

AI in theater. Witkacy case study

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Abstract— The paper presents results of a project involving the use of AI in the creative process in the theatre. As a case study the plays of the Polish polymath Stanisław Ignacy Witkiewicz, aka Witkacy, were considered. The goals were to use AI tools: 1. to draft the author's vision of performances according to his precise original stage directions and to generate character designs and costumes, scenography, lighting and accessories; 2. to generate hypothetical scenes and moreover to reconstruct texts of lost plays. The quality of the content generated by AI was evaluated by a stylometric analysis confronting it with the original corpus. The project was complemented by a survey conducted among theatre artists to assess the potential usefulness of AI tools.

Index Terms—AI in Digital Humanities, theatre, stage and character design, reconstruction of lost content, Stanisław Ignacy Witkiewicz, Witkacy.

I. INTRODUCTION

WIDESPREAD Widespread availability of generative AI tools has created an entirely new situation for creators and given rise to numerous questions of an aesthetic, ethical, philosophical, as well as technical nature. If this had happened during Witkacy's lifetime (1885–1939), knowing his views regarding, on one hand, his vision of the end of art against the backdrop of social development toward increasing mechanization and automation, and on the other hand, his openness and interest in scientific discoveries and technical progress, one could assume that he would not only have taken a position, but perhaps would have used AI in his creative work, at minimum marking its presence. In his absence, I considered two scenarios for using generative AI tools in the creative process in theatre:

- recreation of the author's hypothetical visions regarding set design projects, character images, their characterization and costumes, props, etc.;
- generation of hypothetical scenes and reconstruction of the texts of lost plays.

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Witkiewicz, being a total artist – a *polymath* – had a comprehensive vision for staging his plays, which was reflected in detailed stage directions in individual dramas as well as in theoretical works. The elements described in stage directions – character designs, costumes design, stage arrangements, scenography, colours used, lighting, sounds, actors' performance style, stage movement, etc. – constitute for him an integral composition of the spectacle. Therefore, the basis for generating designs were Witkacy's original stage directions and character descriptions, as well as Pure Form principles used as prompts for selected AI applications. I proceeded this way because the current post-dramatic “state of the affairs” is such that the vast majority of directors ignore the author's recommendations or implement them in a sketchy if not superficial manner. I therefore postulated a certain unorthodox “minimum program” consisting of hypothetically recreating variants of the author's vision before final decisions about the shape of the spectacle are made. AI tools play in this case a referential-auxiliary and reconstructive role. Whether Witkacy himself would have used AI in his plays – we don't know, but for example, the fact of his pioneering use of film projection as an element of scenography and considerations about formal logic, mathematics, theory of relativity with references to Albert Einstein, Georg Cantor and Bertrand Russell in *The Crazy Locomotive*, *Tumor Brainiowicz* and *The Water Hen*, allow us not to exclude such a possibility.

Theatre creators are already reaching for AI, as evidenced by, for example, the recent (November 2024) *So-Called Humanity in Madness* performance by Krzysztof Garbaczewski and Rébecca Pierrot at the Juliusz Słowacki Theatre in Cracow, Poland (dreamadoptionsociety.com/digitalperformancenetwork/f/so-called-humanity-in-madness).

Using preserved sources, I also attempted to generate hypothetical scenes for *The Shoemakers* and to reconstruct texts of lost plays: *Persy Bestialskaya* and *So-Called Humanity in*

Madness. In order not to assess the results of the experiment only subjectively, I also conducted a stylometric analysis confronting original texts with those produced by AI. Currently I focused only on Polish version of plays. The English version is planned soon but it will be much harder due to a real challenge of translating Witkacy's neologisms to other languages by AI and then verification of their accuracy, neatness compliance with the spirit of a target language.

II. METHODOLOGY

A. Preliminary

The basis for generating stage, character and costume design illustrations with AI tools were prompts utilizing Witkacy's original stage directions and character descriptions supported when necessary by the references to thoughts from the Witkacy's theory of *Pure Form* in theatre.

Final illustrations were obtained iteratively. This was necessary because in many cases the stage directions required additional clarifications so that the queries could be properly interpreted by AI tools. Given that some generative AI tools work more efficiently in English than in Polish, we used both language versions of the plays. When necessary extra instructions beyond the stage directions were added. Due to the theatrical specificity of the texts, it sometimes happened that AI tools incorrectly interpreted certain formulations from stage directions or treated them as violating their internal "rules" of political correctness (for example, the occurrence of religious symbols in character descriptions or references in style descriptions or character traits to works mentioned by named artists). In some cases this was absurd. For example, using the colloquial English term "Vandyke" in a prompt, derived from the name of Dutch painter Antoon van Dyck and his portraits, referring to the characteristic pointed beard, in the description of the character Zygfryd Tengier from the *The Crazy Locomotive* caused a refusal to generate an image due to "alleged copyright infringement".

Within the visual part of the project, illustrations were generated for the following preserved plays: *The Madman and the Nun*, *The Shoemakers*, *The Water Hen*, *Jan Maciej Karol Hellcat*, *The Crazy Locomotive*, and lost plays: *Persy Bestialskaya* and *So-Called Humanity in Madness*.

In the reconstruction part, an attempt was made to recreate two lost dramas: *Persy Bestialskaya* and *So-Called Humanity in Madness*. Additionally, ten hypothetical scenes for *The Shoemakers* drama were also generated.

The aim of the second thread was to capture, through extensive stylometric analysis, the characteristic linguistic features of Witkacy's original dramas and confront them with texts produced by generative AI tools. The goal was to objectively assess the proximity of both categories of texts and evaluate the "power" of AI tools. Subjective evaluation based solely on reading the scenes can lead to erroneous conclusions. In this context, we encourage familiarization with the hypothetical scenes for *The Shoemakers* (see part IV).

B. Corpus Preparation

Conducting stylometric analysis required appropriate preparation of the texts of plays. The verified Polish texts – without footnotes and editorial notes – were converted to pure text format – .txt (UTF-8 encoding), and then collected in a common directory. This directory was then supplemented with AI generated texts of lost plays and hypothetical scenes converted to the plain .txt format.

A corpus of English-language versions of dramas was prepared in a similar way, collected from sources available on the internet as well as scanned and OCR-processed from paper editions with subsequent correction.

C. Used AI Tools

Three AI applications were used for image generation: DALL-E 3 (embedded in Chat GPT 4o), Midjourney and NightCafe. In each of them efforts were made to utilize multiple modes, models and styles of image generation. Claude Sonnet 3.5 and Claude Opus 4 were used for generation of both hypothetical scenes and reconstruction of lost plays.

Each of the AI tools used has its own specific range of capabilities for fine-tuning and adaptation to the tasks being performed.

In the case of Chat GPT the GPT project creator was used. Through interaction with the GPT model, one can indicate the area of application and characterize expected results. Additionally, the context definition can be supported by providing data closely related to the project. This allowed adding complete Polish corpus of Witkacy's plays to the project. The Chat GPT text interface also serves to transmit commands to the DALL-E application, which generates images. An important feature of fine-tuning in the GPT project is that each interaction within the project uses the GPT-4o model, and the dialogues are contextual in nature, which makes files, settings and interactions integrated with each other.

The operation of the Midjourney application is based on combining large language models (LLM) and diffusion models. When a user enters commands, the language model interprets their meaning, transforming them into a numerical vector, which then directs the diffusion process, leading to the creation of an AI-generated image. A single command can generate a series of images with selected proportions and layout. Additionally, one can influence the final result by choosing parameter settings that control image generation. Stylization – the value of this parameter determines how close the generated images will be to the command content or more distant, but expressed in the artistic style built into the Midjourney model. This style can be fine-tuned through interaction and direct indication of preferences based on consecutively presented sequences of image pairs. Reference images can also be shared as a starting point for generating new images. Besides style, one can parameterize the level of "weirdness" of images and "diversity" within each quartet of generated images. Each generated image can be subjected to further transformation by indicating whether the level of modification

should be small or strong. In the process of generating characters and costumes designs, stage design, available visual resources of Witkacy's theatrical, drawing and painting work were utilized.

The NightCafe application is a platform for generating images based on text prompts which provides access to many AI models through a common interface: DALL-E, Stable Diffusion, CLIP-Guided Diffusion, VQGAN+CLIP, Disco Diffusion, Latent Diffusion and its own built-in model. Depending on the selected mode (AI model), the user can obtain very diverse effects – from hyper-realistic visualizations, through abstraction and avant-garde art, to simple transfer of one image's style to another. Besides the model, the user has at their disposal a very rich selection of styles, painting and graphic techniques. One can create sequences from a single to 9 images in selected proportions. Similarly to Midjourney, obtained images can be subjected to subsequent modifications iteratively leading to the desired final effect. In the process of generating character images, scenography and costumes, available visual resources of Witkacy's theatrical, drawing and painting work were utilized.

In the case of the Claude Sonnet 3.5, there is no possibility of training it on new data or modifying the internal LLM language model. However, the application is adapted to analyse the style of provided texts and imitate it in generated responses, as well as identify key stylistic features such as: typical sentence length, used vocabulary, grammatical structures and tone of speech. This allows for creating new texts in a similar style to the submitted reference content. Claude was provided full corpus of Witkacy's dramas and was used to generate five hypothetical scenes for the *The Shoemakers* as well as to reconstruct full texts of the lost plays, *Persy Bestialskaya* and *So-Called Humanity in Madness*. Text generation was carried out in the interactive mode, scene by scene – enabling each time making decisions on continuation of the plot.

III. STAGE, CHARACTER AND COSTUME DESIGN

A. The Context of Witkacy's Authorial Visions

Works of Stanisław Ignacy Witkiewicz (1885–1939) provide a particular context for the project. He belongs to that exceptional category of artists in world culture and art who are most aptly characterized by the word *polymath*, emphasizing versatility and achievements in many fields. He was a playwright, writer, painter, draftsman, photographer, art and theatre theorist, philosopher, critic and publicist, and even an occasional poet, composer and librettist. As a total creator, he had a comprehensive vision for staging his plays, which was reflected in detailed stage directions as well as in theoretical works [1]. The elements described in stage directions – character and their costumes descriptions, stage arrangement, scenography, colours used, lighting, sounds, actors' performance style, stage movement, etc. – constitute an integral part of the performance in his plays. Witkacy looks at scenes with the eye of a visual artist and consciously builds compositions of scenes taking into consideration ideas from his own theory of

the Pure Form in art. Representative examples can be found, e.g. *The Water Hen* and *The Shoemakers*.

B. Sample results

The stage directions for the opening scene in *The Shoemakers* read as follows:

“The stage represents a *shoemaker's workshop* (it can be set up in a thoroughly fantastic fashion): in a small semi-circular space. *To the left, a triangular opening hung with a cherry-coloured curtain. In the centre, a triangular grey wall with a small round window. To the right, a dried-up, twisted tree – between it and the wall, a triangular sky. Further to the right, a distant landscape with villages on a plain. The workshop is situated high above a valley in the background, as if placed on high mountains.* The shoemakers are working in the workshop, *Sajetan in the middle*, the two apprentices on either side, *Apprentice I on the left, Apprentice II on the right.*”

The above description was directly used as a prompt. A sample result generated by Midjourney is depicted in Fig. 1.



Fig 1. *The Shoemakers*: stage design is close to the original description

It should be emphasized that an important detail representing Witkacy's painterly vision is, for example, the division of the background rectangle-plane into three triangles in complementary colours: a cherry-coloured curtain, a grey neutral workshop wall, and the sky. One can easily find connection to the guidelines described in Chapter III in the section *Colour Harmony* of [3].

Design of characters and their costumes was also based on their original descriptions and used directly as prompts for Midjourney and DALL-E 3.

SAJETAN TEMPE – Master shoemaker; thin “wild” beard and moustache. Blond hair going grey. Wearing an ordinary shoemaker's clothes with an apron. About sixty years old.

APPRENTICES I (JOE) and II (ANDY) – very good-looking, ordinary young shoemakers. Wearing ordinary shoemakers' clothes with aprons. About twenty years old.

DUCHESS IRINA NIKITOVNA PROVOKSKAYA-DEBOCHKOVA – With chestnut hair, extraordinarily beautiful, unusually charming and attractive. Twenty-seven to twenty-eight years old.

PROSECUTING ATTORNEY ROBERT SCURVY – A broad face, as if made out of red headcheese, in which are incrustated eyes

pale blue as the buttons on underpants. Wide jaws – they'd grind a piece of granite to a fine powder (that's how it seems). Wearing a cutaway and a derby. A walking stick with a gold knob (très démodé). A folded white ascot with a huge pearl in it.

The AI generated images of SAJETAN, DUCHESS IRINA, PROSECUTING ATTORNEY ROBERT SCURVY, and APPRENTICES I (JOE) and II (ANDY) are depicted in Figs. 2–5.



Fig 2. *The Shoemakers*: two versions of SAJETAN character design (Midjourney)



Fig 3. *The Shoemakers*: a cyberpunk version of DUCHESS IRINA (DALL-E 3)



Fig 4. *The Shoemakers*: two versions of PROSECUTING ATTORNEY SCURVY character design (Midjourney – left, DALL-E 3 – right)

It should be noted that the same prompt may result in totally different images. The image of SCURVY generated by DALL-E 3 is a very literal interpretation of the character description. Both projects depicted in Fig. 4 are very caricature and grotesque, but they can still be an inspiration for the creators of theatrical productions.



Fig 5. *The Shoemakers*: Apprentices I and II (Midjourney)

IV. GENERATION OF HYPOTHETICAL SCENES AND RECONSTRUCTION OF LOST PLAYS

Ten hypothetical additional scenes for *The Shoemakers* were generated, as well as complete 3-act dramas – *Persy Bestialskaya* (two versions) and *So-Called Humanity in Madness*.

The large task of reconstruction of lost plays was preceded by a simpler one – generation of various versions of an imaginary single scene for *The Shoemakers*. They were generated by the following Claude Sonnet 3.5 prompt:

“Write a hypothetical scene for *The Shoemakers*. Generate a vivid conversation full of invectives and curses which are all neologisms which are not vulgar, in the style of Witkacy, among the following five characters: SAJETAN TEMPE – Master Shoemaker, APPRENTICES I (JOE) AND II (ANDY), DUCHESS IRINA NIKITOVNA PROVOKSKAYA-DEBOCHKOVA and PROSECUTING ATTORNEY ROBERT SCURVY.”

In the following one of the AI generated scenes is presented. It was translated to English with support of Claude Opus 4:

Setting: *A shoemaker's workshop. SAJETAN at his last, APPRENTICES hammering leather. PROSECUTOR SCURVY stands stiffly by the door, and DUCHESS IRINA lounges on a pile of unfinished boots.*

SAJETAN (*hammering the last*) May you all be twisted inside-out, you navel-gnawing octopusoids! Think I can't see how your metaphysical putrefaction seeps through these boot-holes?

APPRENTICE I Stop it, master, or you'll bash our skulls in with that hammer...

SAJETAN (*interrupting*) Silence, you gut-strangling demoniac! I still rule in this workshop!

DUCHESS IRINA (*stretching luxuriously*) Ah, how you all are... so... proletarianly-coarse...

PROSECUTOR SCURVY Your Grace, let us not descend to their level. These are common inter-brain fracturlings!

SAJETAN (*hurls a boot at Scurvy*) Look at him, the pox-brained pseudo-sage! Came in his silk suit to enlighten us!

APPRENTICE II (*to Scurvy*) You soul-throttling mustiness! Think those patent leathers give you the right?

DUCHESS IRINA (*with growing excitement*) Oh, how wonderfully they curse! It's so... folkloristic!

SAJETAN Folkloristic?! (*to the Duchess*) You sweat-soaked gut-dumpling! Think lounging on our boots makes you understand the proletariat?

PROSECUTOR SCURVY (*straightening up*) How dare you, you scab-ridden bowel-monger! To Her Grace...

APPRENTICE I (*interrupting*) And you, corpse-jawed degenerate, better tend to your courthouse papers!

DUCHESS IRINA (*clapping*) Magnificent! (*to Scurvy*) Do you hear how beautifully they compose these insults?

SAJETAN Compose?! (*explodes*) There's no composition here, you metaphysical dung-wench! This is real life!

APPRENTICE II And real boots! (*waves unfinished boot*) Not some imagined bile-bellied blowhards!

PROSECUTOR SCURVY (*to the Duchess*) Let us leave, Your Grace! This exceeds all bounds of...

SAJETAN (*interrupting*) What exceeds, you brain-flaying under-feathered wretch? The limits of your musty worldview?

DUCHESS IRINA (*in ecstasy*) No, let's stay longer! (*to Sajetan*) Please, curse more! It's so... illuminating!

APPRENTICE I & II (*together*) Illuminating?! (*throw awls*) You marrow-brained splatterfunk!

SAJETAN (*raising his hands*) And so it ends - grand metaphysics in a cobbler's shop! (*to all*) You pickled slime-mongers!

DUCHESS IRINA (*fainting theatrically*) Ah, what a marvelous fusion of social rebellion with linguistic invention!

SAJETAN May you all be twisted in your inter-class sauce!

All freeze in grotesque poses, only Sajetan's hammer still beats the rhythm of final curses

END OF SCENE

A second example illustrates an attempt to reconstruct *So-Called Humanity in Madness*, a lost drama for which only the following description of characters was preserved.

FATHER JOSEPH BYMBYLAK – Jesuit. In the first and second acts wearing a lace mask. Cassock and biretta on his head. Tall, thin, aged 47. Clean-shaven.

CHLODWIG DE SCIERVA VON UND ZU KRAWENAHN – 17th degree Mason. Very distinguished mediatized *Reichsfreiherr* (imperial baron). In the first and second acts wearing a lace mask. Clean-shaven. Morning coat. Top hat. Gloves and cane with an enormous golden knob. Aged 47.

IDA VOLPONE – Fascist, aged 28. Very beautiful brunette. Dark red ball gown.

MANGWALBO DULBAFURRO – Carbonari emissary. Rather fat, bearded, aged 47.

Three acts of the lost play were reconstructed interactively in the "scene by scene" mode, taking into consideration main

topics of Witkacy's plays, novels and theoretical works. The results are illustrated by the final scene of Act III generated with Claude Sonnet 3.5 and translated from Polish to English with support of Claude Opus 4.

SO CALLED HUMANITY IN MADNESS. ACT III: FINAL SCENE.

Setting: *The shopping centre transforms into the "Commune of Eternal Happiness and Wellbeing". Everything is pastel, organic, eco-friendly. Characters in identical hemp outfits, with eternal smiles glued to their faces. Above them a neon sign: "NO THINKING – JUST BEING". Everywhere signs with slogans: "Art is trauma!", "Philosophy kills joy!", "Religion = Anxiety", "Just chill!"*

IDA (*in a pink tracksuit with "PEACE & LOVE" written on it, hugging a meditation pillow*): You know what? I don't even remember why I wanted absolute power anymore... (*giggles*) Totalitarianism is totally toxic for the skin!

BYMBYLAK (*in a "NO GODS – JUST GOOD VIBES" t-shirt, chewing an organic carrot*): And I discovered that religion is such terrible doomscrolling... (*shows app*) Now I only use "Happy Life Plus" – it generates positive thoughts every 5 minutes!

KRAWENAHN (*in organic cotton shorts, giving himself a head massage*): Secret knowledge? (*laughs emptily*) Why would anyone need knowledge when you can have peace! I sold all my Masonic books on OLX...

MANGWALBO (*in recycled sandals, watering flowers*): And revolution? (*shrugs*) Bad vibes! Now I run tree-hugging workshops for corporations...

The formerly dead artists enter – now as happiness influencers.

FORMER PAINTER: Who wants to sign up for "Mandala Colouring for Beginners"?

FORMER POET: I have something better – "Haiku without meaning: write what you feel!"

FORMER COMPOSER: And I'm running "Meditative Drumming for Better Sleep!"

Everyone sits in a circle on cushions made of ecological buckwheat.

EVERYONE (*chanting*): We don't think – therefore we are! We don't feel – therefore we live! We don't create – therefore we endure! In eternal bliss full of emptiness!

IDA (*clapping*): Oh! Let's start a commune! We'll grow our own microgreens!

BYMBYLAK: And meditate over smoothie bowls!

KRAWENAHN: And run "mindful" breathing workshops!

MANGWALBO: And sell it all online!

From the speakers flows ambient music mixed with whale sounds and the sound of cash registers.

Voice from speakers: Welcome to the Commune of Eternal Happiness! Reminder: thinking is harmful to your health! Art causes stress! Philosophy causes wrinkles!

EVERYONE (*in a trance*): We happy, happy people! In happy, happy world! Without the pain of existence! Without the agony of creation!

They begin dancing in a circle, holding hands.

IDA: I feel so... empty! (*with delight*) It's wonderful!

BYMBYLAK: It's better than all mystical ecstasies!

KRAWENAH: Better than secret knowledge!

MANGWALBO: Better than revolution!

The dance becomes increasingly mechanical, faces increasingly plastic.

CHORUS OF FORMER ARTISTS: Farewell art – you evoked uncomfortable emotions! Farewell philosophy – you forced us to think! Farewell religion – you disturbed consciences! Welcome eternal, blissful, mindless happiness!

Everyone begins transforming into plastic mannequins with eternal smiles.

EVERYONE (*their voices becoming increasingly mechanical*): We consume, therefore we are! We scroll, therefore we live! We like, therefore we endure! In eternal "now" without meaning!

The space fills with pink fog, everything becomes soft and plastic.

FINAL COLLECTIVE WORDS (*as if automated*): Thus ends so-called humanity... Not in fire... Not in storm... But in pink fog... Eternal... Mindless... Happiness...

All characters freeze as smiling mannequins in the shopping centre window. Above them the neon flickers: "HAPPINESS IS MANDATORY".

THE END

V. STYLOMETRIC ANALYSIS

A. Scope of analysis

The analysis was conducted with R statistical package with the *Stylo* extension [4]. The *stylo()* function of the *Stylo* R package enables automatic loading and processing of a corpus of text files from a specified folder and conducting various stylometric analyses using multivariate statistics to assess and visualize stylistic similarities between input texts.

The function created a list of the most frequently occurring words MFW (Most Frequent Words) for the entire corpus. It then determined their frequencies in individual texts to create an initial matrix of words (rows) by individual texts (columns): each matrix element will contain the frequency of occurrence of a specific word in a given text. These frequencies were then normalized: words from desired frequency ranges were selected for analysis and additional processing procedures were performed (automatic removal of personal pronouns and "culling" – elimination of common words), so as to create a final list of words for the actual analysis.

The next step was to compare results for individual texts by calculating text distances using typical measures and utilizing various statistical procedures (including: cluster analysis, multidimensional scaling, or principal component analysis). Their result is the production of graphical visualizations of distances – similarities/differences between texts for selected measures. Final diagrams visualize results in the form of dendrograms, consensus trees, correlation diagrams, similarity maps, principal components analysis, etc.

The corpus of studied texts includes all 22 preserved complete dramas by Stanisław Ignacy Witkiewicz [5], to which four texts generated with Claude 3.5 Sonnet were added: two

versions of *Persy Bestialskaya, So-Called Humanity in Madness* and hypothetical scenes for *The Shoemakers*. The application was preliminarily prepared through contextual "immersion" – training on the corpus composed of original texts.

The stylometric analysis methodology represented a case of "verification" a hypothesis of authorship of a work. Quotation marks are used in this case since it was known in advance which works were authored by Witkacy and which were generated by AI tools. Therefore, the results can be interpreted as an assessment of AI tools' capabilities to create dramas in the Witkacy's style as well as an objective illustration of whether artificial content could – without prior knowledge – be classified with some probability as works by the originator of the concept of Pure Form in theatre.

A side effect of the project was also a preliminary stylometric analysis of original texts of Witkacy's plays, constituting a first step toward further detailed research on the characteristics of the plays, for example from the point of view of chronology, distinguishing creative periods or their similarities.

It should be noted that the results can also be used in another way. The results of stylometric research have a numerical form, providing detailed insight into the degree of similarity of "artificial" texts to the original ones. So they can be used for extra training of AI tools and improve quality of subsequent attempts making generated texts stylistically even closer to the original ones.

In the conducted stylometric studies, I attempted to examine the similarity of original texts with those generated by AI tools using various distance measures as well as different statistical methods and appropriate forms of visualization of results (cran.r-project.org/web/packages/stylo/stylo.pdf). The multiplicity of similarity indicators used served multi-faceted verification of the hypothesis that despite the subjective impression of similarity of AI generated content to original texts, still clear differences between them can be shown using precise analytical methods. In all types of diagrams representing stylometric analysis results, texts generated with AI assistance are distinguished by an outline and colour. The following distance measures were used: Classic Burrows' Delta, Eder's Delta, and Cosine Distance.

B. Results of stylometric analysis

Selected results of stylometric analyses using various distance measures, statistical methods and visualization approaches are reported. The aim was a clear and intuitively understandable interpretation of the results. The captions under individual diagrams provide information about the method used, similarity measure and parameters. The results are also accompanied by explanatory comments.

Table I serves as a legend for the stylometric analysis diagrams by listing both Polish and English titles of plays.

Fig.6 depicts Cluster analysis based on Eder's Delta measure typically recommended for stylometric exploration of literary texts. It is clearly visible in this case AI generated texts constitute a separate branch – subcluster.

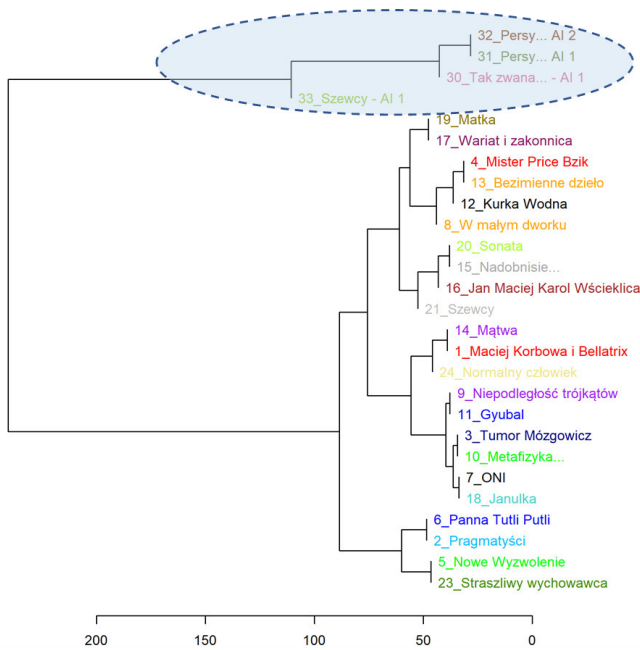


Fig. 6 Cluster Analysis, [100 MFWs | Culled 0 | Pronouns deleted | Eder's Delta] (MFW = Most Frequent Words)

Fig. 7 depicts Consensus Tree analysis based on Cosine Delta measure. In the dendrogram, it is clearly visible that the complete drama texts created by AI constitute a separate branch. However, the hypothetical scenes from *The Shoemakers* show close resemblance to the original for this specific measure. This is an interesting result confirming the reader's subjective impression the scenes sound very Witkacyan (c.f. IV).

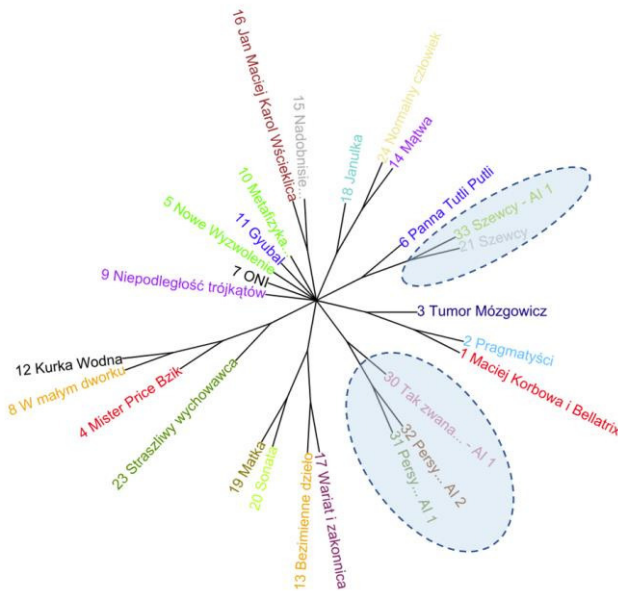


Fig. 7 Consensus Tree, [100-72 MFWs | Culled 0 | Pronouns deleted | Cosine Delta | $c=0,5$]

The diagram in Fig. 8 presents two principal components PC1 and PC2 representing the dominant features of the analysed texts. Similar texts are clustered around the main axes. In the figure, one can clearly notice "outlier" texts generated by AI. The use of a covariance matrix in data pre-processing

ensures that variables in the input set with the highest variance have the greatest impact on the result, which corresponds to the assumption of comparability of variables representing the studied texts.

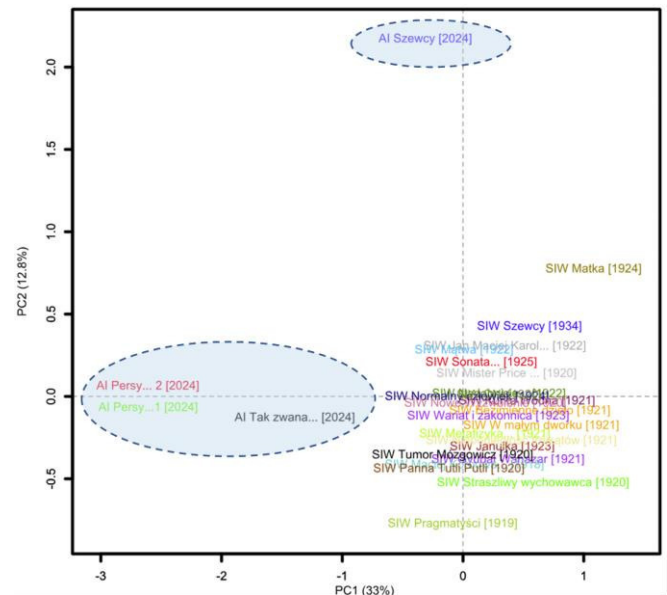


Fig. 8 Principal Components Analysis [PCA: 100 MFWs | Culled 0 | Pronouns deleted | Covariance Matrix]

Fig. 9 depicts a similarity network or a Bootstrap Consensus Tree for the original texts and those generated by AI. The diagram is illustrative in nature and shows similarity between individual works. Direct neighbourhood and greater thickness of the lines connecting nodes – works indicate their greater similarity. Greater distance in the graph and position remote from the centre indicate increasing difference between texts. The diagram clearly shows that texts generated by AI form a separate subgroup on the edge of the network connected to the rest by thin lines. However within the "AI" subgroup itself strong similarities are clearly visible.

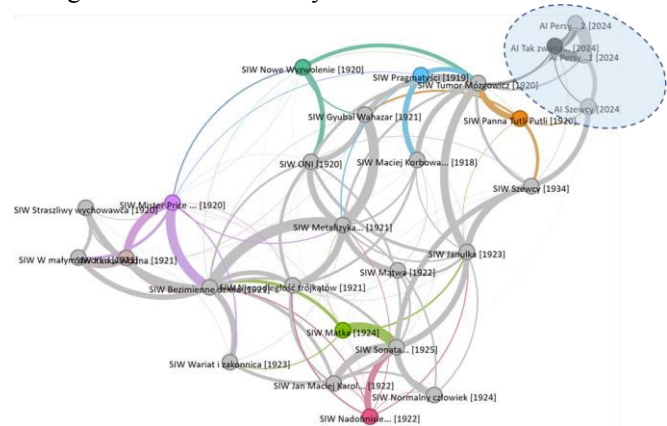


Fig. 9. Bootstrap Consensus Tree (diagram generated with Gephi)

The analysis shows that play reconstructed with AI assistance – *So-Called Humanity in Madness* and two versions of *Persy Bestialskaya* – show some similarity to *The Tumor Brainiowicz* – an original work by Witkacy. The hypothetical scenes for *The Shoemakers* reveal, as in the previous case,

some resemblance to the original text in terms of the Delta Cosine measure, as well as some correlation with *Miss Tootli-Pootli*.

VI. CONCLUSION

The main conclusions from the project are as follows.

The project confirmed that generative AI tools can be useful in the creative process in theatre. Slightly more than half of the responders held such opinion in the conducted survey.

AI can be treated like an intelligent electronic sketchpad, very useful in the preliminary phases of developing performances. The richness of styles and graphic techniques available in AI tools can significantly accelerate work and even be a source of inspiration. A good metaphor is cooperation in the mode of "converging minds."

Theatre creators are reaching for AI, as evidenced by the recent (November 2024) staging by Krzysztof Garbaczewski (concept, director) Rebecca Pierrot (script, dramaturgy) of the *So-Called Humanity in Madness* at the Słowacki Theatre in Cracow. They used "raw" material generated during interactions with Chat GPT as the basis for developing their own script and dramaturgy for the performance. In this case AI application was only a support tool.

Stylometric analyses showed that original works can still be clearly distinguished from AI generated content. Visualizations of text similarity between both categories show that they are distant from each other regardless of the measures and models used for comparison.

Experiments with reconstructing lost dramas and generating hypothetical scenes should be considered successful and promising. This applies to both the stylistic layer and the construction of action and the final message of the plays. This is especially visible in the case of the drama *So-Called Humanity in Madness*, where the finale transposed to contemporary times corresponds exceptionally aptly with today's realities.

The survey showed that on one hand, theatre creators, especially those who had no experience with AI, express great concern and a sense of threat, while on the other hand, it is simply a new technical tool that can be helpful in the creative process.

The presentation of the project's working results revealed that for the general public, the concept of using AI in any creative process is controversial. This manifested itself in a large share of negative voices, or even wave of hate, mainly dictated by a superficial view of the matter and simplistic interpretation of the project's goal as intention to replace human work by AI.

The key issue is the attitude toward AI tools. I am convinced that AI's potential should be treated as a complement to human natural intelligence leading to a certain kind of synergy, which could be metaphorically called "converging minds". The simplest way to realize this vision is to use AI tools to generate raw content which is subject to further steps carried out by human artists. In a more advanced model, this can be an interactive and iterative process. Taking into consideration the general classification of human-AI collaboration methods encompassing five basic modes: parallel work, contributive work, teamwork, hybrid models and synergy, each of them could be used in the creative process in theatre.

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TABLE I.
LEGEND FOR THE STYLOMETRIC ANALYSIS DIAGRAMS: TITLES OF PLAYS

Polish	English	Polish	English
<i>Bezimienne dzieło</i>	<i>The Anonymous Work</i>	<i>Nowe wyzwolenie</i>	<i>The New Deliverance</i>
<i>Gyubal Wahazar</i>	<i>Gyubal Vahazar</i>	<i>ONI</i>	<i>THEY</i>
<i>Jan Maciej Karol Wścieklica</i>	<i>Jan Maciej Karol Hellcat</i>	<i>Panna Tutli-Putli</i>	<i>Miss Tootli-Pootli</i>
<i>Janulka, córka Fizdejki</i>	<i>Janulka, Daughter of Fizdejko</i>	<i>Persy Zwierzontkowska (AI)</i>	<i>Persy Bestialskaya (AI)</i>
<i>Kurka wodna</i>	<i>The Water Hen</i>	<i>Pragmatyści</i>	<i>The Pragmatists</i>
<i>Maciej Korbowa i Bellatrix</i>	<i>Maciej Korbowa and Bellatrix</i>	<i>Sonata Bełzebuba</i>	<i>The Beelzebub Sonata</i>
<i>Matka</i>	<i>The Mother</i>	<i>Szalona lokomotywa</i>	<i>The Crazy Locomotive</i>
<i>Mątwą</i>	<i>The Cuttlefish</i>	<i>Szewcy</i>	<i>The Shoemakers</i>
<i>Metafizyka dwugłowego cielęcia</i>	<i>Metaphysics of a Two-Headed Calf</i>	<i>Tak zwana ludzkość w oblędzie (AI)</i>	<i>So-Called Humanity in Madness (AI)</i>
<i>Mister Price, czyli Bzik tropikalny</i>	<i>Mr. Price or Tropical Madness</i>	<i>Tumor Mózgowicz</i>	<i>Tumor Brainiowicz</i>
<i>Nadobnie i koczkodany</i>	<i>Dainty Shapes and Hairy Apes</i>	<i>W małym dworku</i>	<i>In a Small Country House</i>
<i>Niepodległość trójkątów</i>	<i>The Independence of Triangles</i>	<i>Wariat i zakonnica</i>	<i>The Madman and the Nun</i>