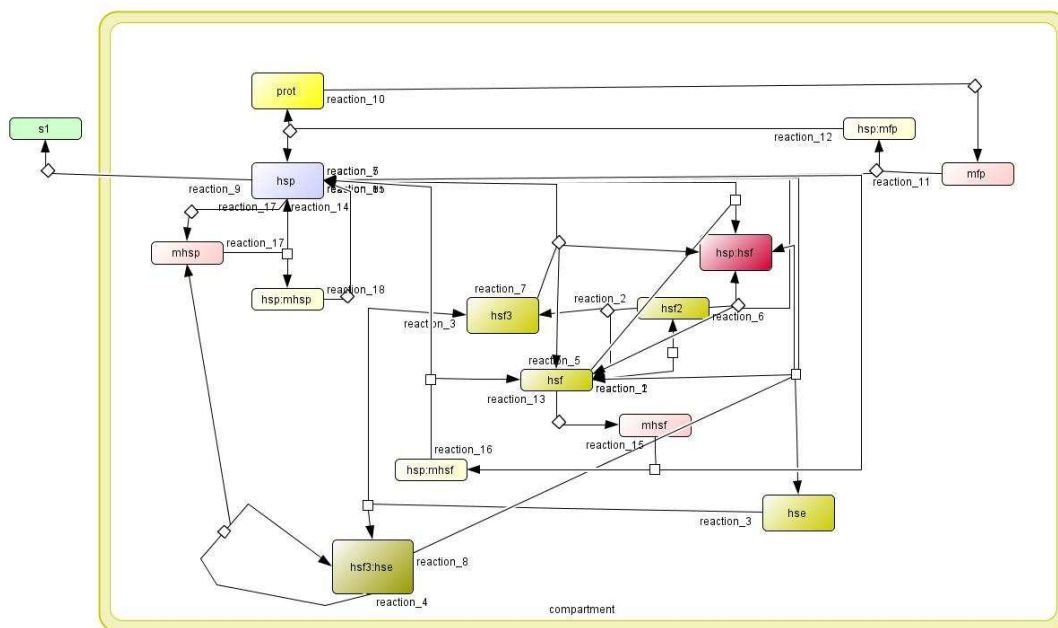


Fig.2. Topological structure of biochemical network of HSR.

Ion Petre and co-workers used Copasi 4.4 software to analyze mathematical model of HSR. For better understanding of the structure of HSR Copasi file of molecular reactions converted to SBML file to visualize by computer software CellDesigner (see Fig.2.)

Search of control loops

CellDesigner represents HSR as a graph enabling diagnoses structure and conjunction among elements of HSR. Analyses of structure gives confirmation to known control loops and gives

opportunity to search for new candidate loops. Even more structure of known control loops can lead to alternative realizations of control loops.

	reaction 01.	reaction 02.	reaction 03.	reaction 04.	reaction 05.	reaction 06.	reaction 07.	reaction 08.	reaction 09.	reaction 10.	reaction 11.	reaction 12.	reaction 13.	reaction 14.	reaction 15.	reaction 16.	reaction 17.	reaction 18.
hsf	-2	-1	0	0	-1	1	2	2	0	0	0	0	-1	0	0	1	0	0
hsp	0	0	0	0	-1	-1	-1	-1	-1	0	-1	1	0	-1	-1	1	-1	2
mhsp	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	-1	0
hsf2	1	-1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0
hsp:hsf	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0
mfp	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0	0
mhsf	0	0	0	0	0	0	0	0	0	0	0	0	1	0	-1	0	0	0
hsf3	0	1	-1	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0
prot	0	0	0	0	0	0	0	0	0	-1	0	1	0	0	0	0	0	0
hsp:mhsf	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1	0	0
hsp:mhsp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-1
hse	0	0	-1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
hsp:mfp	0	0	0	0	0	0	0	0	0	0	1	-1	0	0	0	0	0	0
hsf3:hse	0	0	1	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0

Fig.3. Stoichiometry matrix of HSR.

Manual search of oriented cycles in the structure can be easy in case of a small network (up to 10 nodes). In case of bigger networks mathematical algorithms should be applied using stoichiometric matrix of a control network that contains the same information as in Fig.2. An example of stoichiometry matrix is shown in Fig.3.

Further targets

Cellular behavior is determined not only by available biological entities, but mainly by their dynamic interactions and individual properties. Activities of most if not all of the enzymes involved in cellular metabolism are regulated by end products and intermediates of corresponding pathways. This complex network with positive and negative feedback as well as genetic regulation of expression level provide flexible adaption of metabolic network to fast and low changes in external environment correspondingly (Demin and colleagues, 2005).

In the next step of research we plan to analyze the features of evolutionary development of structure and it's dynamic.

Conclusions

1. Holistic approach of systems biology aims to understand and predict cellular processes in quantitative way. However usually quantitative data is not available.
2. Under lack of numerical information about the process of interest structural analysis can be used to study control mechanisms of a process. Graphically presented structure or stoichiometric matrix of biochemical network can be used to identify oriented cycles that are one of prerequisites of control loop existence.
3. Thus structural analysis can give insights about control mechanisms, alternatively possible ways of their execution as well as predict possible ways of control alteration.

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Применение интеллектуальных технологий контроля качества пищевых продуктов

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Ключевые слова: контроль качества, безопасность пищевых продуктов, защита потребителей

Введение

В государствах с развитой рыночной экономикой потребители защищают свои интересы обдуманно и организованно. Это означает, что производителям товаров и продавцам необходимо учитывать не только общие, но и индивидуальные интересы и требования потребителей. Такие требования в демократических странах считаются абсолютными и непререкаемыми. Обман, низкое качество товаров, невнимание к высказанным претензиям считается покушением на права потребителей. Товарооборот - это оборот пищевых продуктов, товаров и сырья с момента изготовления до их использования. Контроль товарооборота предполагает, прежде всего, защиту интересов потребителей, производителей и государства. При этом учитываются такие сбалансированные условия их отношений, когда развитие государственной экономики охватывает обеспечение уравновешенных потребностях человека, бережное использование природных ресурсов и охрану среды. В демократических странах каждый член общества – потребитель.

Нет ничего дороже и ценнее человеческого здоровья и жизни. Поэтому каждый товар и технология его производства должны соответствовать определённым требованиям, которые регулируют внутренние и международные нормативные акты. Товар считается небезопасным, если достигнутый уровень науки и техники позволил обнаружить в нём хотя бы один из следующих негативных признаков: в структуре или в составе товара обнаружен дефект, недостаток или неполноценность; предоставленная информация о товаре является ложной или вводящей в заблуждение; товар является опасным для здоровья и жизни потребителя, имущества или среды [1, 2 -5].

К сожалению, достижения науки пока ещё не предоставляют возможности использовать сравнительно простые, надежные и дешёвые приборы контроля

соответствия качества продуктов. В результате проверяют, в основном, не сам товар, а только сопровождающие документы, а потребитель подвержен реальному риску приобрести некачественные, вредные для здоровья и даже опасные для жизни пищевые продукты [3-4].

Интеллектуальные технологии всё чаще внедряются в технические, экономические и биосистемы. Современные технологии контроля соответствия качества опираются на сенсорные инструменты с искусственным интеллектом, которые воспринимают сигналы окружающей среды аналогично органам чувств человека. Таким образом, функцию “интеллекта потребителя” берёт на себя интеллектуальное устройство – «умный» сенсор, контроллер, микропроцессор или компьютер. Как показывает мировой опыт, современные автоматизированные технологии контроля соответствия могут принципиально улучшить ситуацию в области защиты прав потребителей [2-5].

Целью работы является анализ возможностей применения современных интеллектуальных и информационных технологий контроля соответствия и качества пищевых продуктов для защиты прав и интересов потребителей.

Для достижения цели сформулированы следующие задачи:

1. Проанализировать состояние и актуальность проблемы контроля соответствия и качества пищевых продуктов для защиты прав и интересов потребителей;
2. Проанализировать законодательную базу в области контроля соответствия и безопасности пищевых продуктов;
3. Осуществить анализ основных функциональных связей, отношений, интересов и ответственности между государством, производителем, поставщиком услуг и потребителем и разработать соответствующую структурно-функциональную модель;
4. Дать оценку возможностям применения современных технологий контроля соответствия для защиты прав и интересов потребителей.

Методы исследования

В ходе исследования использовался метод экспертных оценок, метод структурно-функционального анализа, метод индукции и дедукции, метод диаграмм Джона Венна (Symmetric John Venn Diagrams).

Результаты и дискуссия

Основой системы защиты интересов потребителей является “Закон о защите прав потребителей”. Законы “ О безопасности товаров и услуг” и “Об ответственности за несоответствие товаров и услуг” позволяют разделить требования безопасности и регулирование ответственности. Цель внедрения закона о безопасности товаров и услуг – обеспечить безопасное для здоровья и жизни потребителей, а также для среды

производство товаров и предоставление услуг. Защита интересов потребителей в Латвии регламентируется законом “О надзоре за оборотом пищевых продуктов”.

Цель этого закона – обеспечить качественный и для здоровья человека и среды безвредный оборот пищевых продуктов, предотвращая риски, способствуя торговле и защищая интересы потребителей. Оборот пищевых продуктов – это все те этапы, которые проходят пищевые продукты от их производства до потребления, рис.1.

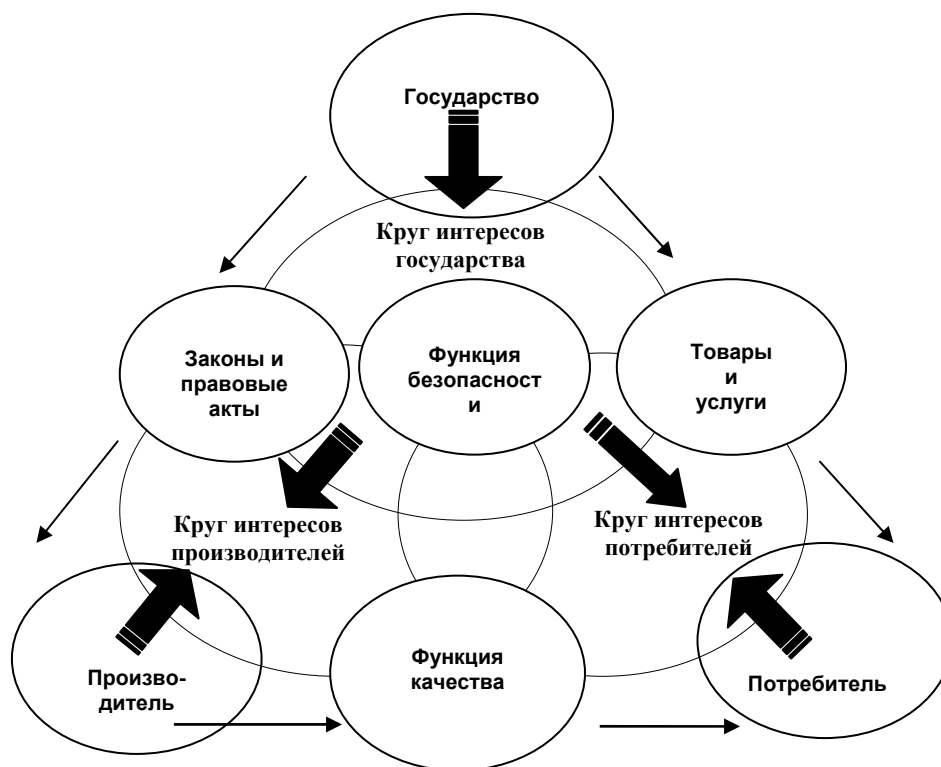


Рис.1 Структурно-функциональная модель отношений, интересов и ответственности между государством, производителем, поставщиком услуг и потребителем.

В Европе и в мире действуют несколько систем для контроля и обеспечения безопасности пищевых продуктов [1]. В мировой практике традиционным является тестирование конечного продукта. Систему обеспечения качества и безопасности сельскохозяйственной продукции условно можно разделить на пять частей:

1. Good Hygiene Practice (Ghp), хорошая гигиеническая практика;
2. Good Manufacturing Practice (GMP), хорошая производственная практика;
3. Chain control (CC), цепочка контроля, отслеживание пути прохождения от сырья до готовой продукции, от поставщика до потребителя;
4. Quality control (QC), контроль качества;
5. Hazard Analysis by Critical Control Points (НАССР), анализ факторов риска в критических контрольных точках.

GHP - хорошая гигиеническая практика. Одна из главнейших составляющих успеха - высокая санитарная культура производства. Получение высококачественных продуктов может быть достигнуто только при четкой организации противоэпидемических и гигиенических мероприятий. Основная цель - исключить попадание в готовую продукцию любых нежелательных посторонних включений.

GMP - хорошая производственная практика. В первую очередь это четкая организация производственных процессов, соблюдение технологических регламентов, параметров мойки и дезинфекции оборудования и т.д. Соблюдение производственной дисциплины достигается не только порядком действий каждого работника, регламентированным должностными инструкциями или инструкциями на рабочих местах, но и личной ответственностью работающих. Все производственные процессы должны быть максимально прозрачными, чтобы по информации на этикетке каждой партии готовой продукции можно было установить все исходные данные (а это значит - ведение всей технической и технологической документации должно всегда находиться под строгим контролем). Таким образом, создается "Система обратного отсчета", которая позволяет в любое время для любой партии продукции проанализировать все факторы, повлиявшие на качество готового продукта, идентифицировать точки нежелательного воздействия и провести корректирующие действия.

СС - цепочка контроля, отслеживание пути прохождения от сырья и основных компонентов до готовой продукции (от поставщика до потребителя). Чаще всего на предприятии входной контроль сырья сводится к контролю отдельных образцов (или, например, к контролю по отдельным показателям), а полученный результат распространяется на всю партию. А как показывает практика, не всегда качество всей партии продукции соответствует анализируемому контрольному образцу. Поэтому важной составляющей входного контроля является последовательная и постоянная работа с поставщиками.

QC - контроль качества. Каждое предприятие самостоятельно строит свою производственную деятельность, а значит должно иметь собственный пакет документов, регламентирующих производственную деятельность и призванных обеспечить качество и безопасность выпускаемой продукции. В основе этих документов должны лежать требования государственных нормативных актов. Инструкции должны включать описание полных и подробных действий по каждому производственному процессу, каждому продукту. Поэтому необходимо использовать возможности аккредитованных лабораторий центров сертификации, санитарного надзора и других ведомств. Контроль качества не

должен ограничиваться существующими возможностями, поскольку необходима полная информация обо всех параметрах продукта.

Система контроля качества НАССР (Hazard Analysis Critical Control Point – анализ факторов риска в критических контрольных точках) обеспечивает внутреннюю упорядоченность технологических процессов предприятия и обеспечивает неизменно высокое качество продукции. Используя систему НАССР, контроль качества переносится с тестирования конечного продукта на отдельные этапы процесса производства и обработки пищевых продуктов. Производителям пищевых продуктов это даёт уверенность в том, что возможные отклонения в качестве продукции будут предотвращены ещё в процессе производства, чего нельзя достичь, выполняя традиционное тестирование конечного продукта. Технология контроля соответствия товаров и качества пищевых продуктов опирается на анализ факторов риска. Для того, чтобы в каждом конкретном случае определить фактор риска, необходимы соответствующие базы данных о параметрах продукта или товара: процессуальные параметры (происхождение, производитель, перевозчик, заказчик, распространитель, торговец, цена и т.д.); параметры качества (группа качества и её параметры, длительность срока годности, время сохранения и т.д.). Потенциальные причины риска система НАССР делит на следующие группы: микробиологические, химические и физические. Для документирования системы НАССР необходимо составить список всех критических точек процесса производства, в которых могут появиться источники риска.

В современном мире технологии «думающих машин», машин искусственного интеллекта, интенсивно развиваются. Интеллектуальные технологии в обороте товаров и контроле соответствия по уровню “интеллекта” уже сейчас готовы не только проводить операции контроля соответствия и обеспечивать автоматические функции анализов с помощью людей с аналогичными способностями, экспертами, но и самостоятельно планировать и организовывать процедуры контроля соответствия, систематизировать выявленные несоответствия, фиксировать и обрабатывать факты несоответствия, события и данные, обеспечивая потребителям свободный доступ к информационным ресурсам о полезных или нежелательных свойствах продукции [2-3]. Кроме того, интеллектуальные технологии в области защиты прав и интересов потребителей дают возможность потребителям использовать для своей защиты готовые к употреблению электронно-обобщённые и юридически обоснованные знания о товаре или услуге [4-5].

Обеспечение безопасности пищевых продуктов находится в компетенции институций государства, а ответственный за качество произведённую продукцию или качество услуг является производитель, рис.1. Контроль количественных параметров

влияет только на доходы потребителя. Недостаток контроля качественных параметров приводит потребителей в ситуацию риска, которая влияет на их здоровье и даже является угрозой для жизни. Поэтому в магазинах, на складах и в лабораториях рядом с контрольными весами необходимо установить электронно-обученные индикаторы контроля соответствия качества пищевых продуктов. Тогда у каждого потребителя будет возможность активно участвовать во всех этапах контроля соответствия качества товаров и получать готовые к использованию знания о качестве, полезных или нежелательных свойствах конкретного продукта [2-5]. Основой таких интеллектуальных технологий является автоматический анализ риска несоответствия. С помощью таких технологий любой потребитель очень просто сможет получить доступ в электронную базу данных приобретаемых пищевых продуктов, используя имеющийся на упаковке товара штрих-код [6-11]. Таким образом, покупатель сможет узнать всю необходимую информацию о продукте, например, актуальную цену приобретаемого продукта, полезные и нежелательные свойства продукта, сведения о происхождении и дате реализации пищевого продукта, получить полную информацию о конкретной добавке, консерванте или о наличии в составе продукта генетически модифицированных компонентов.

Разработанная для защиты потребителей интеллектуальная технология с использованием штрих-кода (рис.2.), позволит усовершенствовать всю систему организации торговли, радикально изменит отношение производителя к соблюдению интересов и прав потребителей.

Результаты исследования показывают, что, к сожалению, мы имеем дело с монополией на жизненно необходимую потребителям информацию, поэтому эту услугу не предлагают ни торговые базы, ни супермаркеты, ни производители, ни контролирующие институты. Необходимо также усовершенствовать законодательную базу по мере усовершенствования технологий контроля соответствия. Свободный, или за минимальную плату, доступ к электронной базе данных продаваемых товаров и пищевых продуктов с помощью штрих-кода, мобильного телефона и интернета (исключая доступ к информации коммерческого или “секретного” характера), на наш взгляд, моментально освободит полки супермаркетов от товаров сомнительного происхождения и качества.

Основываясь на информационные технологии штрих - кодовой идентификации товара, интеллектуальные сенсоры и на такие «умные» электронные инструменты, как «искусственный язык» и «искусственный нос», не только уменьшаются риски возможного приобретения покупателями некачественных или ненадёжных пищевых продуктов сомнительного происхождения, но и через электронную базу данных покупателью предоставляется полная информация о свойствах и составе приобретаемых продуктов.

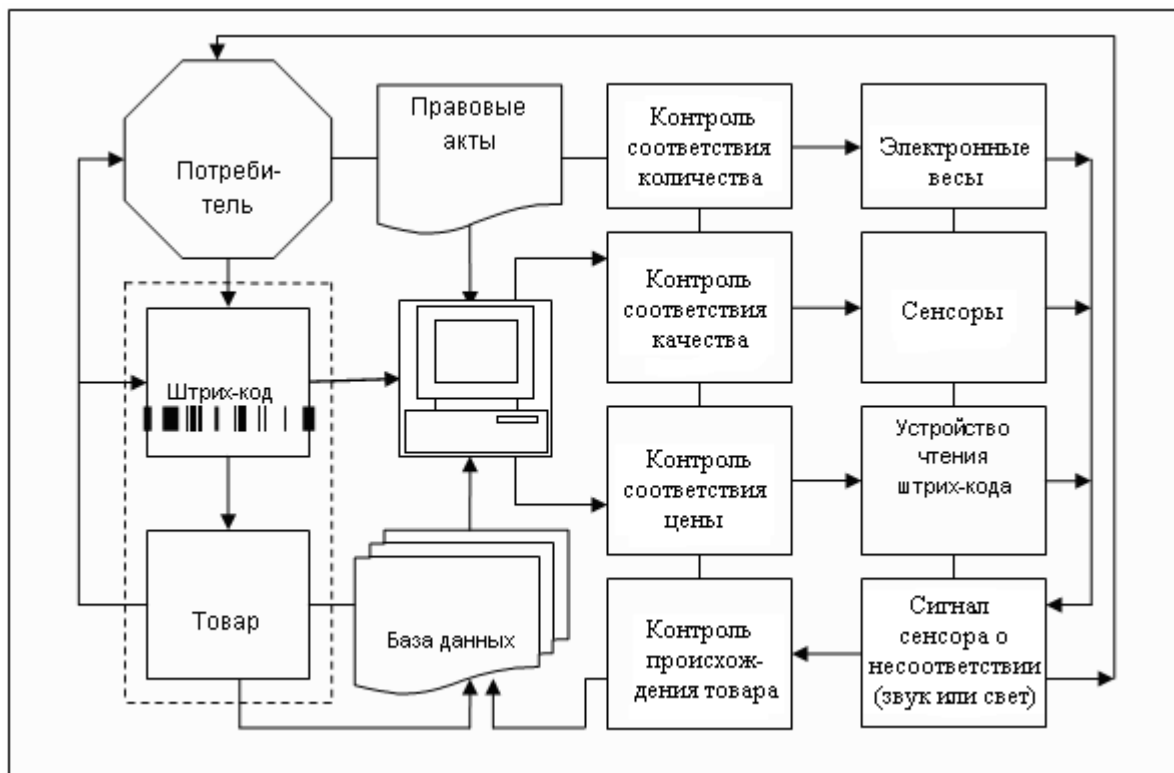


Рис 2. Концепция интеллектуальной штрих - кодовой технологии контроля соответствия в обороте товаров

Выводы

1. Главная цель внедрения технологий контроля соответствия качества состоит в том, чтобы обеспечить качественный и безопасный для здоровья человека и окружающей среды оборот пищевых продуктов, устраняя при этом возможные риски и защищая интересы потребителей.
2. Технологии контроля соответствия качества путем тестирования в специальных лабораториях основаны на новейших достижениях науки и техники в области разработки лабораторных инструментов контроля.
3. Интеллектуализации технологий и инструментов контроля безопасности пищевых продуктов наблюдается во всём мире. Поэтому в Латвии необходимо ускорить и расширить исследования в этой области, включая применение интеллектуальных, информационных и нанотехнологий.

4. При создании соответствующей электронной базы данных в Латвии имеются все необходимые предпосылки для широкого внедрения в супермаркетах, складах и торговых базах интеллектуальных штрих - кодовых технологий контроля соответствия качества продуктов для защиты прав и интересов потребителей.

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