

The HY-DE Model: An Interdisciplinary Attempt to Deal with the Phenomenon of Hyperattention

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ABSTRACT

As academics, as parents, as members of generation X, we cannot afford to ignore that the young generations that have been socialized in information society (generations Y and Z that I call “bit generations”) diverge from their seniors not only in lifestyle and mentality, but they also follow new paths as regards cognitive (and thus learning) processes. International research indicates that the accelerating development of digital devices results in changing habits of information consumption in a matter of a few years. The above changes, perceptible in information society, set me thinking, which, in turn, led me to devising a method based on what I call the HY-DE model.¹

The method I developed invites those who are interested, into the realm of teaching methodology. It is meant to deal with a logical but problematic, nevertheless not at all useless development of digital-world multitasking: hyperattention. The HY-DE-model method I constructed and wish to deploy as a corrective in the fashion described below is meant to tame and harness this phenomenon so that deep attention, which hyperattention suppresses in the electronic learning process, could again be liberated from the prison-house of hyperattention. But the latter, rather than diminishing or even discarding it, should also be regarded as a necessary tool if its positive aspect is recognized and even trained and cultivated as hyperattention is also necessary in coping with an overwhelming flood of information. Thus, in general, the HY-DE-model approach, with all the difference it represents, falls in line with the widespread research that engages the problematic of teaching and education in knowledge-based information society, trying to exploit the possibilities offered by a ceaselessly changing technical environment and put them to the service of effective learning and knowledge.

¹ “HY-DE” is a term that I constructed from the first syllables of hyper and deep attention.

Keywords: reading and learning research, teaching methodology, generations, digital literacy, information society, hyper- and deep attention, HY-DE model

1. THEORETICAL BACKGROUND

The nature of my topic is multidisciplinary, because I have used results and insights of several fields of science, such as reading research, narratology, philosophy, cognitive psychology, and neuroscience.

Reading research

Richard L. Venezky’s “The History of Reading Research” gives a systematic account of six trends in reading research: research on reading processes, reading instruction, testing, literacy, legibility/readability, and reading disabilities [1]. These can be regarded to be as many narratives of the history of reading and reading research. The sociology, philosophy, psychology, pedagogy of reading and their diverse theoretical schools also offer their narratives of reading—all of them fields investigating reading, inclusive of bibliotherapy, an interdisciplinary therapy of ancient conception but so popular in its modern form today.

My paper will not engage these trends, fields, schools, and methodologies. Nor will it apply the hermeneutic approach although interpretative reading is part and parcel of what we are going to discuss. Rather, this presentation is based on a contention (of mine); namely, that all of the narratives produced by reading research on the various trends in the various fields by various methodologies *do* tie into an overarching narrative, which, as a generality, is more than, and is also different from, the sum total of these and can be called *the* narrative of reading (in the broadest sense of “narrative”), something that has been with us since reading appeared in human history for the first time.

The narrative of reading, postmodern society, knowledge-based society

The narrative of reading is itself a story after all, a life-story. In terms of the specific focus of the present study, the narrative of reading is conceived as the life and fate of reading in information society and the age of digital technology. If we take a comprehensive look at the long history of reading, we find that—if viewed on the large scale of cultural history—reading also has its “grand narratives.” According to Jean-François Lyotard’s well-known formulation, grand narratives serve as the means of legitimation of knowledge. Extremest ideologies, totalitarian dictatorships, world wars, and genocides led, however, to disillusionment and delegitimation in the postmodern age, “grand narrative has lost its credibility” [2]. If we regard reading as a source of human knowledge acquisition and a means of knowledge transmission that in and by itself constitutes a (meta)narrative (of what reading is; what we read as individuals and as a culture, when, how, and why), what there is to diagnose in and about our age is that the Gutenberg galaxy is (was?) a paradigmatic phase in the history of reading (to apply Thomas Kuhn’s concept of stability versus revolution in scientific investigation loosely).

Although delegitimation of reading itself as such, in general, is out of the question (a statement to that effect would make no sense), still, we are witnessing a paradigm shift in the history of reading, a new era is beginning (has begun) in the narrative of reading—and there *is* a delegitimizing component in the process as we will see. Printed books, i.e., the shift from the pre-Gutenberg to the Gutenberg age meant a tremendous change, primarily as far as the availability of books was concerned. But the change taking place before our very eyes as a post-Gutenberg world (that can be identified as the Neuman galaxy) intersects with the Gutenberg galaxy, is a much more radical paradigm shift in the narrative of reading: with the e-world gaining ground, print-based reading is shifting to digital base in the digital world [2].

Knowledge-based societies of our days unloose the flood of inherited and new knowledge torrentially upon the new generations, with narratives of the musts and advantages of required or potential acquisition. Cybermedia assist the process by developing new information storage devices, technologies of data-processing, data transmission, and data locking at a speed never seen before. The continuously accelerating process and the radical changes that occurred in the narrative of reading delegitimate, as it were, everything that validated reading in the Gutenberg galaxy. Lyotard is a relevant guide in this context too. “[T]he status of knowledge is altered” in “computerized societies” [3], he argues. The fast pace of technological

transformations that are more and more difficult to follow “can be expected to have a considerable impact” on the two principal functions of knowledge: “research and the transmission of acquired learning” [3]. The nature of knowledge also partakes of the process of transformation: “[i]t can fit into the new channels, and become operational, only if learning is translated into quantities of information” [3].

The question raised in the present paper connects closely with Lyotard’s argument at this point. The basic unit of computer information is the bit, thus postmodern knowledge (knowledge in the “postmodern condition,” to rephrase the title of Lyotard’s book) is bit-based. It is this circumstance that prompts me to refer to the children of the computer age—generations Y and Z—as the “bit generations.” They are the true consumers of the new technologies and applications.

Hyperattention – deep attention - multitasking

The arising question is: what does the paradigm shift brought about by the e-world do to these generations? If we regard the postmodern (digitalized-world) narrative of reading as the basis of our investigation, we can ask: what does this paradigm shift do to the reader, to what s/he reads, and the way s/he reads? What it does to *attention*, has already been established by Katherine Hayles: it produces the phenomenon she calls “hyperattention.” “Hyperattention is characterized by switching focus rapidly among different tasks, preferring multiple information streams, seeking a high level of stimulation, and having a low tolerance for boredom” [4]. What is it that hyperattention does to reading? And, on further reflection: how does it manifest itself through the triple process of reading, comprehension, and memorization in the contemporary narrative of learning?

Our multimedia environment has been flooding us with information through multiple channels, but our organs of perception have not multiplied, nor did the receiving brain. Thus the impact of the medium which opened up new vistas that could never be imagined before and can indeed be hailed as a great achievement of science, becomes more far-reaching than what McLuhan described as its effect (“the medium is the message”). It determines not only the content and aims of the deluge of knowledge it transmits but also the generation it targets. It does that especially through the bandwidth, speed, vividness, and diversity of information as those lead to hyperattention while the skill of intelligent, in-depth reading (a skill acquired through reading texts of single-channel—mono-stream—transmission that require deep attention) is pushed into the background, thereby also interfering with the process of learning. Reading belles lettres is

particularly badly hit by this development since deep attention is needed for literary narratives to fulfill their essential role in identity formation.

Nor can we disregard the circumstance that, as Jürgen Habermas maintains, “[k]nowledge ceases to be an end in itself, it loses its ‘use-value’” [3]. It becomes—in Lyotard’s words—“an informational commodity” (ibid.) whose use-value, let us add, is, in fact, multiplied for the bit-generations as it is no longer knowledge-which-is-an-end-in-itself. The fact of the matter is that knowledge as informational commodity becomes, for these generations, a means of making their way and getting on in life. It fulfills that role in more direct ways than traditional knowledge could ever before.

The road to knowledge leads through learning, and the learning process is grounded in reading, interpretation, and memorization. Members of generation Y have already reached and left higher education; generation Z is standing before the gates of colleges and universities. It is a world-wide phenomenon that willingness to read is diminishing among the young generations, and reading-comprehension skills are on the decline year after year. So highly developed reading skill is a vital issue for educational policy as well as cultural and social policy. Generations may come and go, but text interpretation is still one fundamental condition of effective learning in social and natural sciences alike.

All things considered, the phenomenon of hyperattention is very much here (as already indicated), with its positive and negative aspects, and perhaps is here to stay. The question is whether we need to and/or want to do something about it? It certainly demands attention, especially in higher education contexts when it comes to redesigning and implementing educational models and methods. It must be noted here that parallel with the development of the foregrounding of hyperattention, performance-enhancing neurodrugs appeared in higher education—stimulants for learning, and more and more generation Y students use it. If we view the problem from the point of view of hyper- and deep attention, the drug is clearly suitable for the stimulation of deep attention. In other words, students use performance-enhancing drugs in an attempt to try to activate deep attention in learning processes that require serious concentration. Generation Z is already unresponsive to mono-stream information (hyperattention certainly does not respond to it). They were socialized in what I call “informationally multiple-loaded” environment (where multiple-loadedness can be monomedial: several channels, same medium; or multimedial: several channels, several media). So this generation never had the option to learn how to focus on one single issue.

Reading rules

Significant constituents of my model are the four rules of reading as theorized by narratologist Peter J. Rabinowitz. My time constraint is prohibitive to enlarge on his four types of rules in detail. Here they are, briefly, as a reminder.

- (1) The “rules of notice”: the reader pays more attention to some details, less to others in a text and may completely miss many more—all of this amounts to how much the reader comprehends of the text (s)he is reading;
- (2) the “rules of signification” (meaning attribution): the reader ascribes meaning to what grasped his or her attention as a result of the rules-of-reading functions—this is the step of symbolization, drawing “the significance from the elements”;
- (3) the “rules of configuration”: the reader “assemble[s] disparate elements” and creates patterns of meaning, form, and genre;
- (4) the “rules of coherence”: it is a readerly reflex to look for cohesion and coherence in a literary text in spite of textual deviations, disjunctures, inconsistencies, and contradictions [5].

Identity scenarios

Neuroscientist Susan Greenfield’s research fields and findings are fairly divergent. I feel that the identity-typology set up by her is most essential from the point of view of my subject, as the *raison d’être* of introducing my model (with learning, attention, concentration, and levels of reading as primary concerns) would be that Somebody-ID young people should graduate from our higher education institutions in increasing numbers. Greenfield’s types of identity are as follows, in a nutshell.

In the **Somebody-ID** scenario it is the mind that determines the individual. The brain adapts to the digital environment by forming constantly changing “cell-alliances.” Reading belles lettres has a peculiarly important role in shaping Somebody-ID, especially fiction does, as it helps individuals form conceptual frames and narratives for themselves.

In the **Nobody-ID** scenario screen-culture fills the primary role. Computer games are a solitary activity, on the one hand; on the other hand, emphasis shifts from content to process—preventing the formation of a logical conceptual frame. Visual fantasy of the Nobody-brain declines; it becomes difficult to distinguish the virtual from the real; action is not purpose-driven but an automatized process. This scenario does not generate a demand for reading, nor does it require sustained thinking: the constantly high-strung stimulus threshold

produces a daze of “the here and now,” a kind of addiction—one that the individual is not aware of, and this is the most dangerous part of it. In the Nobody-ID scenario reading is nothing but impersonal snippets of information that never add up in the receiver in a meaningful way. “Mindless thinking” has two identity variants: pseudo (avatar) and collective identity.

In the **Anybody-ID** scenario autonomous identity dissolves in collective identity, the latter assuming the leading role as opposed to the former. One characteristic feature of the Anybody-brain is a fixed state (it is practically impossible to change the mental schema) and being shut down for incoming stimuli. According to this scenario, the individual does read, but the what is immaterial: anything. S/he does not become a reader as a matter of conviction, reads uncritically, not capable of synthesis or metaphysical thinking—s/he is an optimal consumer [6].

2. QUESTIONS

The following questions pose themselves.

1. Should we accept the definite presence of hyperattention in the new generation, and take note of the fact that if we do not make efforts to exploit the positive side of this development, this generation will be even more superficial? Can the generations whose life has been determined by the paradigm shift of digitalization be somehow turned back on the road they traveled as far as reading, comprehension, and learning are concerned?
2. It is a big question whether we can intervene in the process, let alone make an effort to press back hyperattention? After all, the flood of information keeps rolling along more and more heavily so that it is impossible to process it with deep attention. Or perhaps we had better work out something about the dynamics of the two, something about how one relates to the other?
3. What is the influence that hyperattention exerts on the rules of reading in the four mutually interactive categories established by Peter J. Rabinowitz?
4. What is the binary HY-DE model that I constructed, and how does its two-stage application work towards solving the problem?
5. What can the results of the practical implementation of the model be from the point of view of the threefold process of reading—comprehension—memorization? What is the

degree of effectiveness of HY-DE-model-aided learning? The answers to these questions will be provided by empiric research.

The theoretical model that I developed, in an awareness of all the problematic outlined above (from the paradigm shift of the narrative of reading in the digital world through hyper- and deep attention to the rules of reading) is an attempt to follow and consciously control the alternating shifts of hyper and deep attention in a higher-education classroom-instruction situation.

3. THE HY-DE MODEL

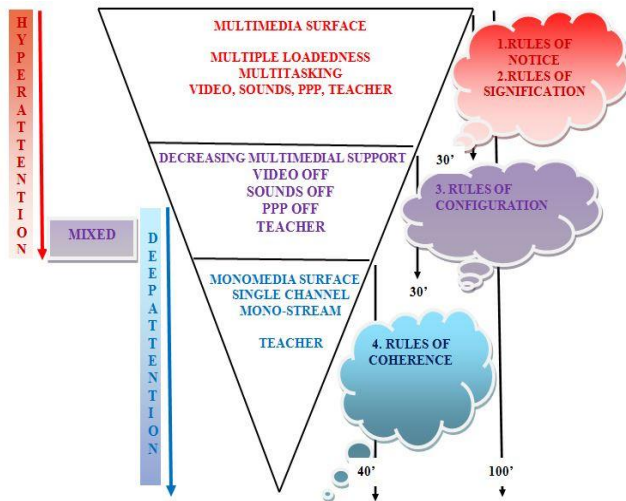
Here are the two stages of the model of a proposed new methodology. The HY-DE-model has one stage for the instructor and one for the student. Its application requires an adequate level of media education on the part of teacher and student alike.² Similarly, mediatext-creation³ is an organic part of the student stage.

This study presents only the theoretical multidisciplinary grounding of the HY-DE model (the philosophy of it, if you like) and the structure of the model. In the *Journal of Systemics, Cybernetics and Informatics* I will extend it by introducing some slides related to how the model works in practice. It is a visualized learning material (an MA course), which is having its trial run at the University of Debrecen (its title being “The History of the European Union.”).

²Tibor Koltay’s “*Médiaműveltség, média-írásstudás, digitális írásstudás*” (Media education, Media Literacy, and Digital Literacy) provides an overview of a broad scale of what is meant by media education. The most relevant mediaeducation-definition when it comes to the HY-DE model is this: media education is “the sum of the knowledge and skills that are essential for us to understand what media can carry data, information, and knowledge, what forms the latter can assume, how they are created, how they can be stored, transmitted, and presented” (Varga, 2008; quoted in Koltay, 2009 [7]) The student stage of independent HY-DE activity has been designed in the spirit of this definition.

³In the present case, when creating mediatext, it is not technical proficiency which is most important (it is a prerequisite, though), but that those young people should experience the joy of self-expression and independent discovery while creating the mediatext (during solving the task) (Dimbleby and Whittington, 1994, Dowmunt 1980; quoted in Herczog, 2012 [8]).

The guided instructional stage (type of class: lecture)



Heeding the Rabinowitz rules, imparting a subject-matter to the class would start with his first two levels in mind (attention/notice and signification), capitalizing on the advantages of the prevalence of hyperattention: the subject would be introduced on multimedia surface. Let us say, one third (30 minutes) of a university double class session (100 minutes) could be devoted to the exposition of the subject in this manner. That is, the teacher presents the material in broad outlines, applying multiple loadedness of the highest intensity. Students do not take notes, they are just viewers and listeners, trying to grasp as much as possible and attribute significance.

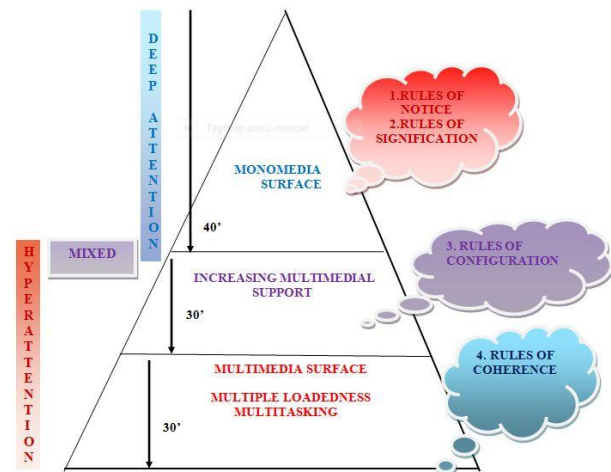
This would be followed (the next 30 minutes), in accordance with Rabinowitz's rules of configuration, by the teacher re-presenting the whole material. But s/he is doing it by gradually decreasing multimedial support. For example, the video or other moving images are switched off, then the sound is taken out, and finally the text slides of the power-point presentation are switched off during the teacher's presentation, until only the teacher's voice remains. During this phase (the second presentation of the same material but with multimedia removed step by step) the students take notes, using traditional techniques of note-taking. It would compel them to switch to deep attention mode slow but steady.

Reaching the phase of coherence-formation (the closing 40-minute segment of class time), multiple loadedness completely disappears, and information monostream (in this case the teacher's voice) would be foregrounded so as to aid the process of deep-attention activation. This is the point where I can relate to Nagib Callaos's argument in that the Aristotelian principals of ethos, pathos, logos are not only still valid, but they have increasing importance in our age of mechanical existence and

digitalized world in which communication (teaching included) tends to be faceless and is losing much of the human presence [9].

During this third presentation of the same material, in-depth discussion of the topic gains priority. All in all, the same subject would be advanced again and again so as to engage attention in three different ways in the classroom: it would mobilize hyper- then mixed (hyper and deep combined), and finally, deep attention [10].

The stage of independent student activity (type of class: seminar)



After presenting the given material in lecture format, independent student activity follows in seminar format, with the same time-distribution (40'+30'+30'), but in reversed order as far as attention-types are concerned. The students work with the lecture material independently and individually this time, solving a well-defined task they are assigned, using the types of the lecture-class media. This is designed to lead them from deep to hyperattention.

In the first phase deep attention is needed to work with the text provided by the instructor. It is a new text but related to the subject dealt with in the lecture stage. This phase is based on text interpretation and the Rabinowitz rules of reading that apply are the rules of attention and notice as well as the rule of signification. Information is monomedial, provided through traditional print medium. The teacher's role at this point is only to answer questions related to the text if there are any. 40 minutes are allotted to this exercise of the student trying to understand the text through individual inner reading.

The 30-minute second phase keeps the same text but enhances the multimedia environment (newer and newer media are added). Students now turn to the internet to gather (picture, sound, video) material so as to process the printed text in a much more complex fashion after they

have already interpreted it purely as printed text. It also means that their reading of the text reaches the stage of configuration: the students' interpretative textual segments that were produced according to the rules of attention and notice will now be connected and enter into combinations (configuration), aided by multimedia.

In the third phase (30 minutes), when the information content of the text becomes a coherent whole (level of coherence), and the same learning material has already reached the student as printed text, pictures, sound effects, moving pictures and videos—multitasking and hyperattention take the task to its completion in the form of a presentation. The logical structure of the presentation will be an outcome of the student's logical capabilities.

It goes without saying that the receiver's (i.e., the student's) thinking does not necessarily always match (or fully match) the logic of the learning material. But such possible lack of compatibility can in fact help the learning process since the student is thus offered the chance of what can be called "flexible learning." It means that s/he uses his or her own learning reflexes, that is to say, his or her medium-affinities and rely more on preferred kinds of media (e.g., pictures) more than on others (e.g., sound effects).

This is how the HY-DE model can help us split up the learning process into the twice-three phases of a guided instructional lecture-stage (an attention-training moving from hyper to deep attention, with instructional dominance) and the independent student-activity seminar-stage (moving from deep to hyperattention, with decreasing teacher activity). Thus the conscious manipulation of deep and hyperattention can result in a much more effective storing of new knowledge in memory, making the learning process much more effective.

CONCLUSIONS

My presentation undertook the task, after surveying the present situation, to propose a higher education methodology that would counteract the advance of hyperattention. The new method serves double purposes. Firstly, it hopes to exercise and train hyperattention to make it conscious of the need to take in, as comprehensively as possible the almost ungraspably immense world of information, but in such a fashion that hyperattention could capture *the essence* worthy of *deep attention*. Secondly, its aim is to influence hyperattention so that by pushing hyperattention into the background (so as not to yield to it more than necessary evil deserves)—after it fulfilled its selective front role of notice and signification by scanning, and sifting through, informational immensity—deep attention could be

foregrounded. This is where learning takes a direction towards knowledge.

And this methodology (for one) would serve the purpose that the bit-generations overcome what follows from the identity scenarios of the e-world, and young people with Somebody-ID will graduate from our universities in much higher numbers than the Anybody- and Nobody-ID masses we are producing today (to apply the ID-categories introduced by neuroscientist Susan A. Greenfield), although there are no sharp dividing lines between these types.

To sum up: the HY-DE-method could serve, then, as a corrective measure by restraining, perhaps overcoming the shallowness of narrative reception characteristic of the hyper-attention generations and thus leading these generations back to deeper and more thorough knowledge that can be acquired only with the help of deep attention. Again, literary narrative can be instrumental in it all. Literary narratives could chart a healthier course for what the narrative of reading and learning has become in the digital age.

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