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O. M. Ilchenko, PhD, professor
orcid.org/0000-0002-5546-1408
Z. B. Shelkovnikova, PhD
orcid.org/0000-0002-1112-627X

THE EVOLUTION OF AN ABSTRACT

«By adopting some of the techniques of classic story-telling, scientists can become more effective in making our ideas clear, educating the public, and even attracting funding.»
K. Padian

The purpose of this article is not to reiterate what is known about abstracts. Most authors have enough knowledge on the subject and enough practice writing abstracts. The aim of this article is to introduce a number of recent developments in writing academic abstracts that might help both us and our students to tell a better research story. Some of these new developments are difficult to place under conventional headings. In this article we review the evolution of a research abstract from the traditional to what might be called a narrative one. We identify types and features of such abstracts: visual/graphical and video abstracts.
Key words: *research abstract; narrativization; narrative abstract; visual abstract; video abstract.*

Статтю присвячено не повторенню того, що вже відомо про анотації. Більшість науковців має достатньо знань та досвіду з цього питання. Метою праці є аналіз останніх тенденцій укладання анотацій, що здатні допомогти нам та нашим студентам краще оповідати історію проведених нами досліджень. Деякі із цих тенденцій не вписуються у звичайні класифікації. Ми розглядаємо еволюцію анотацій від традиційних до таких, які можна назвати наративними. У статті проаналізовано типи й характеристики таких наративних анотацій: візуальних/графічних та відеоанотацій.
Ключові слова: *наукова анотація, наративізація, наративна анотація, візуальна анотація, відеоанотація.*

Статья посвящена не повторению того, что уже известно об аннотациях. Большинство ученых имеют достаточно опыта и практики в этом вопросе. Целью работы является анализ последних тенденций аннотирования, что призвано помочь нам и нашим студентам лучше рассказывать историю проведенных исследований. Некоторые из этих тенденций не укладываются в рамки обычных классификаций. Мы рассматриваем эволюцию аннотаций от традиционных до таких, которые можно было бы назвать нарративными. В статье проанализированы типы и характеристики таких нарративных аннотаций как визуальные/графические и видеоаннотации.
Ключевые слова: *научная анотація, нарративизация, нарративная аннотация, визуальная аннотация, видеоаннотация.*

People love good abstracts. It's a great pleasure indeed to read a succinct, well-structured, and lucid abstract. The traditional dichotomy of Abstracts includes informative (brief summarizing of key information from every major section of the paper that states purpose, methods, scope, results and conclusions, around 200 words) and descriptive (very short ones, stating no results or conclusions, 100 words or fewer) ones. All Abstracts should be concise enough (but not too concise), they should involve key words/phrases, but should contain no definition of the terms, quotations,

extensive references to other works, and should not present new (not mentioned in the paper itself) or irrelevant information. Long gone are the days when abstracts fulfilled just one — major — purely informational mission. Now they indeed…tell stories! The opposite can also be true: scientists either tell stories or don't (Padian 2018). Thus, the **research relevance** of turning to studying abstracts seems to be due to their ubiquity and importance: because abstracts come right after the title and could be metaphorically called «articles' blurbs» . In this paper, we will concentrate on the genre of IMRAD articles. Research **novelty** is determined by raising the very issue of abstracts as scientific narratives as a linguistic problem viewed in light of scientific discourse dynamics. The **aim** of this paper is to single out narrative abstracts and to summarize the recent practices related to abstracting research papers and to uncover discourse processes behind the phenomenon.

Ever since Andrew Sekey's seminal paper on abstracts (1973), several attempts have been made to analyze their structure and semantics (Mahrer 2004; Hyland 2005; Pho 2008; Can, Karabacak, Qin 2016; Storey, Engstrom, Höst, Runeson; Bjarnason 2017; Al-Khasawneh 2017; Ibrahim 2018; Ermakova, Bordignon, Turenne, Noel 2018; Mewburn 2019).

Researchers and practitioners alike identify more or less similar and regular moves and features of scientific abstracts. They are: optional background and obligatory purpose, methodology, key findings and implications of the study, a.k.a. discussion and results. Kenneth Mahrer in his paper «Writing Abstracts — a Basic Approach» (2004) aptly — and succinctly — puts it in the following way:

1. What did you do?
2. How did you do it?
3. What did you learn that was not known before?

This correlates with the three moves in abstracts (the so called **PMR**), namely: **P** (purpose) **M** (methodology) and **R** (summarizing the findings):

1. What is known in the field? Situating the research, setting the scene for current research (optional).
2. Presenting the research, stating the purpose of the study, research questions and hypotheses. What is the study about? (**P**)
3. Describing the methodology, the materials, subjects, variables, procedures, etc. How was the research done? (**M**)
4. Summarizing the findings reporting the main findings of the study.What did the researcher find? What do the results mean? Discussing the research, interpreting the results/findings and/or giving recommendations (**R**) (Pho 2008).

In abstracts, some standard phrases are usually employed, for example:

<u>background</u>
«This paper sets out to explore…»
«X is discussed in light of…»
«The present paper addresses … from the perspective of…»
«This sets out to explore…»
«Our aim with this paper was to…»

purpose
«The aim of this paper is to …»
«To determine…we… compared...»
«To achieve (this,) …»
methods:
«We analyzed/measured …»
«The analysis showed...»
«State-of-the-art / modern methodology was employed including (but not limited to)…»
discussion and results:
«We discussed …»
«It is argued that…»
«X is considered to be…»
«We found that …»
«The results of the study demonstrate clear signs of …»
«Emphasized here are …»
«X(s) is/are also examined/explored/studied/approached/investigated/ discovered/ analyzed/determined/described/considered/presented/evaluated/discussed/shown/ developed/performed/verified/compared.»
conclusion:
«In conclusion …»
«It can/could be concluded that…»

An abstract should convey as much new information as possible. When writing an abstract, one should state the problem and its importance, as well as the solution to the problem, and what follows from it.

Specialists from ENAGO Academy argue that an Abstract — the concise description of a research (150–200 words) should be written in the past tense because a completed work is described. Since one is describing the work s/he performed, it should be written in an active rather than passive voice. Again, key points of an Abstract involve covering the following:

1. **What problem did you study and why is it important?** Why the research topic is important and why you chose to investigate it? Here, you want to provide some background to the study, the motivation behind the study, and/or the specific question or hypothesis you addressed. You may be able to set the stage with only one or two sentences, but sometimes it takes a longer description.

2. **What methods did you use to study the problem?** Next, you want to give an overview of your methods. Was it a field study or a laboratory experiment? What experimental treatments were applied? Generally, you want to keep the methods section brief unless it is the focus of the paper.

3. **What were your key findings?** What you learned? When describing your results, strive to focus on the main finding(s) and list no more than two or three points.

4. **What did you conclude based on these findings and what are the broader implications?** (ENAGO 2019). Proofreading and editing specialists from WORDVICE (2019) suggest concentrating on similar elements and answering several pertinent questions.

Andrew Sekey's approach is unique because he compares engineering and scientific reports and papers' Abstracts vs. Conclusions vs. Summaries. He argues that although Abstracts come before the paper, and Conclusions/Summary come at the end of articles, «the functions of these parts of a document are vaguely understood by most readers and even writers. Yet only too often they are treated as if they were cloaks, worn alternately by different bodies on different occasions…yet they can all have different identities.» (Sekey, 1973:25). A good Abstract must thus tell the reader what he will find in the document and, if possible, also what he might reasonably expect to find but will not; thus not only should the abstract present the main results, but also the method by which they were achieved e.g. analysis, experiment, computer simulation and their significance — all within 200 words (Ibid.). Sekey suggests a brilliant example that could be understood by anyone irrespective of their field of expertise: William Shakespeare's Othello. We also find it highly useful for educational purposes. The example below is invaluable in ESP class and works just fine with the students because it helps them to elucidate the very essence of an Abstract. Let us summarize his ideas below:

ABSTRACT	**CONCLUSIONS**	**SUMMARY**
OTHELLO Othello, a Moorish commander of the Venetian Army, marries after a passionate courtship Desdemona against the wish of her father, a Senator. During their subsequent stay in Cyprus, Othello's jealousy is fiendishly aroused by Iago, his shrewd but vengeful lieutenant. Iago's scanty — and false — evidence eventually convinces Othello of his wife's unfaithfulness and he strangles her, then commits suicide. Thus blind jealousy is shown to possess the power to destroy even a just and brave man.	*OTHELLO* *(a study in the psychology of jealousy)* The play shows how the emotional stability of a seemingly indestructible strong man can be shattered once a point of insecurity is found, Othello's initially latent preoccupation with the color of his skin — foreshadowing like feelings in today's multicultural society — is carefully nurtured by Iago to the point where Othello believes it to be the cause of Desdemona's desertion. That Othello allows himself to be driven by Iago to the murder of his loving wife without even suspecting his motives for incriminating Desdemona; is the tragic outcome of Othello's honesty, naiveté and thus vulnerability.	*OTHELLO* Othello was victorious when fighting the Turks or pacifying the Doge, but not in laying his self-doubts to rest. He knew his worth as a commander and statesman, yet could be led to believe that Desdemona prefers the insignificant Cassio to himself. Nonetheless, Iago could not have succeeded with the monstrous plot built on this weakness of Othello without the one crucial piece of "evidence": the handkerchief. Yet why did Iago engineer this disaster, which ultimately cost him his own life? Shakespeare suggests that he was settling an old account with Othello, while Verdi whose opera based on this plot, provides much insight to the story and its characters, has his Iago declare this Credo: "I believe in a cruel God, who has created us in his image... I am evil because I am a man." So, ultimately, we still do not know where the root of Othello's tragedy resides: in his jealousy, his bad luck, Iago's evil mind? Or did we witness not a tragedy but Divine Justice, for if Othello did indeed once seduce Iago's wife as alleged, isn't he but punished for that deed in a terrible but fitting and just way? Yet the answer, if there is one, must lie in the play itself.

NOTES		
Several "key words" appearing in this version: ***Moorish, passionate, Cyprus, jealousy, vengeful, strangles, suicide*** *are* ***names, events, features*** *etc. are closely associated in our minds with* ***Othello****. Likewise,* ***a well-worded technical abstract*** *will* ***invoke numerous associations*** *which will "localize" in the reader's mind* ***the place where the article might fit in****.*	*The* ***Conclusions*** *answer the questions posed in the* ***Introduction****, even rhetorical ones, and the* ***degree to which they have been solved*** *is a* ***measure of the success*** *of the work reported, while the remainder should act as a* ***stimulant for the readers to pursue the topic further.***	*Scientific papers are usually written as a linear progression from hypotheses through experiments or analysis to results. One of the most effective ways of* ***anchoring a new notion in the reader's mind is by illuminating it from a different angle:*** *not interpreting the observations reported in the context of various theories — for which the Discussion is the appropriate place, but* ***suggesting a different framework: a few sentences can give a final twist to the paper, making the reader think further about what he thought he already fully understood.***

There is still no final agreement as to the difference between Conclusions and Summaries, on the one hand, and Abstracts and Summaries, on the other. As to the difference between Abstracts and Conclusions, one thing is for sure: Conclusions should answer the questions posed in Introduction. It should also be noted that Conclusions should contain no new information other than that mentioned in the paper itself.

Now, the case of Abstracts vs. Summaries is a bit more challenging. If, in Sekey's words, an Abstract is like a restaurant's menu card, inviting the reader to try and taste, while a Summary may be likened to the package of colour slides brought back from the summer vacation (Ibid, p. 26), then we agree with Andrew Sekey's approach and could say that Summary is, so to speak, a wrap-up with a twist. However, a caveat is needed here. If we speak of Summaries that come in the beginning of a paper, in many cases, that would be some kind of an executive document. So here we can speak of Summaries' genre specificity.

Today, we witness the so-called narrative turn resulting in narrative ubiquity (Kreiswirth 1992; Gottschall 2013). Narratives are everywhere. The most intriguing point here is what we call narrativization. In the case of scientific discourse we speak about telling scientific stories. This trend reflects scientific discourse dynamics: drifting away from purely descriptive statements to vivid narratives. Scientific narration is a new and promising research area (Dahlstrom 2014; Olson 2015; Shelkovnikova 2016; Padian 2018). Overall, scientific storytelling/ narration is about better comprehension, about provoking a reader's interest and engagement; «narratives are also intrinsically persuasive» (Dahlstrom 2014). In this light, Sekey's Summary of «Othello» is a perfect example of what we might call a narrative abstract. What are the features of such abstracts? They

- tend to employ Active rather than Passive voice (or a mixture of both);
- combine past (preferable choice) and present tenses;
- employ simpler language (no abbreviations, no jargon; short but complete sentences etc.);
- employ persuasion formula «*we need to know more about…because…»*;
- for making central claim (the «heart» of the argument) use Randy Olson's ABT formula: A*nd…But…Therefore* and Theodosius Dobrzhansky's formula: *(Nothing in …makes sense except in the light of …)*;
- involve rhetorical questions;
- emphathize with the reader, are in rapport with the audience;
- use self-promotion and marketing devices;
- are visually engaging and well-structured;
- follow specific «U-curve» semantic density/gravity pattern (according to Hayot's terminology).

Let us clarify several points. As Randy Olson reminds us it, there exists a sort of formula that conveys the essence of any core message. This template — for stating the main argument and the strongest claim — was suggested by the renowned scientist, evolutionary biologist of Ukrainian descent, Theodosius Dobrzhansky: *Nothing in … makes sense except in the light of …* (Olson 2015).

Another notion that needs clarification is Eric Hayot's semantic gravity or semantic density notion put forward in his book «The Elements of Academic Style: Writing for the Humanities» (2014). He argues that there are five levels of abstraction in conveying information:

Level 1: Concrete, raw data or information.

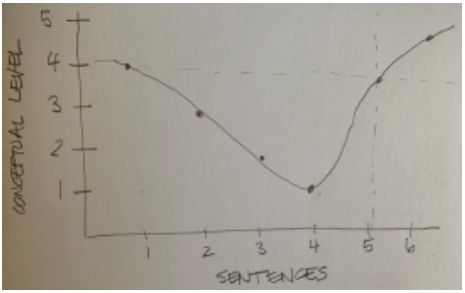
Level 2: Description; plain or interpretive summary.

Level 3: Conceptual summary that draws together two or more pieces of evidence, or introduces a broad example.

Level 4: Less general, problem-oriented; pulls ideas together.

Level 5: Abstract; general, oriented toward a solution or conclusion.

The Hayot pattern presents the most successful information conveying the so-called «uneven U» structure:



Pic. 1. Eric Hayot's semantic gravity/density U-curve

Hayot speaks mostly of such structural elements of research papers as paragraphs. However, his pattern applies equally well for Abstracts, as Ingwer Mewburn (2019) has successfully shown.

Let's have a look at traditional (1) vs narrative (2) abstracts:

(1)	**(2)**
This paper will look at the human genome project and its goals. I will prove that scientists have ethical and moral questions about genetic engineering because of this project.	Begun in 1988, the human genome project intends to map the 23 chromosomes that provide the blueprint for the human species. The project has both scientific and ethical goals. The scientific goals underscore the advantages of the genome project, including identifying and curing diseases and enabling people to select the traits of their offspring, among other opportunities. Ethically, however, the project raises serious questions about the morality of genetic engineering. To handle both the medical opportunities and ethical dilemmas posed by the genome project, scientists need to develop a clear set of principles for genetic engineering and to continue educating the public about the genome project.

(The examples are taken from ERIC publication guidelines)

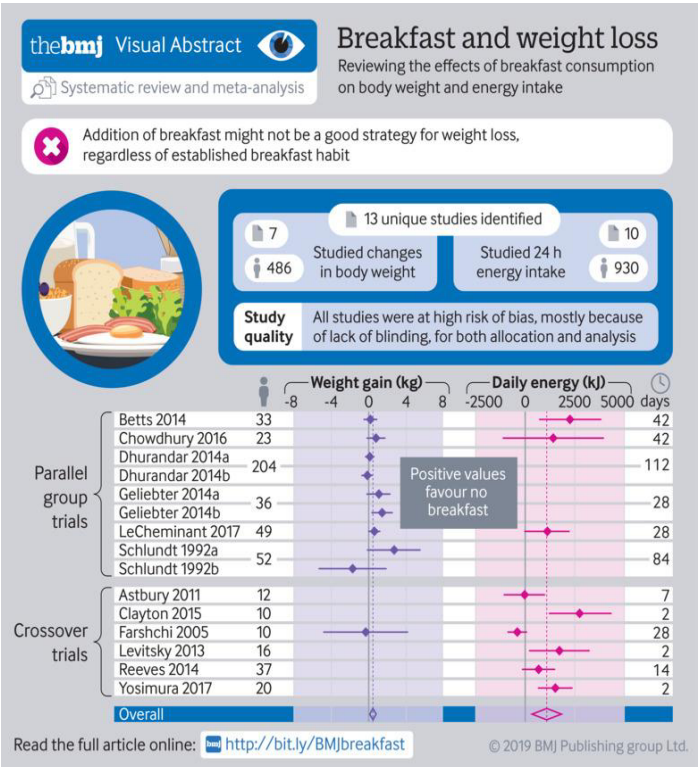
The second abstract narrates a mini-story, while the first one is just a cursory glance at the facts. Interestingly, the second abstract, like many others we have come across recently, makes the optional part of a traditional IMRAD article abstract, the obligatory «background» used «to set the scene» .

But that's not the whole story. Just a couple years ago new kind of narrative abstracts appeared — visual/graphical one. Andrew M. Ibrahim identifies the following key components of the visual abstract: summarizing key question being addressed; summary of results with focusing on no more than 1–3 primary findings of the article; results: a short phrase stating outcome with some directionality (for example, «Decreased Need for Blood Transfusions» is used rather than simply «Blood Transfusions.»). Visual display of outcome is a simple, single colored icon. Of course, graphical abstracts also mention the author's name(s) and the journal (the title, the link etc.). The visual abstract is NOT a substitute for reading the article and does not contain all the details of an article. The goal of a visual abstract is to inform a potential reader of the key findings in an article to help them decide if they want to proceed in reading the entire article. It is similar to the «trailer» of a movie. (Ibrahim 2018). A typical example, from the BMJ (the British Medical Journal) (see pic. 2).

Visual abstracts originated and are especially popular in medicine. However, they are quickly becoming more and more popular in other fields as well (Storey, Engstrom, Höst, Runeson; Bjarnason 2017). And Taylor and Francis publishing house even suggests compiling…cartoon abstracts! (Cartoon Abstracts 2019).

The next step is the advent of video abstracts. They appeared just a year or two ago as well. Well-established publishers provide the guidelines regarding such abstracts. For example, Wiley publishing house encourages submitting a two to five minute video introduction to an article, outlining what the research is about and why it's

important. Such abstracts usually feature the authors speaking on camera and can be intercut with animation, images, and text: «video abstracts allow the author to directly address their audience and provide the background and context for their work in a quick and easy format. A video abstract is a useful tool for removing some of the complexity from research, helping the authors bring their work to life. This ultimately helps readers to better connect with the research and grasp the key findings more readily.» (Wiley Author Services, 2019). Why such abstracts have narrative nature? Because, according to the guidelines, they don't feature the author simply reading the written abstract, they speak from the heart about their research (Ibid.). Wiley distinguishes between Video Abstracts (2 to 3, maximum 5-minute animated video that briefly explains methods, findings, and contribution to a field; ideal for reaching scientifically literate audiences) and Video Bytes (1-minute overview of someone's work and how it impacts society; they are ideal for reaching lay audiences).



Pic. 2.
https://www.bmj.com/content/bmj-visual-abstracts

Video abstracts are generally uploaded to Youtube. From there, one can post them to a society website, social media, and anywhere else that has a presence online. Yes, the ultimate reason for such video communication is to spread the word about research, and to make complex things simple. But, on the other hand, as Jacob Berkowits (2013) puts it, «Will «publish or perish» soon include «video or vanish»?

As time goes by, discourse conventions change. So do genres, including the genre of an abstract. The evolution of an abstract reflects discourse processes in the language of science, especially the narrativization road it has taken over the recent years. Abstracts undergo transformations — from a purely informational piece of writing to a «blurb», and further on — to a «movie trailer», or «teaser», as the case may be. Today, people only read the material (a document, a research paper) if they find the accompanying abstract interesting enough. And that's reason enough for abstracts to still play an important role in science communication. The heart of a modern research abstract is scientific narration — both verbal and visual, which is but natural in times of narrative turn and narrative ubiquity.

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