

# Anne-Sophie Bories, Pablo Ruiz Fabo, and Petr Plecháč

## Closing Remarks: What Was This All About?

**Abstract:** Centered on the main question of poetics and poeticity, this volume provides a broad overview of computational methods including motif analysis, network analysis, machine learning, and natural language processing. Without limiting ourselves to poetry, we explore the poetics of various literary productions in verse or in prose, as well as experiments towards the computational generation of poems. The volume is meant to gather a representative set of such approaches, and to offer a space for sharing perspectives, practices, and inspiring insights into the issues, old and new, being addressed by digital literary studies.

As we reach the end of this volume, one can see, or so we hope, how the various tools, approaches, and goals presented here come together to form a larger picture of what computational stylistics can bring to the literary scholar, and to inform a relevant set of methods and applications for such a purpose. Centered around the main question of poetics and poeticity, yet not limited to poetry, the contributions gathered here explore a variety of methods and techniques, ranging from motif analysis, network analysis, machine learning, and natural language processing, with the purpose of exploring the poetics of various forms of literary production, whether written or spoken, in verse or in prose, and the possibility of computationally generating literary texts, in this case poems.

There is a dizzying array of methods, approaches, and tool combinations, mirroring the diversity of hermeneutical goals. The way the contributing authors interact with each other's works is testament to how such an abundant diversity of traditions, cultures, methods, and goals offers opportunities for mutual enrichment. This is why our objective in putting together this volume has been not just to gather a representative set of such approaches – although it has been precisely that as well – but also to bring them together in one place to create an active dialogue, to share perspectives, tools, and good practices, so that we can benefit from each other.

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The authors in this volume present and discuss several automatic detection efforts, geared toward, e.g., sonnets (Bermúdez et al.), sonic genre (Mustazza), and enjambments (Delente), and providing an overview of this rich and dynamic field, which encompasses areas such as natural language processing, distant listening methods, and user interfaces. Semantic issues, because of their intrinsic link to questions of poetics, play a central role in this volume, with quantitative methods serving reflections on rhyming words and their influence on meanings in Victorian poetry (Houston), Melville's patching and mixing of characters (Armoza), poeticisms in Russian poetry (Vekshin et al.), and the detection of character types in German drama (Krautter et al.). Finally, the last contribution (Gervás) presents the automatic generation of poetic texts by means of computational efforts, which is something of a poetic quest in its own right, and provides insights into what poetry is.

These collected articles, besides forming a solid and up-to-date primer on computational stylistics and poetics, are also usefully representative of the various stages of research activity, from the early development of new devices (Bermúdez et al.) to the results of long-term efforts (Meister, Armoza, Delente) and reflections upon years of evolving practice (Bandry-Scubbi). Not only did it seem enlightening to both appreciate the evolution of known endeavors and to learn about new initiatives, but we also thought it useful to provide a sense of how such undertakings progressively shift their focus as computational challenges are progressively resolved, as preliminary results influence ongoing questions, and as both original and emerging hermeneutical goals are addressed.

Several chapters (Meister, Bandry-Scubbi, Delente) raise one, same important issue, albeit from different angles: the focus on slow, cautious interpretation. This angle is worth stressing, for, at a crucial time for the humanities, when our scholarly community is taking a fast methodological turn toward new quantitative and statistical analyses, we need to keep in mind the qualitative, hermeneutical benefits to be gained from these novel approaches. And the chapters presented here do just that: they put in focused efforts to apply and interpret data analyses in order to advance our understanding of texts, literary history, and genre boundaries.

The diversity of the approaches, methods, and goals described in this volume is representative of a thriving research community within the growing, dynamic field of digital literary studies and will be useful to both students and scholars looking for an overview of current trends, relevant methods, and possible results. Although the volume gives more room to written poetry, chapters addressing spoken productions (Mustazza), narrative analysis (Armoza), and drama (Krautter et al.) share the spotlight too. Moreover, there are discussions of not only poetic analysis but also the possibilities of generating poems computationally (Gervás). The chapters consider various methods, such as motif analysis (Bandry-Scubbi),

machine learning, and NLP (Bermúdez et al., Houston, Krautter et al., Vekshin et al.). The volume pays particular attention to annotation, one of the most fundamental practices in computational stylistics, and Jan Christoph Meister very usefully problematizes its hermeneutical value.

Strikingly, both Anne Bandry-Scubbi and Jan Christoph Meister, who delivered the two keynote lectures at the Plotting Poetry conference held in Nancy in 2019, reach a similar conclusion – one we fully agree with – centered on the “pleasure” and “human emotion” of our contact with literature, on the importance of a certain something that escapes quantification and operationalization, and on the fruitfulness and relevance of combining this intuitive, exclusively human approach with the different strengths of computer-aided, systematized treatments in order to achieve a truly multifocal, augmented apprehension of literature.

Anne Bandry-Scubbi writes about zooming in and zooming out, presenting us with a genuine and most relevant exploration of the question of focal length. Like us, she advocates for a focus on texts that brings together close and distant reading practices in a dialogical, back-and-forth movement to sort out canonical and non-canonical features, norm, and typicality.

As she traces her own steps back through 30 years of “corpus stylistics,” describing its evolving methods and goals, how it has navigated its growth as a young field, as well as exciting and disappointing results, and her many collaborations, she affords us a unique glimpse into how an evolutionary approach has allowed her to explore several overlapping corpora and to delineate a system within eighteenth-century British fiction. Aiming for a common definition of style, she emphasizes how computational literary scholars have a duty to use the novel possibilities of hypothesis testing to genuinely check and possibly disprove prior constructs, how they should be careful to avoid moving around numbers without interpreting them, and how, when exploring literary works, we should always keep in mind the effect that such objects always aim to have on their readers, to treat them as the devices with a purpose that they are and not as aimless, accidental configurations.

Jan Christoph Meister chooses to address poetry, phenomenon, and phenomenology together, combining theoretical reflections on epistemological issues raised by the field with a more practical exposition of the tool he and his team built to make standoff markup available barrier-free: CATMA.

He starts from the premise that the phenomenology of the aesthetic artefact on the one hand and the methodology of digital analysis and modeling of empirically observed phenomena on the other appear to be epistemological opposites: the subjectively experienced “world” that is the subject of the humanities and the arts vs. the quantifiable and objective domain that is of relevance to

the sciences. His central argument is a rebuttal of this dualistic distinction. In this spirit, he argues that, from a philosophical-historical perspective, the so-called methodological divide turns out to be a discursive trope rather than a logical necessity; that attempts to bridge the gap between hermeneutic and quantitative, formalistic methods can be traced back to well before the “digital turn,” namely to the late eighteenth century; and that it is indeed possible to conceptualize and build tools for the digital analysis of aesthetic artefacts – notably for that of literary texts – in which hermeneutic and formal, analytical methods can be productively combined. As for the annotation software CATMA, it too exemplifies how a new, *scalable* practice of digital text analysis can bring together “close” and “distant” reading as two parts of one continuum and bring an empirical perspective on poetic texts and poetry into fruitful contact with their conceptualization. This call to bring together qualitative and quantitative approaches is nothing new, but it makes our time a very exciting one to be a part of and our endeavor to combine computation and hermeneutics a laudable challenge. Indeed, and Meister stresses this, we need to address textual objects at both a holistic and an analytical level, blend systematic and intuitive reasoning routines, navigate linear and iterative processes, and, of course, integrate distant and close reading.

Helena Bermúdez Sabel, Pablo Ruiz Fabo, and Clara Martínez Cantón present something that sounds like a little rover exploring some faraway Disco planet: DISCOver. This is a well-thought-out web interface that builds on their previous work, DISCO, the Diachronic Spanish Sonnet CoRpus. DISCO is not a planet but a large dataset, comprising 4,085 sonnets written between the fifteenth and nineteenth centuries, including canonical and lesser-studied authors from both Spain and Latin America, with detailed author metadata, metrics, rhyme scheme, and enjambment annotations. DISCO had already been made available on public repositories in plain text and TEI, enriched with the linked data format RDFa. Yet some audiences who could have been interested in using it had been prevented from doing so for lack of an easier navigation system. So, the authors constructed DISCOver, for which the user needs no prior knowledge of XML or linked data. The impressive technical apparatus of DISCO is both accessible and hidden in DISCOver. Users with limited technical capabilities can use it to easily view literary annotations, define sub-corpora, and discover quantitative data. They can also start with aggregated data and travel back from these to the texts from which they came. This interface has been precisely designed to bring together, not just for the team’s own benefit but for that of a larger, non-specialist audience, various levels in the understanding of a text, packing a lot of expertise into a portable virtual device, one that feels like an extension of, but certainly not a replacement for, our reading capabilities.

It is an astute tool, affording the luxury of a circular reading process: from distant to close and back, seeing the text, the rhymes, the meters, and the text again. We can spot trends and outliers, contributing to our knowledge of the sonnet in Spanish. The authors argue for similar implementations being appended to other poetry corpora interfaces and for further exploration features to be added, such as sentiment analysis or imperfect rhymes, for instance, in their desire to bring elaborate tools into the hands of anybody who is interested – literary scholars of course, but also teachers – or as a means to increase interest in poetry and its wealth of forms.

Chris Mustazza takes us to a seemingly very different area, to the machine listening of sermons, a genre with which we poetry scholars are not very familiar. His main argument is that, alongside the features of what is generally recognized and expected as a “literary” reading, which often shapes the way poets perform their own work, we must also acknowledge other sonic genres, some of them outside the conventional definition of poetry. Indeed, Mustazza shows how poetic performances can feature sonic aspects of political radio speeches, vaudeville monologues, or sermons, placing a special focus on the influence of the latter genre in his chapter. The machine listening method presented and applied to sermon-poems by James Weldon Johnson and sermons by Rev. AW Nix, is still largely a prospective one. Far from just letting an algorithm loose on a heterogeneous corpus, the author carefully studies whether, where, and how exactly the sermonic genre can be understood as a dimension of form within passages of individual poems, and how this sonic reference may interact with the lines’ content. Ultimately, Mustazza’s interest is truly in poetics as he subtly and firmly focusses his gaze on the precise interactions between the meanings brought about by a recorded reading’s sonic references and the ones to be found in the written text itself. What does it mean for a poem’s reading to stick closely to or stray from its expected “poem reading” voice? It is thus a productive dialogue between an algorithm that is *incapable* of understanding content and a perceptive reader and scholar who has been trained to decipher it but is *incapable* of abstracting his reading from the meaning of texts. This collision creates a new view of the text, one combining two aspects that the human mind alone would have been unable to dissociate.

Stepping away from the technical perspective on computational devices to question their hermeneutical uses, Éliane Delente discusses the extent to which the relationship between rhythm and meaning in versified poetry can be automated. More precisely, she examines the limitations of aligning syntactic and metrical structures, a common practice when it comes to detecting enjambments and one that the author finds unsatisfactory in several respects. Instead, she suggests analyzing the metrical expressions themselves, taking into account their

beginning, their end, and their internal consistency, as well as the processing time of such successive expressions, then linking all these observations to specific reader expectations, and the time periods and individual poets being considered. By analyzing the metrical expressions themselves, Delente instructively shows how versified poetry develops and how meaning is processed, metrical expression by metrical expression, in a dynamic of interpretative constructions and readjustments. While she is herself an advocate of corpus-based research and observations, she adds a contrasting voice to the discussion of how enjambments are automatically detected and supports giving careful thought to the constitution of homogeneous subcorpora and improving the alignment of the type and level of metrical expressions, time periods, or even individual poets so that enjambment detection can work within a more stable frame.

Working within a reasonably homogeneous corpus of nineteenth-century English poetry, Natalie Houston offers us a distant reading of rhyme. She rightly argues that the effect of rhyme should be taken into account when analyzing word frequencies in poetry, and that it is thus essential to distinguish between word frequencies at and outside the end-of-line position. The author herself explores rhyme word frequencies and discusses three methods for analyzing them: rhyme frequency ranking, effect size metrics, and the rhyme frequency ratio. With a view to better understand the conventions that shaped nineteenth-century English verse, Houston offers us a glimpse into how historical readers might have experienced rhyme's structuring force within poetic discourse. Readers might respond positively or negatively to conventional language and poetic style, depending on their aesthetic preferences. But their reading of poetry will inevitably have been marked by those conventions of poetic discourse. This examination of which words or phrases would have been perceived as typical or as unique can only be achieved by computational means, and Houston's informed analysis makes it a valuable hermeneutical journey through the question of canon and style.

As Jonathan Armoza cobbles together a model of Melville's *Moby-Dick*, he revisits Harrison Hayford's previous stylistic analysis of duplicate and vestigial settings, events, and characters in the novel. He tests this initial set of hypotheses regarding Melville's drafts to explain its apparently unnecessary redundancies by submitting the scant and heterogenous data to nonnegative matrix factorization (NMF), an efficient filtering method for patching together data from multiple, insufficient sources. Rather elegantly, the author warns us not to give blind, undue credit to his statistical results, as his entire experiment is based on the assumption that these duplicates indeed originated in the blending of different drafts. Armoza thus advocates for the forming and testing of adversarial hypotheses while conceding to himself, so to speak, that the similar findings obtained by applying

two different methods do seem convincing when addressing the characterization of Queequeg in the novel.

In their article on poeticisms and common poetic discourse, Georgy Vekshin, Egor Maximov, and Marina Lemesheva present the development of the *Russian Live Stylistic Dictionary*. In order to identify poets' self-positioning strategies, the poeticisms that say "I am a poet" in naive Russian literature, they focus on writers' social stylistic positioning. They do this by examining the contextual role determinant of the social coloring of the word and phrase, and are developing a web application to automatically determine sociocultural variations of linguistic units. From there, they speculate that there is a link between a high concentration of poeticisms and the "low artistic value" of popular poetry texts. They base their diagnosis on a poem's lack of stylistic originality, measuring the degree of uniqueness in the features of a text as signs of its quality and originality. This method also enables them to monitor changes in the use of the word and to trace the dynamics of its stylistic meaning.

In many theater traditions, characters are types, and the audience is well-used to identifying them. Benjamin Krautter, Janis Pagel, Nils Reiter, and Marcus Willand are trying to automatically detect them by linking their interpretative, literarily understood types, such as intriguer, with better operationalizable properties, such as gender, age, and social status. Their larger goal is to produce a quantitative and diachronic analysis of character types over large corpora, which would allow for the rational comparison of characters. Determining exact character types without any human interpretative effort seems out of reach, and turning to the simpler, seemingly more detectable features of gender, age, and social status is intended to help select a list of possible types within an inventory. But these apparently reasonably objective features, in turn, pose their own set of difficulties. Annotating a character's social status is relative at best, the same character being placed in different contexts depending on the play, and his or her relative status changing accordingly. Additionally, age is usually underspecified. Actually, some level of interpretation is required just to annotate the three desired features for characters. An optimal solution might be found in the use of machine learning, and the authors' efforts aim to make this possible. The authors here give us valuable insights into the interpretative efforts that go into operationalizing any material and explain how this immediate objective is linked to their broader hermeneutic goal of making a nuanced contribution to drama history.

Pablo Gervás produces poetry, but not as a poet. Rather, he produces robots who produce poems. The robot presented here works with n-gram-driven word level recombination. To address the challenge of exploring a search space of metrically valid verse – such spaces tend to be very large – his program samples it in an informed manner, driven by simple quantitative metrics about elementary

features of the poems. Capable of discriminating between human-generated poems, the recombination of human-written verse, and purely computationally generated poems, the program presented here calculates vectors for the samples being examined from the large search space of metrically valid verse. Samples can thus be selected based on a target distance to human- or machine-generated poems. This somewhat vertiginous article – there is after all no great shortage of poetry, no masses of readers hoping to obtain poetry rations by industrial means – raises one very exciting contradiction: while human poets try to set themselves apart from other poets, a robotic poet typically tries to emulate the real human thing and fails because of this, as its imitation prevents the emergence of a voice of its own. Gervás’s efforts address this quirk, absolutely justifying the computer generation of poetry.

Some of the chapters share similar standpoints or methodological bases. Meister describes the “hermeneutic circle,” whereby individual data points are understood within the larger corpus context, and our understanding of the larger context shapes our grasp of individual data points. This underlies the design philosophy behind the CATMA annotation and analysis tool that he also describes in his chapter. The same promotion of a back-and-forth movement between the aggregated data and the individual observations upon which the data are based underpins the DISCOVer corpus exploration interface described in Bermúdez et al.’s chapter. Bandry-Scubbi also refers to efforts to go “back and forth between book and data” in her chapter titled “zooming in, zooming out,” echoing the same idea. As another example of shared methodologies, word frequencies are one of the raw materials on which the methods in several articles rely. Bandry-Scubbi uses measures of word overrepresentation in subcorpora, extracting specificities to tease out how female characters are depicted by female vs. male authors, as well as other topics in eighteenth-century British novels. In Houston’s chapter, various measures of frequency difference for words in rhyme position vs. the rest of the poem (rhyme frequency rank and ratio, and effect size) allow her to assess poems’ typicality vs. uniqueness in nineteenth-century English verse. In a related manner, Vekshin et al.’s chapter utilizes supervised classification methods that also rely on a term’s frequency and discriminativeness in order to detect conventional expressions typical of naïve writing in Russian.

The reader will have understood the argument underlying the whole volume, expressed collectively by the editors and individually by the contributing authors. This argument is a refusal to set computational and traditional approaches in opposition to each other as contradictory, incompatible, or otherwise exclusive of one another. It is a plea to increase the visibility of an intrinsic feature of this novel proliferation of techniques and possibilities: all these new methods and goals are following in the footsteps of previous and ongoing methods and goals.

This is not a revolution but a leap in technology. It has not come about as a reaction to or in disagreement with traditional hermeneutics but as a welcome enhancement of our capabilities. Getting all the help we can get from computers is intended to palliate the limitations of our own human minds, not to invalidate our ability to think, analyze, or interpret. Popular fears about artificial intelligences taking over our own critical thinking do not actually reflect a real threat looming over literary studies when the computational literary studies community is so skillfully bringing together exciting hermeneutical questions and innovative processing solutions.

We hope that this book will provide a concrete overview, serve as an introduction, and allow readers to discover current trends and recent works in the field. We also hope that readers will enjoy the multifaceted vision put forward by these scholars, as their many personal approaches together provide inspiring insights into the issues, both old and new, being raised and addressed by digital literary studies.

