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AT THE ORIGIN OF US «NUCLEAR» LITERATURE: «ALEXANDER'S BRIDGE» BY W. CATHER

The premises of the US "nuclear" literature formation within the comminity's interest in the scientific achievements in the field of radioactive studies at the beginning of the XXth century are under study on the example of novel "Alexander's Bridge" by W. Cather. Two editional versions of the novel (1912 and 1922) are under consideration, the analysis of which enables the process of studying the transformations of her "novel about a disaster" to "a scientific drama", including the elements of describing pastoral landscapes next to the images of urban areas in the novel.

The emphasis is made on the premises of how W. Cather's "nuclear" narrative, represented by her novel "Alexander's Bridge" not only laid the foundations of the US "nuclear" literature, which partially launched the initial stage of "nuclear" identity formation, defined as a set of statements and ideas about self-determination in the context of national and world nuclear politics – "identity's significance in terms of national nuclear ambitions", but also became the impulse for the subsequent interaction of fundamental disciples and humanities.

Key words: "nuclear" literature, "nuclear" narrative, "nuclear" identity, literary response to nuclear research, postcolonialism, W. Cather.

The discovery of the phenomenon of radioactivity in the 1890-ies, according to Th. Khun, an American historian and philosopher, who was considered to be "the man who changed the world of science" by "The Observer" [21], defined the beginning of what is called as "a paradigm shift". In his work "The Structure of Scientific Revolutions" [15], he used the term "paradigm" to denote the set of beliefs of a particular scientific community, arguing that the changes in the scientific paradigm enable changes in the narrative which actually happened within the general interest of society in the scientific achievements in the field of radioactive studies [15].

Within such transitive conditions of science reception Willa Sibert Cather (1873–1947), an American writer, wrote the novel "Alexander's Bridge" (1912) [6], where she laid the background for the initial stage of "nuclear" identity formation that is defined as a set of institutions and ideas about self-determination in the context of national and world nuclear policies stressing the "identity's significance in terms of national nuclear ambitions" [13], or so-called "atomic" identity by R. Lang's definition [15].

In a broader sense, as it was noted in the resolution of Nuclear Identity Symposium (Edinburgh, April 2015), "nucleal identity" covers the issues of how much states, social groups and individuals are identified as nuclear or anti-nuclear, how different forms of identity can be imposed or withdrawn, or how nuclear issues themselves are identified, codified, and analyzed [23]

Radiativity as a scientific category continued its existence in both scientific and non-fiction literature, where this process was often correlated with the process of evolution where radium was named a powerful but terrible descendant of uranium [5, p. 22].

Due to its natural properties, radium was considered as an endless source of energy generation, which was the definite response to the attempt to solve the world problems. In addition, the enormous amount of energy emitted by radium was explained by its reaction to unknown

external stimuli, among which a significant role was given to the radiation of the space origin [7, p. 56].

When W. Cather created the first version of her novel (1911–1912), the radium for its properties was widely presented as the most amazing source of energy in the world. In 1903, British physicist Ch. V. Boys was quoted in the article published by New York Times, where he described the discovery of radium as an event which surpassed all other opportunities in its importance and promise [4].

In 1908 the emotional excitement about radioactivity reached its climax in the society – it was likely that no scientific discovery, since Darwin's "The Origin of Species", was so revolutionary in receiving a natural phenomena such as Baquerel's radium and Curie's radioactivity – they both shared the "indivisible" atom and provided an opportunity to review the common ideas about the nature of matter and electricity [9]. Those days radium became a symbol of popular culture as well as a symbol of "healthy life", and although its deadly effects were established at the early stage, the public opinion remained unchangeable regarding the danger of this substance. In one of his plays (1913) B. Shaw noted that "*the world is getting crazy about radium*" [26].

When W. Cather was involved in writing her novel "Alexander's Bridge", the phenomenon of radioactivity was already considered as a revolutionary discovery, both in the scientific sphere and in the literary circles. W. Cather, along with other authors, was fascinated by the idea of creating "a scientific drama" based on this achievement. Among the fiction works stressing the idea of radioactivity, the science-fictional novel "The World Set Free" (1914) by G. Wells was one of the first literary texts focusing on at the threat of an atomic bomb [30]. G. Wells had received that idea from his friend F. Soddy, one of the first researchers in radioactivity studies [2].

Under such circumstances W. Cather got aquiainted with the fact that in 1909 F. Soddy had already had his works on the use of radium and the phenomenon of radiation published. He assured the public audience that radioactivity was an absolutely "natural" form of energy while neglecting the evidence of the danger of radiation accumulation [27]. At that time F. Soddy's "The Interpretation of Radium" was already of great popularity while being published in its third edition (1911).

For those readers who remain skeptical about the fact that the first edition of W. Cather's novel had any concern with atomic studies, K. Moffett noted that W. Cather was interested in scientific papers in the field of radioactivity studies, because in 1903, when she was an editor of McClure's magazine, it published a large, thematic publication about the phenomenon of radioactivity [24].

The storyline of the novel "Alexander's Bridge" depicts Mr Bartley Alexander, an engineer on the western coast of the United States, who developed a console bridge design and coordinated its building in Canada. Together with his wife, Mrs Winifred Alexander, who is of Canadian origin, he lives in a comfortable area of Boston. At the invitation of Bartley, they welcome Professor Lucius Wilson, who knew him from his student years and relied on him in the field of mechanical physics. While being on a business trip to London, Bartley rejoins with his former girlfriend Hilda Burgoyne, whom he had known since his studies in Paris. Later Bartley faces the situation of constant trips between his wife in Boston and her lovely friend in London. He failed to break his relationship with his love affairs with his friend in London, while being unable to decide on one of two women. On one of his trips to Canada in order to check the building process of the bridge, his bridge construction gets destroyed while killing Bartley.

In the first edition of her novel (1912) – its second edition with the author's preface came out in 1922 – W. Cather emphasized the storyline on the main character Bartley Alexander, a young engineer, whom his former professor Lucius Wilson highly hoped for because for his mental abilities [6, p. 4].

However, when W. Cather calls Bartley Alexander as "*the most tremendous response to stimuli*" by inserting these words in Professor Lucius Wilson's speech, she does not concern to the metaphorical connection with energy in general; she refers to radium – the kind of energy which was under debate on the international level for some years earlier (such author's comments can be found in the preface to the second edition of the novel in 1922) [6].

While trying to set the allusion to a nuclear reaction within its physical parameters, W. Cather mentioned that at some point Bartley begins to feel a little tired, but then at one mo-

ment, he makes himself free from this state and plunges into his self-consciousness ("*in a flash, he was free of it and leaped into an overwhelming consciousness of himself*") [6, p. 44].

Despite the level of readers' awareness about the diversity of research directions on radioactivity, one statement of this radioactivity studies was out of doubt: the speed of a nuclear reaction is very high, so that it is almost impossible to catch its physical move. Rapidity as a feature of this phenomenon occasionally appeared in the text of novel "Alexander's Bridge", and W. Cather depicts Bartley "*a natural force, certainly, but beyond that … he was not anything very really, or for very long at a time*" [6, p. 8].

Bartley as a character represents one more feature, usually used to describe radioactivity as a phenomenon: his enormous energy can be transmitted to his environment, as his former professor notes: "*His old pupil always stimulated him at first, and then greatly wearied him*" [6, p. 7].

The phenomenon of secondary radioactivity as one of the characteristic features of uranium represented by the process "excited radioactivity" in which inert, non-radioactive materials became active, or "stimulated" ones by an external radioactive source, was well known those days [1].

At the time of writing the text of the novel's first edition the public was aware of two forms of radioactive energy: the primary one, participated in the process of destroying itself, but sufficient to result in the secondary one which is transitional in its state [24]. It is that kind of energy that Bartley transmits to his former professor in "Alexander's Bridge".

The analysis of the novel's storyline confirms that W. Cather manages to depict Bartley as a character, having these two kinds of energy (primary and secondary ones) – Barthley has another shadow copy of himself who threatens to betray himself, and this second nature is much stronger than the original one. The main character tries to struggle with this duality of his personality: "*I feel as if a second man had been grafted into me … and he is fighting for his life at the cost of mine. That is his one activity: to grow strong. No creature ever wanted so much to live. Eventually, I suppose he will absorb me altogether*" [6, p. 60].

The reader can observe this «nuclear» drama of the early XXth century takes place in Bartley's consciousness. W. Cather depicts Bartley as a complex character of dual consciousness with suicidal thoughts, while referring to the phenomenon of radioactivity, simultaneously revealing the death of the original atomic entity and the promise of immortality as a result of transmutation.

This contradiction became an important feature of the characters in "Alexander's Bridge", where Hilda acts as a source for Bartley's youth, while his feeling for Hilda merges with his desire for his own immortality, that results in his hesitating about which of these two desires is stronger. Thus, having walks and thinking about Hilda, Bartley notices the shadow figure side by him, which turns out to be his own one but somewhat younger: "*Shoulder to shoulder with a shadowy companion*" [6, p. 24]. Hilda not only helps Bartley recover his youth age, but also creates the feeling of confidence in their immortality when they (Bartley and Hilda) are together [6, p. 54].

Bartley's death is represented as an inevitable and natural event, but an accompanying process of the tragedy depicted in the novel. Bartley becomes only a small particle in the system of natural processes. His death here is a certain creative process – "*what should be happening*". In the author's interpretation Bartley does not die, but turns into other new subject, into other matter. At this very moment of death, Bartley becomes a ghostly remnant in the minds of his loved ones, and especially in his wife Winifred's consciousness, who embeds his body ashes into the walls of their house – "*as if he was there for good*" [6].

Bartley underwent a process of mutation into the original element, as a ghostly version of himself, while occupying his proper place in his wife's mind as a kind of chemical element in the Periodic Table. Professor Wilson distinguished a new, in his opinion, format of relationship between Winifred and Bartley ("*their simple personal relation*") which is a direct indication to F. Soddy's statement on "simple personal relations" between the elements: that previously considered as a radical and intimidating process when uranium turned into something completely different – radium, was identified by scientists as a mathematical relationship between these two elements [27, p. 171].

Other characters of the novel also go through the process of self-awareness. For example, Bartley's wife is firstly described as if she exists in a certain mist: Professor Wilson observes how

a woman wearing a veil enters Bartley's house and asks: "*Can that possibly have been Mrs. Alexander?*" [6, p. 2].

Another character – Maurice Mainhall – appears in the novel. He is Bartley's British friend, having "*a biased view of everything, and in his presentation, Americans were to be engineers and mechanics. He hated them when they turned out to someone else*" [6, p. 13].

Describing the relationship between Bartley and Hilda who is his love of youth, the author aptly uses the technical term "*welded*" ("joined by a welding technology") in Bartley's letter to Hilda, emphasizing that two people can never be completely "welded" one to another, because "*the base one goes on being the base, and the noble one is noble to the end*" [6, p. 59].

It is in this way that W. Cather combines the contemporary engineer's language ("welded") with the one of the medieval alchemists ("basic" and "noble" elements) in the novel. It is neccesary to note that in the time of writing the novel, alchemy was already experiencing the great public interest and was regarded as an integral part of radioactivity as a phenomenon.

The storyline of the novel has the allusion to the process of radioactivity debates, when the scientific truth can result from the destruction of old scientific postulates. The fact that in his life Bartley has two women – one is from Canada and the other one is originally from France – is a very significant fact for presenting the issue of radioactivity researching centers those days: exactly these countries hosted the most important radioactivity research centers then. For ten years (1898–1908) the scientific community was divided between two competing centers in determining the features of radioactivity. The first interpretation of the phenomenon came from France – from the Curie couple – who admitted that the radioactive process was caused by an external stimulus influencing the atom. However, a year later, they launched the idea of "possible radiation of matter" inside the atom [2]. The second interpretation of radioactivity source came from Canada (from the team of British researchers) who insisted that radioactivity was an internal process by which the uranium atom transformed into new forms of matter and energy without the action of external forces, which subsequently became the leading idea later [17]. During a brief collaboration in 1900, E. Rutherford and F. Soddy left the Curie's version and, while basing on Rutherford's further researches, launched the idea that radioactivity is caused by the process occurring inside the atom. In their opinion radium was formed as a result of the accidental disintegration of the uranium atom. Rutherford and Soddy realized that their theory of spontaneous transmutation of the atom was quite radical against the background of the existing scientific theory. It is the "Canadian" version that gained much popularity at the turn of the XIXth and XXth centuries [2]. In "Alexander's Bridge" W. Cather tried to address the course of those urgent for her time debates about radioactivity sources by appealing to these two schools of radiactvity studies. She portrays Bartley, who lacks the determination to make his choice between two women – from France and from Canada – which in some ways gives a chance to see the parallels with the debates about the theory of the origin of radioactivity within the world scientific community.

It is Alexander's console bridge that became a symbol of such science and the theory of science in the novel by W. Cather. Its integral structure is destroyed, causing, like the disintegration of the uraniuam atom, to humans' death. In the novel the panic about some mistakes in the bridge structure iss followed by an attempt to deny the scale of the coming disaster, and then – the sudden collapse of the bridge into parts. Shortly before the collapse of the bridge, Bartley checks its structure, noting that he had to detect the inadequate tension of the bridge's main supporting colums: *"There was nothing to do but pull the whole structure down and begin over again*" [6, p. 78].

However, without seeing the visible signs of violation of the bridge construction, he changes his mind: ("*It was hard to believe…that the whole great span was incurably disabled, was already as good as condemned, [simply] because something was out of line in the lower chord of the cantilever arm*" [6, p. 70]). Being confident in the stability of the bridge constuction, Bartle decides to walk over the bridge just at the moment when the bridge collapses and splits into pieces. It breaks into parts not for the external stimuli, but the internal technical problems: "... *The bridge had no external influence, except for its own weight*" [6, p. 72]. While describing the bridge's destruction, W. Cather appeals to the process in which her contemporary scientists were involved: first of all, there was a certain panic about the fact that the process of studying

radioactivity destroyed the common principles of science, followed by a reduction of costs of making energy and then an attempt to save the structural components of the generally accepted theory. The description of such efforts was provided by F. Soddy in his work "*The Interpretation of Radium*", where he writes about a kind of theoretical chaos launched by the discovery of radioactivity. Thus, he says that physical scientists were unexpectedly surprised by this discovery; if twelve years before anyone dared to make an assumption about radium, that information seemed not only incredible, but contradicting all the established principles of matter and energy; such a sudden discovery was somewhat threatening to the society [24].

The recognition of the fact about the danger of radioactivity originally made some changes in scientific background for further studying of atomic studies, but, as noted by F. Soddy, the public opinion remained unchangable: "Some new facts from the scientific world became a subject of academic discussions in academic and scientific circles, and then overcame the limits, but only because that branch of science itself was new. The extension of such knowledge in the field of seemingly established sciences was a little revolutionary, but in no way devastating" [27].

The fact of referring to the works by F. Soddy provides the understanding of the achievements of scientific consensus, which in turn could be considered a collective form of "nuclear" identity, outlined in the work by J. Hymen [13]. What F. Soddy could not foresee in his work is the fact that quantum mechanics and the theory of relativity would soon strongly influence the scientific theory, which would result in a catastrophic collapse of the theory, as allegorically demonstrated by W. Cather in her novel by depicting the episode of the bridge's destruction.

While researching W. Cather's fiction, M. Ryder notes that all her works were devoted to establishing of relations between theoretical science, art and religion [25]. And according to R. Millington, it was easy to believe in the fact that that W. Cather was able to draw the allusion on scientific developments of her time into the novel, because he says that American Victorian culture was a deeply allegorical culture, which found its embodiment in the literary texts [19, p. 58]. Researcher J. Middleton points out that while using her codes in the literary works, W. Cather aimed at establishing the reader's perception of science at the level of intuition [18].

The range of critics, including Th. Hughes and E. Layton, support the idea that "Alexander's Bridge" undoubtedly declared the urgency of the narrative about the "cult of technical science" that captured the US nation for the following decades [12; 16; 22]. At the same time C. Tichi and E. Ammons regard the text of "Alexander's Bridge" as W. Cather's attacks on the so-called "mechanical age". So C. Tichi states that W. Cather felt "the threat coming from engineers" [29], while E. Ammons stresses the threat, coming from Bartley Alexander, whom she characterized as "a person with the cyborg character" [3].

In the 1920-ies W. Cather was at the top of her writers's popularity (although later she again declared herself in the context of literary urbanism [8]) and she launched the second edition of her novel "Alexander's Bridge", containing her preface, where she gave the comments on reading the novel by explaining some authentic names there. In that preface, the author stated that writers at the beginning of their writing career often neglect the "material of their own lives" and "profound experience", but emphasizing the external storyline that encourages them to focus on creativity more than on the truth. "Alexander's Bridge", as she claimed, was a simulation of her true nature, while her further works were a real reflection of her nature [31].

According to J. Hinz's words about "Alexander's Bridge", the thematic appeal to the real story about the bridge destruction in Canada is easily traced, while the appeal to the theme of radioactivity is regarded by analyzing the novel in the context of achievements in technical progress, resulting in further "scientific knowledge paradigm shift"; however the true value of the novel is represented in the aspect of the formation of W. Cather's writing style in the context of the US literary landscape [11, p. 473].

In her further comments to the novel, W. Cather stated that he had never been able to imagine that her favorite US western coast would go through this self-destructive "atomic" process of restoring its identity in the coming century, while becoming not only a physical place for the creation of an atomic bomb, but also the cultural code for such a bomb (the Manhattan project) as well as the beginning of nuclear weapon tests and even the Cold War.

It was a little later that the United States would survive what can be called the "pre-war techno western" and the crisis of "nuclear identity" when the old paradigms changed to the de-

mands of the new era, represented by the concept of "ecology of ideas", due to K. Hayles [10, p. 185], which influenced the interaction of fundamental sciences and humanities throughout the century.

Throughout the XXth century all these transformations can be traced in the US "nuclear" literature, which was initiated with "nuclear" narrative by W. Cather in the very beginning of the Nuclear Age.

Bibliography

1. Чолаков В. Анри Беккерель [Электронный ресурс] / В. Чолаков // Нобелевские премии. Ученые и открытия. – М.: Мир, 1986. – 370 с. – Режим доступа: https://www.litmir.me/br/?b=204021&p=10 (последнее обращение 03.10.2017).

2. Циганенко В.О. Содді Ф. Трактування радію / В. Циганенко // Енергія квантової свідомості. – К.: Кий, 2017. – 345 с.

3. Ammons E. The Engineer as Cultural Hero and Willa Cather's First Novel «Alexander's Bridge» [Electronic resource] / E. Ammons // American Quarterly. – 1986. – № 38.5. – P. 745–760. – Access mode: https://www.jstor.org/stable/2712821?seq=1#page_scan_tab_contents (last access 03.10.2017).

4. Boys' Second Book of Inventions. The Miracle of Radium [Electronic resource] / Ed. R.S. Baker. – NY.: Doubleday, Page Company, 1903. – 350 p. – Access mode: https://www.gutenberg.org/files/44188/44188-h/44188-h.htm (last access 03.10.2017).

5. Campos L. Birth of Living Radium [Electronic resource] / L. Campos // Representations. – 2007. – No. 1 (87). – P. 1–27. – Access mode: http://rep.ucpress.edu/content/97/1/1.1 (последнее обращение 03.10.2017).

6. Cather W. Alexander's Bridge [Electronic resource] / W. Cather. – NY: Dover Publications, 2002. – 160 p. – Access mode: http://e-libra.su/read/356597-alexanders-bridge.html (last access 03.10.2017).

7. Curie M. The Discovery of Radioactivity and Transmutation [Electronic resource] / M. Curie. – New York: Doubleday, 1939. – 650 p. – Access mode: http://alsos.wlu.edu/information.aspx?id=76&search=Curie,+Marie+ (last access 03.10.2017).

8. Downs M. Becoming Modern: Willa Cather's Journalism [Electronic resource] / M. Downs. – London: Associated University Press, 1999. – 175 p. – Access mode: http://ravecage.net/Becoming-modern-Willa-Cathers-journalism-or-25 cM-Catherine-Downs/2/ccbdcgb (last access 03.10.2017).

9. Gager Ch. S. Some Physiological Effects of Radium Rays [Electronic resource] / Ch. Gager // The American Naturalist. – Dec. 1908, p. 761–778. – Access mode: https://www.jstor.org/stable/2455770?seq=1#page_scan_tab_contents (last access 03.10.2017).

10. Hayles K. Chaos Bound: Orderly Disorder in Contemporary Literature and Science [Electronic resource] / K. Hayles. – Ithaca, N.Y.: Cornell Univ. Press, 1990. – 185 p. – Access mode: https://monoskop.org/ File:Hayles_N_Katherine_Chaos_Bound_Orderly_Disorder_in_Contemporary_Literature_and_Science.pdf (last access 03.10.2017).

11. Hinz J. The Real Alexander's Bridge [Electronic resource] / J. Himz // American Literature. – 1950. – № 21. – P. 473–476. – Access mode: https://www.jstor.org/stable/2921910?seq=1#page_scan_tab_contents (last access 03.10.2017).

12. Hughes Th. American Genesis: A Century of Invention and Technological Enthusiasm (1870–1970) [Electronic resource] / Th. Hughes. – Chicago: Univ. of Chicago Press, 1989. – 548 p. – Access mode: http://innovate.ucsb.edu/85-thomas-hughes-american-genesis-a-century-of-invention-and-technological-enthusiasm-1870-1970 (last access 03.10.2017).

13. Hymans J. The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy [Electronic resource] / J. Hymans // Capsule Review. – 2006. – September/October Issue. – Access mode: https://www.foreignaffairs.com/ reviews/capsule-review/2006-09-01/psychology-nuclear-proliferation-identity-emotions-and-foreign (last access 03.10.2017).

14. Kuhn T. The Structure of Scientific Revolutions. 4th ed. [Electronic resource] / T. Khun. – Chicago: University of Chicago Press, 2012. – 264 p. – Access mode: https://projektintegracija.pravo.hr/_download/repository/Kuhn_ Structure_of_Scientific_Revolutions.pdf (nlast access 03.10.2017).

15. Lang R. My Atomic Identity [Electronic resource] / R. Lang // The Hierarchy of Heaven and Earth. – Access mode: http://www.headless.org/hierarchy/atom.htm (last access 03.10.2017).

16. Layton E.D. The Revolt of the Engineers: Social Responsibility and the American Engineering Profession [Electronic resource] / E. Layton. – Baltimore, Md.: Johns Hopkins Univ. Press, 1971. – 275 p. – Access mode: https://quod.lib.umich.edu/cgi/t/text/text-idx?c=acls;cc=acls;view=toc;idno=heb05536.0001.001;rgn=full%20text (last access 03.10.2017).

17. Malley M. Radioactivity: A History of a Mysterious Science [Electronic resource] / M. Malley. – Oxford: Oxford University Press, 2011. – 267 p. – Access mode: http://www.xprojectfrederick.com/radioactivity/radioactivity-a-history-of-a-mysterious-science.pdf (last access 03.10.2017).

18. Middleton J. Willa Cather's Modernism: A Study of Style and Technique [Electronic resource] / J. Middleton. – Rutherford: Fairleigh Dickinson Univ. Press, 1990. – 178 p. – Access mode: https://muse.jhu.edu/article/532193/summary (last access 03.10.2017).

19. Millington R. Willa Cather's American Modernism [Electronic resource] / R. Millington // The Cambridge Companion to Willa Cather / Ed. M. Lindemann. – NY: Cambridge Univ. Press, 2005. – P. 51–65. – Access mode: https://www.cambridge.org/core/books/the-cambridge-companion-to-willa-cather/ 43A348E557102B0346CBFBF3FCBA6CCB (last access 03.10.2017).

20. Moffett C. The Wonders of Radium [Electronic resource]/ C. Moffett // McClure's Magazine. – № 22.1. – P. 2–15. – Access mode: http://www.unz.org/Pub/McClures-1903nov-00003?View=Search (last access 03.10.2017).

21. Naughton J. Thomas Kuhn: the Man Who Changed the Way the World Looked at Science [Electronic resource] / J. Naughton. – Access mode: https://www.theguardian.com/science/2012/aug/19/thomas-kuhn-structure-scientific-revolutions (last access 03.10.2017).

22. Noble D. The Religion of Technology: The Divinity of Man and the Spirit of Invention [Electronic resource] / D. Noble. – NY: Penguin, 1999. – 288 p. – Access mode: https://academic.oup.com/jcs/article-abstract/41/3/599/772745? redirectedFrom=PDF (last access 03.10.2017).

23. Nuclear Identity Symposium (the University of Edinburgh, April 10, 2015). – [Electronic resource]. – Access mode: https://theatomicage.wordpress.com/ 2015/01/08/nuclear-identity-symposium-april-2015/ (last access 03.10.2017).

24. Reynolds G. Willa Cather in Context Progress, Race, Empire [Electronic resource] / G. Reynolds. – Palgrave Macmillan, 1996. – 198 p. – Access mode: http://search.lib.monash.edu/primo_library/libweb/action/dlSearch. do?query=isbn,exact,0312160712&institution=MUA&vid=MON&search_scope=au_everything&tab=default_tab (last access 03.10.2017).

25. Ryder M. Ars Scientiae: Willa Cather and the Mission of Science [Electronic resource] / M. Ryder // Willa Cather Newsletter. – 2001. – № 45.1. – P. 11–16. – Access mode: https://www.willacather.org/system/files/idxdocs/ volume_45_-_summer_2001.pdf (last access 03.10.2017).

26. Shaw B. The Doctor's Dilemma: Getting Married and the Shewing-up of Blanco Posne [Electronic resource] / B. Shaw. – Access mode: https://www.gutenberg.org/files/5069/5069-h/5069-h.htm (last access 03.10.2017).

27. Soddy F. The Interpretation of Radium: Being the Substance of Six Popular Experimental Lectures Delivered at the University of Glasgow, 1908. – New York: J. Murray, 1909. – 260 p. – [Electronic resource]. – Access mode: https://www.orau.org/ptp/PTP%20Library/library/Subject/Early%20Publications/The_Interpretation_of_Radium__and_the_St.pdf (last access 03.10.2017).

28. Stout J. Willa Cather: The Writer and Her World [Electronic resource] / J. Stout. – Charlottesville: Univ. of Virginia Press, 2000. – 106 p. – Access mode: https://www.researchgate.net/publication/27571083_Willa_Cather_ The_Writer_and_Her_World (last access 03.10.2017).

29. Tichi C. Shifting Gears: Technology, Literature, Culture in Modernist America [Electronic resource] / C. Tichi. – Chapel Hill: Univ. of North Carolina Press, 1987. – 328 p. – Access mode: https://www.units. miamioh.edu/technologyandhumanities/tichi.htm (last access 03.10.2017).

30. Wells H. The World Set Free: A Story of Mankind [Electronic resource] / H. Wells. – Access mode: http://www.gutenberg. org/files/1059/1059-h/1059-h.htm (last access 03.10.2017).

31. Woodress J. Willa Cather: A Literary Life [Electronic resource] / J. Woodress. – Lincoln: Univ. of Nebraska Press, 1987. – 583 p. – Access mode: http://cather.unl.edu/life.woodress.html (last access 03.10.2017).

References

1. Cholakov, V. (ed.) *Anri Becquerel* [Henri Becquerel]. *Nobeleyevskiye premii. Uchenyye i otkrytiya* [The Nobel Prizes. Scientists and Discoveries]. Moscow, Mir Publ., 1986, 370 p. Available at: https://www.litmir.me/br/?b=204021&p=10 (Accessed 03 October 2017).

2. Tsyhanenko, V. *Soddy F. Traktuvannya rediyu* [Soddy F. The Interpretation of Radium]. *Energiya kvantoviyi svidimosti* [Energy of Quant Consciousness]. Kyiv, Vydavnychyj dim "Kyj" Publ., 2017, 345 p.

3. Ammons, E. The Engineer as Cultural Hero and Willa Cather's First Novel "Alexander's Bridge". American Quarterly, 1986, no. 38.5, pp. 745-760. Available at: https://www.jstor.org/stable/2712821?seq=1#page_scan_tab_contents (Accessed 03 October 2017).

4. Baker, R.S. (ed.) Boys' Second Book of Inventions. The Miracle of Radium. NY., Doubleday, Page Company, 1903. – 350 p. Available at: https://www.gutenberg.org/files/44188/44188-h/44188-h.htm (Accessed 03 October 2017).

5. Campos, L. Birth of Living Radium. Representations, 2007, no. 1 (87), pp.1-27. Available at: http://rep.ucpress.edu/content/97/1/1.1 (Accessed 03 October 2017).

6. Cather, W. Alexander's Bridge. NY: Dover Publications, 2002, 160 p. Available at: http://e-libra.su/read/356597-alexanders-bridge.html (Accessed 03 October 2017).

7. Curie, M. The Discovery of Radioactivity and Transmutation. NY, Doubleday, 1939, 650 p. Available at: http://alsos.wlu.edu/ information.aspx?id=76&search=Curie,+Marie+ (Accessed 03 October 2017).

8. Downs, M. Becoming Modern: Willa Cather's Journalism. London, Associated University Press, 1999, 175 p. Available at: http://rave-cage.net/Becoming-modern--Willa-Cathers-journalism--or--cM-Catherine-Downs/2/ccbdcgb (Accessed 03 October 2017).

9. Gager, Ch.S. Some Physiological Effects of Radium Rays. The American Naturalist, 1908, pp. 761-778. Available at: https://www.jstor.org/stable/ 2455770?seq=1#page_scan_tab_contents (Accessed 03 October 2017).

10. Hayles, K. Chaos Bound: Orderly Disorder in Contemporary Literature and Science. Ithaca, N.Y., Cornell Univ. Press., 1990, 185 p. Available at: https://monoskop.org/File:Hayles_N_Katherine_Chaos_Bound_Orderly_Disorder_in_Contemporary_Literature_and_Science.pdf (Accessed 03 October 2017).

11. Hinz, J. The Real Alexander's Bridge. American Literature, 1950, no. 21, pp. 473-476. Available at: https://www.jstor.org/stable/2921910?seq=1#page_ scan_tab_contents (Accessed 03 October 2017).

12. Hughes, Th. American Genesis: A Century of Invention and Technological Enthusiasm (1870-1970). Chicago, Univ. of Chicago Press, 1989, 548 p. Available at: http://innovate.ucsb.edu/85-thomas-hughes-american-genesis-a-century-of-invention-and-technological-enthusiasm-1870-1970 (Accessed 03 October 2017).

13. Hymans, J. The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy. Capsule Review, 2006, September/October Issue. Available at: https://www.foreignaffairs.com/reviews/capsule-review/2006-09-01/psychology-nuclear-proliferation-identity-emotions-and-foreign (Accessed 03 October 2017).

14. Kuhn, T. The Structure of Scientific Revolutions, 4th ed. Chicago, University of Chicago Press, 2012, 264 p. Available at: https://projektintegracija.pravo.hr/_download/repository/Kuhn_Structure_of_Scientific_Revolutions.pdf (Accessed 03 October 2017).

15. Lang, R. My Atomic Identity. The Hierarchy of Heaven and Earth. Available at: http://www.headless.org/hierarchy/atom.htm (Accessed 03 October 2017).

16. Layton, E.D. The Revolt of the Engineers: Social Responsibility and the American Engineering Profession. Baltimore, Md., Johns Hopkins Univ. Press., 1971, 275 p. Available at: https://quod.lib.umich.edu/cgi/t/text/text-idx?c=acls;cc=acls;view=toc;idno=heb05536.0001.001;rgn=full%20text (Accessed 03 October 2017).

17. Malley, M. Radioactivity: A History of a Mysterious Science. Oxford University Press, 2011, 267 p. Available at: http://www.xprojectfrederick.com/radioactivity/radioactivity-a-history-of-a-mysterio us-science.pdf (Accessed 03 October 2017).

18. Middleton, J. Willa Cather's Modernism: A Study of Style and Technique. Rutherford, Fairleigh Dickinson Univ. Press., 1990, 178 p. Available at: https://muse.jhu.edu/article/532193/summary (Accessed 03 October 2017).

19. Millington, R. Willa Cather's American Modernism. The Cambridge Companion to Willa Cather. NY, Cambridge Univ. Press, 2005, pp. 51-65. Available at: https://www.cambridge.org/core/books/the-cambridge-companion-to-willa-cather/43A348E557102B0346CBFBF3FCBA6CCB (Accessed 03 October 2017).

20. Moffett, C. The Wonders of Radium. McClure's Magazine, no. 22.1, pp. 2-15. Available: http://www.unz.org/Pub/McClures-1903nov-00003?View=Search (Accessed 03 October 2017).

21. Naughton, J. Thomas Kuhn: the Man Who Changed the Way the World Looked at Science. Available at: https://www.theguardian.com/science/ 2012/aug/19/thomas-kuhn-structure-scientific-revolutions (Accessed 03 October 2017).

22. Noble, D. The Religion of Technology: The Divinity of Man and the Spirit of Invention. NY, Penguin, 1999, 288 p. Available at: https://academic.oup.com/jcs/article-abstract/41/3/599/772745?redirectedFrom=PDF (Accessed 03 October 2017).

23. Nuclear Identity Symposium (the University of Edinburgh, April 10, 2015). Available at: https://theatomicage.wordpress.com/2015/01/08/nuclear-identity-symposium-april-2015/ (Accessed 03 October 2017).

24. Reynolds, G. Willa Cather in Context Progress, Race, Empire. Palgrave Macmillan, 1996, 198 p. Available at: http://search.lib.monash.edu/primo_library/ libweb/action/dlSearch.do?query=isbn,exact,0312160712&institution=MUA&vid=MON&search_scope=au_everything&tab=default_tab (Accessed 03 October 2017).

25. Ryder, M. Ars Scientiae: Willa Cather and the Mission of Science. Willa Cather Newsletter, 2001, no. 45.1, pp. 11-16. Available at: https://www.willacather.org/system/files/idxdocs/volume_45_-_summer_2001.pdf (Accessed 03 October 2017).

26. Shaw, B. The Doctor's Dilemma: Getting Married and the Shewing-up of Blanco Posne. Available at: https://www.gutenberg.org/files/5069/5069-h/5069-h.htm (Accessed 03 October 2017).

27. Soddy, F. The Interpretation of Radium: Being the Substance of Six Popular Experimental Lectures Delivered at the University of Glasgow. New York, J. Murray, 1909, 260 p. Available at: https://www.orau.org/ptp/PTP%20Library/ library/Subject/Early%20Publications/The_Interpretation_of_Radium__and_the_St.pdf (Accessed 03 October 2017).

28. Stout, J. Willa Cather: The Writer and Her World. Charlottesville, Univ. of Virginia Press, 2000, 106 p. Available at: https://www.researchgate.net/ publication/27571083_Willa_Cather_The_Writer_and_Her_World (Accessed 03 October 2017).

29. Tichi, C. Shifting Gears: Technology, Literature, Culture in Modernist America, Chapel Hill, Univ. of North Carolina Press., 1987, 328 p. Available at: https://www.units.miamioh.edu/technologyandhumanities/tichi.htm (Accessed 03 October 2017).

30. Wells, H. The World Set Free: A Story of Mankind. Available at: http://www.gutenberg.org/files/1059/1059-h/1059-h.htm (Accessed 03 October 2017).

31. Woodress, J. Willa Cather: A Literary Life. Lincoln, Univ. of Nebraska Press., 1987, 583 p. Available at: http://cather.unl.edu/life.woodress.html (Accessed 03 October 2017).

Досліджуються передумови формування «нюклеарної» літератури США у контексті «зміни парадигми наукових знань» в умовах загального інтересу суспільства до наукових досягнень у сфері радіоактивних досліджень початку XX ст. на прикладі роману У. Катер «Міст Олександра» (у двох редакціях роману – 1912 та 1922 рр.), який автор спочатку визначала як «роман про катастрофу», а згодом, базуючись на досвіді журналістської діяльності та залучаючи у своїх творах зображення пасторальних пейзажів разом із зображенням урбаністичних територій, письменниця «наукову драму». Рецепція роману «Міст Олександра» з позиції постколоніальної теорії уможливлює обгрунтування про парадокси у пошуках автором своєї авторської ідентичності, а також сприяє формуванню літературного ландшафту як західного узбережжя Сполучених Штатів, так і Америки в цілому. Окреслюються передумови феномену «нюклеарного» наративу У. Катер, який представлено її романом «Міст Олександра». Цей твір не лише заклав підгрунття американської «нюклеарної» літератури, що у певний спосіб уможливлює простеження початкового етапу формування «нюклеарної» ідентичності, але і став імпульсом до подальшої взаємодії фундаментальних та гуманітарних дисциплін.

Ключові слова: «нюклеарна» література, «нюклеарний» наратив, «нюклеарна» ідентичність, літературна рецепція ядерних досліджень, постколоніалізм, У. Катер.

Исследуются предпосылки формирования «нюклеарной» литературы США в контексте «изменения парадигмы научных знаний» в условиях общего интереса общества к научным достижениям в сфере радиоактивных исследований начала XX в. на примере романа В. Катер «Мост Александра» (две редакции романа – 1912 и 1922 гг.), который сама автор сначала определила как «роман о катастрофе», а потом, базируясь на опыте журналистской деятельности и включая в свои произведения описания пасторальных пейзажей наряду с изображением урбанистических территорий, создает «научную драму». Рецепция романа «Мост Александра» с позиции постколониальной теории дает возможность определить парадоксы в поисках автором своей писательской идентичности, а также содействует формированию литературного ландшафта как западного побережья США, так и Америки в целом. Представлены предпосылки феномена «нюклеарного» нарратива В. Катер, представленного ее романом «Мост Александра», который не только заложил основы американской «нюклеарной» литературы, что определенным образом обусловило начальный этап формирования «нюклеарной» идентичности, но и стал импульсом для последующего взаимодействия фундаментальных и гуманитарных дисциплин.

Ключевые слова: «нюклеарная» литература, «нюклеарный» нарратив, «нюклеарная» идентичность, литературная рецепция ядерных исследований, постколониализм, В. Катер.

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