FROM 'OUT THERE' TO 'IN BETWEEN':
PRESCHOOLERS' INTERPRETATION OF TELEVISED IMAGES

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Two studies investigated preschoolers' understanding of how televised images relate to the reality they represent: are they seen as merely showing the visual aspect of reality as it is ('world-window' interpretation), or as representing it by way of specific visual means ('media' interpretation). The first study compared the reactions of younger (4 - 5) and older (6 - 7) preschoolers to very short video clips showing some usual and some unusual (impossible) sights. The children were asked whether what they saw on the screen was true and, if not, how it was possible to show it. The analysis of children's explanations indicates a development toward 'media' interpretation: while younger children tend to explain the impossible images by referring to interventions made "out there", in front of the camera, the older ones tend to explain them by referring to the interventions of the medium itself. In the second study some of the older preschoolers were given a brief visual literacy training (Videolab method). In the subsequent testing these children demonstrated faster movement toward 'media' interpretations. Cognitive-developmental and educational implications of these findings are discussed.

Key words: cognitive development, iconic representation, pictorial competence, screen-based media

Moving picture, in all its versions - film, television, video, internet transmission/presentation, computer animation - has long been a part of everyday life of millions of people. These means of communication, often called screen-based media, marked the 20th century by bringing a new language into human communication: building upon the ancient, visual language, the new technologies

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made it possible for the new forms of communication to emerge, based on moving pictures.

These new forms of communication, often called filmic/cinematic language, have been studied for decades in various disciplines, but only sporadically in psychology. Recently, however, especially in developmental psychology, the interest in this area seems to be growing.

Recent developmental studies in this area are mostly focused on the basic issues pertaining to understanding the nature of moving (televised/video) picture in very young children, i.e., their interpretation of its relations to the reality it represents. The most interesting among these studies are those placing the interpretation of the nature of moving picture in a wider context of studying iconic models (drawings, photographs and three-dimensional scale models). Most of these studies were done by the group of researchers at the Psychology Department of University of Illinois at Urbana-Champaign, led by Judy DeLoache.

The findings of these studies (DeLoache, 1995; DeLoache et al., 1998) show that the picture as a symbol (iconic sign) practically does not exist for children under 2 to 2,5 years of age. It is only at these ages that a significant change in the use of picture as a source of information occurs. This is preceded by a period in which the picture (or a scale model) seems to be understood exclusively as an object per se. It is only through experience that the child acquires what these authors call 'pictorial competence', i.e. the ability to grasp the dual nature of picture: that it is at the same time an object and a representation of something other than itself. The crucial role in this experience is played by the attempts to grasp (two-dimensional) pictures, resulting in that "physically grasping at pictures helps infants begin to mentally grasp the true nature of pictures" (DeLoache, 1998, p.210).

When it comes to moving (televised) pictures, the few relevant studies (Nikken & Peeters, 1988; Flavell et al., 1990; Troseth, 1997) indicate a similar developmental sequence. It seems that televised picture is at first understood as some kind of a separate reality, "a world in the box". However, these findings are not completely consistent: while Flavell et al. (1990) think that such interpretations, if they exist at all, disappear between the third and the fourth year of life, Nikken & Peeters (1988) found them in considerably older children as well. Nevertheless all the researchers agree that, whatever it is like at the beginning, the child's interpretation of the televised picture develops throughout the preschool period towards understanding its representative (symbolic) nature. However, this concept calls for a more precise definition.

To understand the representative (symbolic) nature of pictures and iconic signs in general, it is important to make a distinction between presentation and representation. In this sense iconic signs, especially photography and, even more, moving pictures, have a specific position in relation to all other types of signs: their visual resemblance to the signified (in the case of moving pictures, supported by the audio track) can leave an impression that they simply present visual aspects of reality as they are, instead of representing them, using their own visual means of expression.
This is the distinction that appears to be crucial in this context: understanding of the nature of televised picture seems to develop along this very dimension (presentation - representation). The studies that will be presented here seem to support this hypothesis.

The studies were done in order to examine the way in which preschool children understand the relation between televised picture and reality: is televised picture some kind of world window, a way to (audio)visually record the visible aspects of reality and show them as they are ('window interpretation'), or a medium which represents them, using its own specific visual means ('media interpretation')? With this distinction in mind, video material was created and shown to children, to see whether the difference between these two types of interpretation would appear in their answers.²

The material consisted of very brief video clips (10 - 30 seconds each) accompanied by off-commentary. Some of the clips showed usual, possible sights, e.g. the empty stands of the race course (with the off-commentary: "The race course stands were empty"), two ostriches in the zoo (off-commentary: "We saw two ostriches in the zoo"), a peacock pecking some seeds (off-commentary: "A peacock was eating some seeds") and the like. The other type of clips showed situations that are impossible in reality: an elephant without a trunk (the trunk was 'cut off' by the side edge of the frame, and the off-commentary went "In the zoo we saw an elephant without a trunk"), a tiger walking upside-down in the cage (done by the simple turning of the camera upside-down, with the off-commentary: "the tiger got a little nervous so he started pacing the ceiling"), a tiny horse standing on someone's palm (the horse was far back and the palm was in front of the camera, with the off-commentary "The horse called Tiny was the children's favorite"), a horse with a saddle changing colors (a simple special effect done in the camera, with the off commentary "We saw a horse with a color-changing saddle").

After watching each of these clips, the children were asked whether what they saw on the screen was true, and if it wasn't, how it was possible to show it. The analysis of their answers was aimed at distinguishing between the two types of interpretation of the impossible sights: 'window interpretation' (referring to the presumed interventions made 'out there', in front of the camera), and 'media interpretation' (referring to interventions of the medium itself - e.g. camera movements, simple special effects). Additionally, attention was paid to the differences between more and less mature answers within 'media interpretation'.

The first of the two studies dealt with the differences in interpreting the nature of televised picture between younger (4 - 5) and older (6 - 7) preschoolers. In the second study, some of the older children were exposed to brief visual literacy training.

² For the very complex job of creating these materials I owe immense gratitude to Alexandar Gubas, my collaborator on the Videolab project, without whose contribution this study would not have been possible either.
using Videolab method, and their interpretations were compared to those of their peers who were not exposed to such training.

**STUDY 1**

**Method**

**Subjects**

26 five-year-olds (4;10 to 5;7, M = 5;4) 13 girls and 13 boys, from "Villa" kindergarten in the historic center of Belgrade, and 26 six-year-olds (6;0 to 6;9 M = 6;5), with an even number of boys and girls, from "Villa" and another nearby preschool institution (see Study 2).

**Materials and procedures**

The children individually watched 9 video clips each. Four of these clips showed ordinary, possible sights, and five showed the impossible ones. The two kinds of clips were shown alternately, except that two 'impossible' clips at the end of the series were shown one after the other. After watching each of the clips the child was asked a simple question: "Is this true?", after which an explanation was requested - "How do you know?" (for affirmative answers) or "How is it then possible for us to see it on TV?" (for negative answers). The differences in interpretation

**Categories of responses**

This analysis does not include the explanations of (the very rare) wrong answers to the question "Is this true?", since they are actually not relevant for the topic of this study. These answers either reflect the child's conception of reality itself (his/her ideas about the characteristics of the physical world), or the tendency to conform one's answers to what is seen as adults' expectations (this was demonstrated by the - very rare - answers in which the usual sights and situations were declared impossible).

The explanations of the correct answers, those clearly distinguishing the possible from the impossible sights, can be classified into the following categories:

**W - window interpretation** (making reference to the presumed interventions made 'out there', in front of the camera)

Examples:
- "That's not a real horse, it's some kind of toy" (a miniature horse on the palm of a hand)
- "She put a hood over her head" (a woman without a head)
- "They made a doll like that" (a woman without a head)
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- "They put a piece of board so it looks as if the roof is lower" (the lens of the camera lowered so that the squatting boy's head touches the edge of the frame)
- "They put all kinds of lights on the saddle and then change colors" (the color-changing saddle)

**M - media interpretation** (making reference to the interventions of the medium itself - camera movements, simple special effects)

Three subcategories can be distinguished within this kind of explanation:

**m1** - incomplete, vague reference to the intervention of the medium itself:
- "I don't know, you somehow did it with the camera, some kind of trick" (different clips)
- "You somehow shot it so that we think she doesn't have a head" (a woman without a head)
- "That's some kind of computer animation, I don't know" (different clips)

**m2** - global explanation of the technique:
- "He couldn't fit into the camera, so he had to squat" (a boy's head touching the upper edge of the frame)
- "Her head didn't fit into the TV" (a woman without the head)
- "The horse was far away" (a miniature horse on the palm of a hand)

**m3** - detailed explanation of the technique:
- "He's totally far, and they put the hand in the front" (a miniature horse on the palm of a hand)
- "They didn't shoot the head, they turned the camera to show more of the ground, so you can't see the head" (a woman without a head)
- "You turned the camera upside down" (a horse upside-down)
- "He squatted with the camera so Marko had to squat, too, so that his head isn't chopped off" (the boy's head touching the upper edge of the frame).
- "It's that the saddle was drawn first and then it's put there... they shoot it somehow... and then there's something in the camera you push and then the colors change" (the color-changing saddle).

It should be noted that distinguishing between categories m2 and m3 was difficult and that it wasn't always completely clear whether the level of interpretation was determined by the degree of understanding of the technique or by the level of the child's linguistic and general communication competence. We believed, however, that making this distinction was necessary because it enabled us to take a closer look into the nature of the evolution we are dealing with here.

**N - no explanation** ("I don't know")
Results and discussion

As expected, there was a very small percentage of wrong answers to the question "Is this true?" in both groups, although it was a little higher in the younger one (19%, compared to 15% in the older one). This was expected because the basic concepts about the characteristics of the physical world are greatly acquired and developed at both these ages.

The main result of the study amounts to the finding that the frequency of M-type responses, compared to W-type responses, significantly increases with age. Planned comparisons of media and window type responses in two groups of different age were performed. Two separate analyses of variance revealed a significant effect of age for media type responses (F(1,50)= 4.72, p<0.05) and non-significant F for window type responses (F<1). This is shown in Figure 1.

Figure 1. Distribution of four types of responses in the two age groups

Such development was expected having in mind the general, and especially the perceptual experience of older children and their ability to apply it in novel situations. This is illustrated by the following response (referring to the clip of a miniature horse on the palm of a hand): "That's because the horse was far away. It's the same as when we're approaching our cabin in the country and I see it is very little, but I know it isn't little at all" (girl, 6;5). This experience is partially shaped by watching TV/video and through the spontaneous testing of its relation to reality: children are thus aware to a great extent that filmic, electronic, and, especially, computer-generated special effects exist ('computer animation' is an expression frequently used in the m1 responses) and that they are often responsible for the discrepancy between what is seen on the screen and what exists in reality. It seems that children sometimes use this expression as some
kind of a 'joker' when they are unable to explain an impossible sight, even when the visual techniques for obtaining those 'impossible' effects amount to simple camera movements/rotations.

The second study examined the possible role of specific experience with the medium in the development of interpretation of the nature of televised picture.

**STUDY 2**

**Method**

**Subjects**

The subjects in this study were the older children from the first study: 26 six-year-olds (6;0 to 6;9, M = 6;5), with an even number of girls and boys. These children were now divided into two subgroups: 15 (8 girls and 7 boys) were from "Villa" kindergarten, and 11 (5 girls and 6 boys) from "Skoligrica" (both preschool institutions are in the historic center of the city, one block apart). Such choice of subjects/institutions was made because Videolab program, whose effectiveness we aimed to examine, has been implemented in "Skoligrica" (Playschool) only. The children from this institution were, therefore, the only possible experimental group for this study, which caused the uneven number of subjects in the two older subgroups as well as some other organizational difficulties stemming from the uniqueness of the program and work methods in that institution.

**Materials and procedures**

The study was organized as an experiment with parallel groups. The pretest for both groups was done within the study 1, and the retest followed after a three-month training (April - June) using Videolab method in the experimental ("Skoligrica") group. Videolab training method was developed during the work on the project with the same title (Korac & Gubas, 1995) and was aimed at fostering the development of visual media literacy in preschool children. Through the workshops appropriate for their developmental level the children were given a chance to directly compare the events occurring in front of the camera (in which they themselves took part) with their simultaneous representation on the screen. In this way they were given a chance to gain direct experience about the nature of the televised picture and its relation to reality (for a detailed description of the method see Korac & Gubas, 1995). Both groups were posttested after a three-month series of workshops done in the experimental group. The material for this test consisted of a series of nine short video clips, parallel in form to those shown in the pretest, but with different contents (the pretest material was shot on

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3 Besides Alexandar Gubas, the person deserving the greatest credit for developing and successful application of this method was Igor Stankovic, preschool teacher in "Skoligrica".
the race course, the adjoining riding club and on several neutral locations; this second series was shot in the zoo). Same as on the pretest, the usual and unusual ('impossible') sights were shown alternately, with the exception of the last two (both 'impossible'). The testing procedure and the classification of responses were the same as in the first study.

Results and discussion

Following the three-month training period, the children from the experimental group demonstrated a somewhat greater frequency of 'media-type' responses. Moreover, the children from this group were much more inclined to giving m2 and m3 responses.

In order to evaluate the effects of training, mean change in number of responses of particular type after training was calculated for both groups. The ANOVA for mixed two-factor design was performed. Effect of interaction group x response type was non-significant (F(3,72)=1.67, p>0.05), suggesting that the training was ineffective. Change in media responses was somewhat larger for experimental group than for control group, but even one-way analysis of variance did not show significant difference between experimental and control groups (F(1,24)=3.50, p=0.074).

When ANOVA for mixed two-factor design was performed after breaking the M responses into m1 vs. m2+m3 categories, the effect of interaction group x response was significant (F(3,72)=7.71, p<0.01), suggesting that the training was effective. Change in m2+m3 responses was larger for experimental group than for control group, and the one-way analysis of variance showed significant difference between groups (F(1,24)=29.23, p<0.01). The results are shown in Figure 2.

*Figure 2. Differences between pretest and posttest measures in m2+m3 response type for experimental and control groups*
In the explanations given by the children from the experimental group much more reference was made to the specific experience with the medium, both from everyday life and from the workshops (26% ) than in the control group (5%). It is important to note here that no explanations related to the functioning of the medium were ever given by the "Skoligrica" workshop leaders, which rules out a possibility of their mechanical application. These explanations (regardless of whether or not they contain explicit reference to the specific experience with the medium) most probably reflect genuine acquired knowledge/understanding of the nature of the relationship between the televised picture and the reality it represents. Acquisition of such knowledge seems to result in the focusing of attention on that relationship and consequently in its gradual 'demystification'.

CONCLUSION

The two studies presented above have provided an insight into the way the preschool child's interpretation of televised picture develops: starting out as some kind of world window, a way to (audio)visually record the visible aspects of reality and show them as they are ('window interpretation'), and gradually becoming a medium which represents them , using its own specific visual means. Understanding the representative (symbolic) nature of moving pictures seems to result from the gradual mutual integration of the general perceptual experience with the physical world and the specific experience with the visual media. This calls for a brief outline of the educational implications of these findings.

The process of acquiring media literacy appears to be more complex than it is usually believed, not so much due to the complexity of the 'language' itself, but primarily because of the fact that preschool children are usually unaware that it is a language in the first place. This suggests that, before dealing with the particular means of expression distinctive to visual language, the first step in teaching visual media literacy should focus on developing an awareness about the three basic facts that mark the nature of the relationship between visual media and reality:

1. what is seen on the screen never looks exactly the same as that which exists in reality, and sometimes considerably differs from it;
2. what exists in reality is not necessarily seen on the screen;
3. what is seen on the screen does not necessarily exist in reality.

Videolab project and training method derived from it dealt directly with making the children of preschool ages aware of these basic facts. The results of our second study suggest that it is these facts that children need to become aware of before any further, more 'sophisticated' steps are taken in teaching them media literacy.
REFERENCES


ISTINE I LAŽI: POIMANJE PRIRODE TELEVIZIJSKE SLIKE U PREDŠKOLSKOM PERIodu

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Pokretna slika, u svim njenim varijantama - film, televizija, video, Internet transmisija, kompjuterska animacija - oblik komunikacije nastao u XX veku, najčešće se naziva filmski/kinematografski jezik ili screen-based media. Savremena razvojnopshološka istraživanja u ovoj oblasti za sada su uglavnom usmerena na elementarna pitanja vezana za razumevanje prirode same pokretne slike t.j. za tumačenje njenog odnosa prema realnosti koju prikazuje. Među ovim studijama izuzetno su zanimljive i značajne one koje tumačenje prirode pokretna slike stavljuju u širi kontekst izučavanja ikoničkih modela (crtež, fotografija i trodimenzionalni modeli - makete). Nalazi studija o kojima je reč pokazuju, pre svega, da slika kao simbol (ikonički znak) za decu praktično i ne postoji do uzrasta od 2 do 2,5 godine. Ovome prethodi period u kome se slika (ili trodimenzionalni model - maketa) po svemu sudeći doživljava isključivo kao predmet za sebe. Dete iskustvom postepeno stiče ono što neki autori nazivaju 'slikovna kompetencija', tj sposobnost da shvati dvojnu prirodu slike: daje ona istovremeno i predmet i predstava nešto izvan sebe same.

Kad je reč o samoj pokretnoj (televizijskoj/video) slici, istraživanja ukazuju na sličan razvojni put. Televizijska slika se, po svoj prilici, u početku razume kao neka vrsta zasebne realnosti, 'stvarnosti u kutiji'. Ono oko čega se svi istraživači slažu jeste da se, kakvo god bilo na početku, detetovo tumačenje televizijske slike tokom predškolskog perioda razvija u pravcu razumevanja njene reprezentativne (simboličke) prirode.

Da bi se bolje razumela reprezentativna (simbolička) priroda slike i ikoničkih znakova uopšte, značajno je unutar ovog pojma napraviti distinkciju između pokazivanja i prikazivanja. U ovom smislu, ikonički znakovi (među njima posebno fotografija i, još više, pokretnе slike) imaju specifičan položaj u odnosu ne sve druge vrste znakova: njihova vizuelna sličnost sa označenim (kod pokretnе slike najčešće podržana zvučnom dimenzijom) može stvoriti utisak da oni naprosto pokazuju vizuelne aspekte realnosti onakve kakvi su, umesto da ih prikazuju, koristeći se svojim specifičnim vizuelnim sredstvima. U razvoju razumevanja prirode televizijske slike ova distinkcija se javlja kao značajna: izgleda da se taj razvoj odvija upravo duž dimenzije pokazivanje - prikazivanje. U prilog ovoj pretpostavci govori i istraživanje koje ćemo ovde ukratko predstaviti.
Istraživanje se sastojalo iz dve povezane studije s ciljem da se ispita način na koji deca predškolskih uzrasta razumeju odnos televizijske slike i realnosti. Da li jezica njih televizijska slika neka vrsta "prozora u svet", način da se vidljivi aspekti realnosti naprosto (audio)vizuelno zabeleže i pokažu onakvi kakvi jesu ("prozorsko" tumačenje) ili, pak, medij koji ih prikazuje, koristeći se svojim specifičnim vizuelnim sredstvima ("medijsko" tumačenje). U tom cilju, pripremljen je i prikazan video materijal za koji je očekivano da će razliku između ova dva tumačenja učiniti vidljivom u dečjim odgovorima.

Materijal se sastojao od veoma kratkih video snimaka (10 - 20 sekundi) pruženih off-komentarom. Neki od snimaka prikazivali su obične, moguće prizore, npr. prazno gledalište hipodroma (uz off-komentar: 'gledalište hipodroma bilo je prazno'), dva noja u zoološkom vrtu (uz off-komentar 'u zoološkom vrtu videli smo i dva noja'), pauna koji kljuca (uz off-komentar 'paun je jeo mrvice') i slično. Druga vrsta snimaka prikazivala je situacije koje su u realnosti nemoguće: slona bez surle (surla je 'odsečena' ivicom kadra, a off-komentar je glasio 'u zoološkom vrtu videli smo slona bez surle'), tigra koji seta po plafonu kaveza (postignuto jednostavnim obrtanjem kamere, uz off-komentar 'tigar se unervozio, pa se prošetao po plafonu'), majušnog konja koji stoji na nećijem dlanu (konj je stajao u daljini, a dlan je bio u prvom planu, uz off-komentar 'ljubimac dece bio je konj zvani Mališa'), konja sa sedlom koje menja boje (jednostavni elektronski trik izveden u samoj kameri, uz off-komentar 'videli smo i konja sa sedlom koje menja boje').

Prilikom gledanja ovih snimaka od dece je traženo da odgovore da li je ono što vide na ekranu istina i, ako nije, kako je to onda moguće pokazati na ekranu. Analiza odgovora bila je usmerena na traženje razlika između dva tipa tumačenja nemogućih prizora: 'prozorskog' (pozivanje na pretpostavljene intervencije učinjene 'tamo napolju', ispred kamere) i 'medijskog' (pozivanje na intervencije samog medija -pokreti kamere, jednostavni elektronski trikovi).

Rezultati naših studija pružili su uvid u način na koji se kod predškolskog deteta razvija tumačenje prirode televizijske/video slike: ona je, na početku, neka vrsta prozora u svet, način da se (audio)vizuelno zabeleže vidljivi aspekti realnosti i da se pokažu onakvi kakvi su ("prozorsko tumačenje"), da bi postepeno postala medij koji ih prikazuje, koristeći sebi svojstvena vizuelna sredstva ("medijsko tumačenje"). Razumevanje reprezentativne (simboličke) prirode pokretnih slika izgleda da je rezultat postepene međusobne integracije opšteg perceptivnog iskustva sa fizičkim svetom i specifičnog iskustva sa vizuelnim medijem.

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