

#GraphPoem @ DHSI. A Poetics of Network Walks, Stigmergy, and Accident in Performance

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Introduction

Could there be any relevance to, or at least fun in, a livestream involving sharing one's computer screen online? Watching on one's computer screen somebody else's computer screen? While the latter displays at times applications that one does not need to watch a performance in order to be able to run on their own screen?

Yet what if the viewer/participant can indeed access and use the apps, social media, and code in ways that will impact the performance and will give them enhanced options to look under the hood, to inspect-control the event? An event nevertheless shaped also by improvisation, chance, and even accident... What kind of performance would that be, and what about its theater or performance venue, its digital space-based environment and the latter's specificity and evolution?

The #GraphPoem events presented on a yearly basis at the Digital Humanities Summer Institute (DHSI) since 2019 (#GraphPoem, web) are digital space performances involving collective database assemblage, interactive coding, social media automation, and livestreaming. Python scripts on JupyterHub represent DHSI-related data as networks which are analyzed for graph-theory (topological) features and then, based on those analyses, sampled intermittently by a Twitter bot (@GraphPoem), this whole process being fed into a Facebook intermedia cross-artform performance (@Margento.Official).

This paper highlights a few moments of #GraphPoem @ DHSI 2021 analyzing them from intermediality, remix studies, performance studies, and graph theory perspectives while focusing on relevant issues such as topography-topology, the interface, human-computer *intra-action*, community, and network walks.

Venue and/as Performance. The Communal Now(/)here of Interfacing Mediation

Chiel Kattenbelt has notably asserted about theater that "just as it can incorporate the other arts, so it can incorporate all media into its performance space. It is in this capacity that I regard theatre as a hypermedium" (Kattenbelt "Theatre as the Art of the Performer and the Stage of Intermediality" 37). This hypermedium or "federating medium" (Larrue and Vitali-Rosati *Media Do Not Exist* 27) can be seen both as "an interart" and "a technological meeting place" that is both a "looking at" and "looking through" window (Richard Lanham qtd. in Larrue and Vitali-Rosati 27t). The former is tellingly exemplified by the *hypermediacy* of a webpage opening onto other windows and not any reality beyond (ibidem 17). My point in this section is that one may consider not only a webpage, but even more relevantly and representatively so, the whole interface of the computer, alongside its connectivity to, or inclusiveness of, multiple other interfaces, to be the digital hypermedium.

This is made most apparent perhaps in events such as #GraphPoem in which the *venue/theater* consists of a live-streamed computer interface and its multiple windows and applications. *Computer interface* here refers to a live stream unfolding as the real-time inner works of a graphical user interface (GUI) and not to a particular identifiable or essentialized interactive screen, and therefore a possibly more appropriate term would be, rather than live-streamed interface, *interfacing livestream* (performing an apparently usual GUI as event venue). The *venue* becomes nevertheless on such occasions a screen of manipulated/manipulatable screens and, therefore, an interface of interfaces, multitudinous and connective in at least a couple of respects. It displays the various platforms informing and/or hosting the event—JupyterHub, Twitter, SoundCloud, Facebook, etc.—and it connects (with) the interfaces of participants and viewers which, besides displaying the interfacing livestream in their turn, also instantiate or make getting actively involved in the event-related processes going on on the above-mentioned platforms possible and visible.

There are two main consequences of this state of affairs. First, the live-streamed interface or apparent venue, i.e., GUI interface *in* the livestream, turns out to be contained or conditioned by what it contains and conditions. Such performance goes beyond the above-mentioned distinction between look-through and look-at windows. The look-at facet involves other windows that actually amount to a look-through effect, as they literally overlook activities and processes (at times even displaying participants as such contributing to the event)

shaping the performance per se *from beyond*. This beyond is nevertheless a *beyond within*, appearing at, and (re)shaping, the very window the performance consists of.

And, second, the venue becomes the performance per se as the mediations it consists of generate technological-societal relational multiplicities. The interface has been defined indeed as a “form of relation” shaped by the “coupling of the processes of holding apart and drawing together” “two or more entities” (Hookway *Interface* 4), a relational form that brings into existence both machinic technology and user (Larrue and Vitali-Rosati op. cit. 51). While these authors peremptorily highlighted the mediating/relational/generative functionality of the interface, they preferred nevertheless to speak of its user or subject in the singular. As mentioned above, while framing the interface as involving two or more entities, Hookway still speaks of the production of “the *subject* through [the interface’s] processes of subjectification” (Hookway 5, author’s emphasis, although most likely not meant to underline the fact that the noun is in the singular; yet, as already hinted and as we will see below, plurality and multiplicity are of the essence in the context).

The interface, particularly within events such as #GraphPoem, that is, mediated as venue-performance, is nevertheless fundamentally multiple and engendering communities in/as performance and action (Tanasescu “Community as Commoning”). The interface in its eventual dimension thus makes (communities and ensembles of) humans, technologies, and (poetry) datasets functionally overlap and become ontologically imbricated as “webformances,” communal webs deployed in “post-Occupy[ing]” the Web (ibid.; cf. also Tanasescu et al. “A-poetic Technology”, and Tanasescu and Tanasescu “#GraphPoem : Holisme analytique-cr atif, le genre D(H) et la performance informatique subversive.”). As argued in these publications, texts are always multiple and networked in digital environments (they are inevitably involved in graphs, while poems are always “graph poems”), and so are users and artificial intelligence. Moreover, performance (and the performativity of the digital per se) presupposes inter/intra-activity which generates communities, in their turn, performative and networked, and ontologically hybrid, involving and generating poem-user-machines.

Hookway’s statement that “[t]he separation maintained by the interface between distinct entities or states is also the basis of the unity it produces from those entities or states” (Hookway op. cit. 4) could be consequently now read in a new light. Namely as referring to communities and ensembles that are brought together by means of network-based (graph theory topology-informed) differentiation and as discrete interfaces converging into the interfacing livestream. The *here and now* of traditional performance and the “home to all” quality of theater emerging from Kattenbelt’s vision (Larrue and Vitali-Rosati op. cit. 25) becomes in this case the *now(/)here* of the manifold mediating venue in/as performance. The now and here as well as the *nowhere* (and no specific time) of *now(/)here* coexist: there are the various temporalities of the multiple processes going on on various platforms just as there are the different temporalities related to the involvement or attendance of various participants or viewers. All of them converge nevertheless within the apparently linear and all-absorbing temporality of the livestream or its subsequent playbacks.

Similarly, the palpable *here* of the interfacing livestream informed by the evident and consistent tangibility of the live-streamed GUI—with its continuous mouse hovering and clicking and writing in search bars, in Jupyter-based coding scripts, etc.—owes its seeming coherence to the various algorithmically interrelated platforms involved, as well as to the various web-based and physical locations of the participants and users. The latter, while making that *here* coherently possible, manifest, and ongoing, also gestures towards its underlying discreteness and machinic *trompe l’oeil*, its “nowhere[s].” I will focus on the implications of physical and/as web-based place or location in the following subsection, but suffice it for now to briefly emphasize the communal function of a graph-theory-based approach to performance such as the one at stake here.

Kattenbelt has noted that the appearance of “a world of bits and bytes” adjacent to the one of atoms (Kattenbelt “Intermediality in Performance” 36, drawing on Nicholas Negroponte) makes it much more difficult to assemble a community (or explicitly belong in one) and consequently equally difficult to stage [oneself as] [part of] a performance. Life in our culture, since no longer centered on the “physical world,” entails “a certain rootlessness” (ibid. 37). Yet life in digital space—a reality that goes beyond the real-virtual binary (cf. Kennedy *Chaos Media*)—can, and did, spawn and/or strengthen communities with clearcut profiles, MO’s, and evolutions (Tanasescu “Community as Commoning”). Deploying graph theory in performance in particular articulates communities with clearly distinct features and individual members or groups (nodes or subgraphs). Moreover, being in, and contributing to, the network is the way to start, expand, and/or enact, and

thus perform, a community (or, in one word, engage in “commoning,” cf. *ibid.*). Intermedial—and consequently interfacing—commoning is the *now()/here* performance par excellence, one in which topography is not replaced by topology, or the physical by the mathematical, but in which the two coexist and, in fact, shape each other into a reality beyond both. The physical world is not abandoned in favor of the digital, but becomes constitutive of, and constituted by, network analysis-based commoning. *Now()/here* is the multiple, specific, correlated, and contextually inflected here-and-now’s of the graph-theory-informed community. But it is also the nowhere of both unpinable intermediality and the amorphous or anonymous beyond of viewers/surfers’ multi- or non-identities and localities;¹ once again nevertheless, the beyond within.

Place/Site/Placing/‘St[e]lling’

As already hinted, place and site² come in a number of varieties in approaches such as the one informing #GraphPoem. I already mentioned topography versus/plus topology, the former referring to the rigorous charting of physical places, and the latter to the mathematical methods of assessing relationships between, or hierarchies of, elements of a set based on features such as connectivity, continuity, and compactness.

More specifically, since our model is the graph, topology does not really have to do with how the graph is represented (it is not... topographical), but with characteristics referring to the individual nodes/edges or the network as a whole such as degree, connectivity, shortest paths, and centrality. These qualitative and quantitative features remain the same no matter how we visualize (or not) the graph, how we look at, or stretch it. Consequently, as mentioned in the previous section, data can be paradoxically both here and now, and nowhere, at the same time. The topology of the network (specifically of the graph poem) can accurately if only relationally locate data, while topographically speaking we cannot say much about their physical and/as web-based locations.

And yet the topographical and the topological interact and fuse towards experiences beyond the binary, and are, moreover, already inextricably intertwined in digital space even before terming them as distinct and even opposed to each other. Topography represents of course an encoding of space to begin with (cf. David Harvey referenced in Bennett “Calgary’s Cultural Topography” 43), but what is more, in digital space it relies on the network topology underlying the Web, the digital apps, and/or the online communities involved in or addressed by its generation. This simplifies and complicates the issue at the same time, especially when examined from a performance-relevant standpoint.

Site-specific (performance) art has generally been seen as site and community-enacting, performative, or even generative, and so has (performance) poetry (cf. Davidson and Skoulding *Placing Poetry*; also Tanasescu op. cit.). The fact that the poem can describe but also generate place (see Davidson *Ideas of Space in Contemporary Poetry*) has, moreover, been extrapolated to the poem *being* the (digitally networked/web...) site, an argument that led to highlighting poetry, as already briefly mentioned, as *the* digital space genre (Tanasescu op. cit.; see also Tanasescu “Literature and/as (the) Digital”). Yet in other recent approaches, place alongside its unique specificity is seen as more actively involved and agentive, animating performance “in locally material ways—rather than merely awaiting animation *by performance*” (Dickinson “Choreographies of Place” 93, author’s emphasis).³ Dickinson finds Laura Levin’s concept of “environmental unconscious” useful in building such an argument (Levin qtd. in Dickinson 92-93) relevant to the spatial turn in performance ethnography (in Canadian dance studies) applied to urban dance communities and, even more relevantly to this contribution, movement practices in general (*ibidem*).

The imbrication of topography and topology briefly considered above render movement multidimensional and multilayered as it bridges bodily movements and physical walks, on the one hand, and web surfing and/or network pathfinding (with their own kind of movements, bodily ones included) on the other. While going

¹ Such concept has been copiously anticipated in the 20th century by Roy Ascott and his notions of “telematic culture” and “telepresence” (cf. for instance Ascott, “Is There Love in the Telematic Embrace?”).

² For distinguishing between place and site particularly in a poetry and visual arts context see Shaw, *Fieldworks: From Place to Site in Postwar Poetics* and, in a digital framework, Tanasescu, “Community as Commoning, (Dis)Placing, and (Trans)Versing.”

³ Dickinson refers to “sited dance,” but his reflections are further applicable in other types of performance, and so is the notion of “environmental unconscious” he borrows from Laura Levin.

beyond the physical-digital and real-virtual binaries renders the space of our culture more cohesive and articulate (if nevertheless spectacularly heterogeneous), it also exposes the complexity of movement the latter is conducive to; and, the truly remarkable opportunities thus made available for performance.

A work featured as part of (and specially created for) *#GraphPoem @ DHSI 2021* and relevant to this discussion is *Brussels. A Human-Computer-Intra-action Hypersonnet*. A transmedia poem, the work consists of a dataset of fourteen (“guiding”) poems, a Jupyter Notebook, a few GitHub-based Python scripts that the latter imports into my own longer script, a notes on “Technics” followed by a “Poetics Statement,” and a number of “resulting” poems consisting in their turn of cosine similarity calculus outputs, lists of words, and concrete arrangements of the latter (“the emerging concrete shape of the poem as linguistic mapping app”) (*MARGENTO Brussels. A Human-Computer-Intra-action Hypersonnet*).

While strolling in various communes of Brussels I would stumble upon a place speaking to me in a really particular way (but otherwise usually hardly noticeable to other passers-by), and that is how the compositional process kicked in. As I let my senses be suddenly, fully, and continuously flooded by the *feel* and *vibe* (and noise) of the place,⁴ I would mentally put together a list of words avalanching in no particular order (an NLP “bag of words”) and with no syntax or poetic form in mind, while also trying to think of, or find online, an existent poem that would go best with that environment and the mood it put me in. In many of the cases actually that poem or poet popped in my mind or among the google or various database search results afterwards, or I would simply *serendipitously* come across it much later. This poem would then go in the guiding dataset, while the poem I was working on would continue to evolve as an element of the set of resulting poems. I was being a flaneur around the city, across a database, and along a compositional process at the same time:

We also walk through a dataset. A corpus of poems we’ve been collecting and reading recently as guidance in our wanderings. Guidance and fluid evolving frame of reference at the same time. It actually works as a “mental” AR app popping up before our eyes in the process of translating (scraping and processing) what we see as we walk. Translation or app or both are shaped in the process. While translation generates both the “original” and the “translation,” the AR does not presuppose a constant or self-contained R either. Rather, AR and R search through/with, and thus shape, each other in the process. Poems are picked for guidance in a specific spot, are de/re/trans-formed, or added to the guidance corpus as we go along, while what we scrape, what we (choose) to see is grounded in those poems. (Ibid.)

Then the code would compute vectors of both the guiding and the evolving resulting poems based off of the FastText word embeddings and measure the cosine similarity between the latter and all the guiding poems. It would be thus associated with the input poem with the greatest cosine similarity, even in the generally unlikely event of being most similar to another poem than the one I initially assigned to the public place in question. This would provide the resulting poem with a certain position (as a multidimensional line of verse) in the in-progress “hypersonnet” (an intermedial sonnet of poems and platforms) and also a spot in the emerging route of public places and poems. The process is described in the “maths” section of the poetics statement:

Maths. Our code computes (iteratively, where needed) the similarity between the emerging poem’s vector and that of the guidance corpus poem involved in mapping the place we loiter about at the time of “writing.” This computation is in fact part of the composition process, crucially impacting the poem’s form (described, therefore, as vector prosody) and informing the topology and optimal tour across the resulting corpus. It is not only the poetry of place involved that intertwines mapping and touring into a dynamic performative *topophrenia* (Robert T. Tally’s term). It is also the mathematics of poetic form transitioning from digits to the digital (or rather submerging the former into the latter) that accomplishes that in mapping and crossing vector and “real-life” spaces alike. [...] The language and form mutual shaping process involve now a space-modeling mathematics of place exploration-generation. (Ibid.)

⁴ The “soundscape” part of an “acoustic space” (Barber “Walking Transects to Explore Soundscapes” n.p.). One might also consider spaces or scapes as made perceptible or imaginable by layering, relationally adjusting, interrupting or suppressing sounds and thus “generating” distance (and inevitably, noise in the process), particularly in experimenting with recording techniques—as done/directed for instance by Jimmy Page for Led Zeppelin (cf. e.g., *Led Zeppelin Houses of the Holy*), or Miles Davis on albums such as *Big Fun* (Davis, *Big Fun*)—or with sound more abstractly (John Cage as revisited from a Deleuzian perspective, e.g., Campbell “John Cage, Gilles Deleuze, and the Idea of Sound”). More philosophically and digitally specifically speaking, noise has been examined as “virtual plane that is ground for emerging events” and, according to Greg Hainge for example, as an “ontology that does not believe in fixed identities” (Kennedy *Chaos Media*, 21 and especially 80-91).

The multiple movements and itineraries that the creation of the hypersonnet involved or discovered were nevertheless complemented with yet another one that potentially detoured and/or superseded all of the above: the journey of the entire transmedial poem into the DHSI performance. Or, otherwise put, the mediated interface-staged reading and presentation of the hypersonnet; the way in which the performance performs the poem. The various spaces and times that the performance crosses, plots, and/or alternates, become therefore instrumental in the context in inscribing and (re)shaping—and thus intermedially (re)performing and rewriting—the poem from scratch.

As the JupyterHub was already up and running and outputting poems to be sampled by the bot on Twitter, the hypersonnet was introduced by opening another Jupyter Notebook, the one containing its own script (MARGENTO #GraphPoem @ DHSI 2021 min. 34:53) (Fig. 1). Observing the technique that pervades most parts of the performance (as well as the previous #GraphPoem events at DHSI), the relatively longer time certain notebook cells or individual commands took to run was used to keep wandering around the other windows and apps opened on the screen (or opening even more of them) apparently looking for some “filler” and getting lost in the process.

[Figure 1. The *Brussels. A Human-Computer-Intra-action Hypersonnet* Jupyter Notebook running while being hovered across the screen and among the other windows and apps involved in the performance.]

There were thus multiple other *sites* and temporalities that became manifest and interfered one way or another with the temporalities and processes (plurals) of the poem in the making per se. The latter consisted of the Jupyter/Python command runtimes, the pace and duration of browsing the guidance database or scrolling the document presenting the relevant poetics statements, other notes and data, the resulting concrete poetry, etc. All these temporalities and sites came to the fore as interspersed with, or put on hold if not obliterated by, other sites and processes that once in a while occasioned potential serendipitous convergences. Besides flaneuring around the “usual suspect” platforms, JupyterHub (now in tandem with the hypersonnet’s Jupyter Notebook), Twitter (Fig. 2), SoundCloud, etc., this part involved starting other applications, windows, and files as well.

[Figure 2. The @GraphPoem bot tweeting samples of the poem/text-nodes singled out by the JupyterHub network analysis script.]

Among the latter, a recent awarded article on the testing of natural language processing models (Ribeiro et al. “Beyond Accuracy: Behavioral Testing of NLP Models with CheckList”) was opened, for instance, and browsed almost at the same time with a YouTube bass and drums backing track extracted out of Google Chrome’s OneTab and mixed with a recording of Hildegard von Bingen’s *Hortus Deliciarum* performed by the ensemble Discantus played simultaneously in another YouTube window. Another window, which had been opened earlier on and lurking in the background both visually and aurally all along, featured digital poet David (Jhave) Johnston’s project *SloMoVo* (Johnston, *SloMoVo*). The window’s sound had been nevertheless interrupted meanwhile (while the image itself seemed to have jammed up refreshing indefinitely) by the increasing number of apps I was running and/or bandwidth-related issues. And then all of a sudden, at minute 41:03, it started playing again.

Mystory vs Remix-and/as-Network-Walks

Yet before detailing what happened at that specific moment and the implications of that happening, I want to briefly discuss a couple of aspects relevant to the poetics briefly suggested above and generally characteristic of #GraphPoem events. These aspects will help us place the latter in current theoretical and practical aspects relevant to intermediality, performance studies, and remix studies (RS).

First, #GraphPoem seems to be telling a number of ongoing “live” participatory stories that are parallel to each other, converge, alternate, and/or clash recurrently. JupyterHub for instance, and Jupyter notebooks in general, are ideal forms and media for presenting and running code as story, moving from one episode (cell of code) to the next (more such cells and coding blocks). It is indeed a mode of telling and performing a story at the same time, as the code outputs itself a manyfold narrative: that of its literal outputs as well as the one of the latter’s impact on other actors, platforms, or sections of the performance as a whole.

The above is part of what both ties #GraphPoem in with, and differentiates it from, mystory. Mystory is Gregory Ulmer's term for a digital ("non-linear, multimedia") composition genre that goes beyond traditional portraiture by exploiting and exposing the digital culture-relevant problematics and manifoldness of *self* as performed, explored, and/or disintegrated through "cultural lenses" (Michalik Gratch "Experiments in Performance, Identity, and Digital Space" 55-56 et infra). Most relevantly for our discussion, mystory curates, mixes, and re-mixes digital artifacts that can amount to new or surprising if ricocheted insight about the mystorian, mainly through unexpected "through-lines" crossing the various discourses involved by the multimedia mashup and the patterns and themes emerging from the latter (cf. *ibid.*).

While for #GraphPoem the *through-lines* are represented by the edges drawn within the expanding network graph and consistently shedding new light on the involved data and/as community, they can be seen as telling a mystory that is an "autocommunication" (Ulmer qtd. in Michalik Gratch, *ibid.* 56) yet not so much one of one's self as... one of... ourselves. An *ourstory* therefore that is based on the networked data poem and fed into it at the same time. But the difference does not reside in the fact that the actors or subjects—algorithmic subjects in Johanna Drucker's terms (Drucker "Writing like a Machine or Becoming an Algorithmic Subject")—are multiple rather than singular. It is rather a case of going beyond that alternative and enacting/experiencing events and contexts in which the distinction becomes impossible. Distinction and distance altogether. For in mystory, "performances are her 'me,' 'not me,' and 'not not me,' all at once" (Michalik Gratch op. cit. 61), which, besides the culture-relevant ontological diffuseness, still presupposes a distinguishable "me." That is hardly the case with performances such as #GraphPoem in which data-commoning not only performs community but also makes humans, AI, and data operationally overlap while performing them as ontologically imbricated (Tanasescu et al. "A-poetic Technology"). The paradox of the interface being mine and belonging to the others and to no-one at the same time is therefore potentially reaching further than the "not not me" above. Discreteness feeds, by means of measuring mathematical (topological) distances, into amassing and agglutination to the point of—again, performative and therefore ontological—indistinguishability.⁵

Consequently, while the notion is not completely irrelevant, "writing style" is hardly there in #GraphPoem in the sense that it can be definitory of mystory (*ibid.* 84, 85, and particularly 87).⁶ #GraphPoem writing always has a prominent machinic and/or human computer interaction (HCI) form within which the "human" contribution mostly involves coding or running code, contributing data (saving files into shared folders or entering links in code lines), entering comments in coding scripts or phrases in search bars, remixing, or... "simply" clicking (which was in fact also, once in a while, automated, as explained below).

In the context, the way in which the hypersonnet was featured in the event is a #GraphPoem characteristic form of writing that fuses remix and network walks. The performance remixed the code behind the hypersonnet alongside its poetics statements and HCI poems (the topographical poems informed by the guiding dataset's topology), on the one hand, and the various other components, platforms, and sub-performances making up the in-progress graph poem, on the other. This amounted to network walks on at least three main levels: distance-based (centrality) network analyses informing the performance, pathfinding across the graphs representing (specific sections of) the datasets involved (see below), and flaneuring across and within

⁵ While in mystory authors like Cindy Sherman document "photographically *the liminal space* between herself/selves and the cultural tropes she plays" (*ibid.* 61, my emphasis), in our particular instance it is hard if ever possible to tell authors/contributors from such tropes, lenses, or pop culture icons. Profusely present for instance, mainly throughout the 2020 event but also featured in #GraphPoem @ DHSI 2021 was the band MARGENTO, the post-rock cross-artform (non-)icon used, in mystory terms, as a cultural lens. Yet MARGENTO is also listed as the 'author' of both performances mentioned above (and others), the identity remaining nevertheless problematic and rendered even more complicated by descriptions such as: "In simplest terms, MARGENTO is the Romanian poet and translator Chris Tanasescu. At the same time, MARGENTO could be described as a rock band, a multi-media performance troupe, and an international coalition of writers and translators." (Woodside, "Martin Woodside Reviews MARGENTO's *Nomadosophy*," n.p.). Remix and/as network walks is therefore a more suitable paradigm than "autocommunication," as argued below.

⁶ Besides the differences stated here between #GraphPoem and mystory, what the former shares with the examples analyzed for instance by Michalik Gratch is feminism. A mathematical feminism in particular of the type advanced by poet Alice Fulton as far back as 1996 (collected in 2001) when speaking of a fractal poetry and complex theory-based poetics that can "discredit" (and disrupt?) the [masculinist high-modernist] "pandemic power of myth" (Fulton "Fractal Amplifications" 117). #GraphPoem inherits that lineage (with obviously a stronger emphasis on poems and poetry corpora as [complex] networks) in combination with—as already hinted in the above-described hypersonnet compositional method—feminist affect and "affect dissonance." (Karen Kayfer-Boyd, "Immersive Feminist Remix").

networked data (including the above-mentioned scripts, platforms, and [un]correlated windows). The latter in particular is relevant to the performance of the hypersonnet that is remixed—i.e., rewritten—as a walk through its various (plat)forms and mediating processes (including browsing the *resulting* poem document from bottom to top) as well as some of other data and apps running, being opened or quit, or cl(r)ashing in the process.

The accidental (or serendipitous) restarting of Jhave’s interrupted “performance” was itself incorporated on the fly into the ongoing walks in a way illustrative of the above-described underlying poetics. The navigation of a magnified graph representing a “collage-voyage” across a poetry corpus (MARGENTO, “Voyage-collage informatique à travers un corpus de poésie francophone”) continued now with Jhave’s literally moving image hovering over it, and then getting behind it and seeming to do the scrolling up and down the graph image himself. These visuals and their suddenly reemerging “soundtrack” (Jhave’s *SloMoVo*) thus amounted to a perhaps surprising enactment of an evolving poetics of network walks (MARGENTO #GraphPoem @ DHSI 2021, 41:03-07 and 41:31-47) (Video 1).⁷

[Video 1. Jhave (David Johnston) performing SloMoVo and navigating #GraphPoem at the same time.]

Stigmergetic HCI

The sudden comeback of the temporarily interrupted *SloMoVo* video and the way it was spontaneously worked into the performance speaks to a number of potentially relevant performance and media studies-relevant aspects. Liveness in recent and/or relevant contributions goes beyond the “physically”-live-vs-recorded (or mediated) binary and is seen as a mode of presence and presentation that can involve either or both in ways that challenge the very distinctions. Liveness and performance cannot be seen as distinct from documentation or re-enactment/re-performance anymore (Widrich *Performative Monuments*; Widrich “Is the ‘Re’ in Re-enactment the ‘Re’ in Re-performance?”) and it is therefore always informed by technologies, notably digital ones. What makes it different then from the non-live, and even more so than the feel of the *here and now*—in its turn mediated or translatable, as we have seen, into computational *now(/)here[s]*—is the definitory element of danger (cf. Dixon “Liveness” 131). The unpredictable, the fact that things can go not really according to plan, if not factually... haywire, that is what makes liveness live.⁸

At the same time, for authors in intermediality and the philosophy of media such as the already cited Larrue and Vitali-Rosati, performativity is all about mediation and, thus, about the freedom that can be enacted and experienced in the moment as transgressing the pre-established. “Performativity is the element of each action that eludes determination. It is what happens in the instant of action that could not have been foreseen” (Larrue and Vitali-Rosati op. cit. 49). Significantly relevant to our discussion is the physics/biology-based model advanced by the two authors (and based on Ollivier Dyens’s concept) for their hallmark concept, *mediating conjunctures*, namely “stigmergy” (ibid. 53). Stigmergy is a form of self-organization in which actions or events in a certain environment trigger the completion of other actions carried out by the same or different agents. A best example is also provided, schooling fish, the relevance of which is visible in the fact that “[t]he school’s shape is the outcome of all of the fish’s movement but, at the same time, it is also the cause...” (ibidem).

The #GraphPoem environment is exactly that, a stigmergetic system of mediating conjunctures whose evolution and dynamics are determined by the agents it contains and determines. The hypersonnet *accident*⁹ described above, alongside the way in which it was translated and integrated into the performance, is a suitable illustration of the concept—and of performativity as (the) freedom (of mediation). And indeed so while also speaking quite literally to the already referenced notion of liveness as danger. A third dimension still has to be

⁷ The way he seemingly “keeps an eye” on the graph also speaks to the culture of control informing the digital (see Tanasescu and Tanasescu “#GraphPoem : Holisme analytique-cr atif” and also note 12 below).

⁸ While we used a combination of Zoom & Facebook for our version of “live,” other technical livestreaming solutions could have involved, for instance, Twitch. The latter’s main focus on live gaming was, on the other hand, not necessarily compatible with our objectives, and what was at the same time essential for our approach was the possibility to combine and make contiguously interoperable a significant number of platforms (some of which work as social media [as well]), including JupyterHub, Twitter, Facebook, SoundCloud, GitHub, YouTube, etc.

⁹ The quotes allude to the fact that such incidents were at times, as already mentioned, perceived as serendipitous and/or to a certain extent expected or planned in advance.

added though, HCI, and namely one in which instead of speaking of human-computer interaction, a more appropriate concept would be that of HC intra-action.¹⁰

A telling illustration of that was offered by another *accident* coming up during the event. While for most of the time the mouse was manually hovered in a consistently patterned movement¹¹ alternated with clicks on various windows and apps, I have included an automation experiment in that section of the event as well. A script using the library PyAutoGUI (for controlling or programming mouse movements) was scheduled to kick in a couple of times during the event, take over from wherever the mouse was at the moment, have it move in a pattern similar to the above-mentioned manual one, and then click on the screen wherever it happened to end up. Far from a consistent MO, these quick interventions were devised as rather tentative and prospective implementations to be further pursued at a larger scale and more consistently in the future. One of such experiments, taking place while visiting the SoundCloud page of Christopher Funkhouser's "electronic poetry / post-punk improvisation / digital recording project" Most Serene Congress (Most Serene Congress n.p.), accidentally resulted in clicking on a recording also available on the same webpage yet involving another project: a poetry reading followed by an interview on radio with Steve Rushton and his band Ovid with Reverb (MARGENTO #GraphPoem 1:29:11).

While playing the latter had not been part of "the plan," it involved nevertheless contributors and mediations pertaining to the overall #GraphPoem stigmergy, which triggered in its turn an on-the-fly excursus into, and integration of, a number of other related *mediating conjunctures*. Among the latter, the pdf file of the book *Various Wanted* (MARGENTO, Rushton, and Murat, *Various Wanted*) and the topic-modeling-based computational poetry translations/transcreations involved in the latter.

There is, as already alluded, a complex HCI dimension informing such episodes of danger and performativity. And by *complex* I certainly mean the already mentioned ontological imbrication of humans and computers, but also (and in certain respects consequently) the multilayered serial nature of HC intra-action. In the example above for instance, the machine automatically clicked on the "wrong" link and did that according to an algorithm written by a human based on another machinic/algorithmic conglomerate (a coding library) assembled by other humans... This *accident* attracted a number of human unplanned performative actions (e.g., browsing a related book pdf) in their turn informed and shaped by, and/or dependent on, further machinic (and human) explicit or implicit agents (the code involved in writing that particular book, the code runtime in other windows as well as the beat of the music played at the moment, both of them pacing the performance and its characteristic flaneuring, and so on).

I am therefore revisiting the present-day focus on human and non-human shared involvement and collaboration in performance (cf. for instance Schweitzer "The American Girl Comes to Canada" 142) rereading the phrase "human and non-human" per se not so much as an enumeration but as a non-identifying co-incidence, or indeed, conjuncture. A statement referring to being, or rather operating (performing as), both human and non-human. One of the main functions of performance, or at least of a #GraphPoem performance, is therefore to explore and/or make apparent *how* the human and non-human are intertwined (cf. Larrue and Vitali-Rosati who want to "understand" that intertwining, op. cit. 123), imbricated, intra-active). How a human-computer (HC) ensemble or environment acts as an object in Fiona Candlin and Raiford Guins's acceptance, that is, a "sprawling category" (Candlin and Guins *The Object Reader* 2) straddling the human-non-human divide.

Towards the end of the performance under discussion, a *sprawling* HC object emerges (poetics statement 1:55:55, Jupyter Notebook a bit earlier on) that can serve as a really suitable case in point here. *Cannes. A Bilingual Corpus Journey in Vector Prosody* is another transmedia project developed specially for DHSI 2021 and consisting of a bilingual (English and French) poetry database, a poetics statement (a Pages file for the event, README.md on GitHub), a Python script (Jupyter Notebook and .py respectively), and a poem outputted by the script in the very last moments of the performance (MARGENTO, *Cannes. A Bilingual Corpus Journey in Vector Prosody*). While the algorithm solves another pathfinding problem—finding the route alternating between English and French without hitting the same poem-node twice and proceeding in the

¹⁰ Karen Baden's agential realism-relevant concept according to which things emerge as components of phenomena and not the other way round. (cf. Larrue and Vitali-Rosati *Media Do Not Exist* 62).

¹¹ The movement—and consequently the mouse as used in that specific performance—was compared to a conductor's baton for digital space-based concerts. "A recording of a live event, a multi-disciplinary mixtape of poetry, music, and digital humanities orchestrated with a cursor's selection rather than conductor's baton and collaging together an international online rock and roll symphony." (Rushton "#GraphPoem MARGENTO screening blurp").

(decreasing) order of edge weights—the project as a whole reaches much deeper into the above-mentioned walk poetics. Its sprawling nature unveils the above-mentioned human-non-human *how* of the database and code, that is, working with *page poems* located in digital environments and automatically analyzing them, repurposing word embedding alignment scripts for multilingual poetry sampling and generation, etc.

At the same time, it resonates with the performance's main recurrent themes and motifs, such as topography and topology as mutually shaping each other in digital space, journeys across geographic distances and databases at once, vector prosody, and so forth. In doing so, it engages in a remarkable kind of remix: the performance itself is remixed within the performance, as computational method but also as documented event. One of the main tenets of RS-based “configurable culture,” modularity and the fact that “each work may become an element in another work” (Rosa et al. “The More Things Change” 36-37) becomes here another potentially representative instance of performative intra-action: the very ongoing performance is itself recycled as part of its own development (which also involves sampling previous editions of the event) (Video 2).

This (re)mix of documentation, (uroboric) reenactment, and improvisation (MARGENTO #GraphPoem 2:01:02 through to the end of the recording) operates as an “evocative object” and constellation of “things to think with” (Sherry Turkle qtd. in Muller and Seck Langill “Introduction” 2).¹² The self-recycling and sampling performance is thus itself performed as computational poetry bi/multilingual pathfinding. And while such dialectics may seem to abstractly involve re- or trans-performing the identical into otherness, it also echoes the specific issues of local community, memory, and sustainability as evoked in some of the videos *accidentally* played as part of this section of the performance. The latter had come up in a “Margento” YouTube search that produced, besides videos of the already mentioned post-rock cross-artform band, testimonies from members of the local community, traditional music, and footages of events and sights from the township of Margento, Colombia (1:57:11 to 2:00:11). The clashing topologies of the networked poem and digital space platforms thus once again coincidentally foregrounded communal topographies (and their various cultural ecologies) within the stigmery of the performance.

[Video 2. Remixing the previous and the in-progress editions of #GraphPoem as part of the latter.]

In Guise of Conclusion

As an ongoing project with episodes dating back to 2019 at DHSI and further back in time in other contexts (e.g., MARGENTO *Margento @ E-Poetry London* in 2013; see also, most recently, MARGENTO *Two Walls & a Mirror*) plus an upcoming new installment at DHSI 2022, #GraphPoem is a protean multifaceted initiative with a definitory performative dimension that involves quite a number of implicit or explicit trans/post-disciplinary and cross-artform investments. The underpinning academic research has fused NLP, complex network analysis, and literary studies for well over a decade now, while the analytical-creative side of things has been instrumental in expanding corpora automatically and editing computationally assembled anthologies (Sondheim et al. “Our Shared World of Language”) or co-authoring intermedial poetry collections (Chris Tanasescu “Nouveau livre Chaire Altissia”).

As the event grows more and more popular—over 600 registered participants in 2021 and thousands of online viewers (over 12,000 in 2020)—the involved technical infrastructure will have to be upgraded in ways that will take the poetic, performative, and community-relevant approaches to the next level. Any conclusion can therefore only be tentative, temporary, and/or partial, if not completely absorbable in its turn into the unfolding performance(s).

Such provisional closing remarks focusing mainly on the 2021 event would highlight the fact that #GraphPoem fuses mathematical pathfinding with digital space flaneuring in ways that bring to the fore a poetics of network walks and intermedial topography-topology, human-computer, and data-commoning/social-media intra-action. #GraphPoem thus proves once again (if in ever new ways) to be an ongoing remix—involving coding scripts, collectively assembled data, automation, cross-artform DJ-ing/improvisation, and pseudo-narrative

¹² An aspect of this way of thinking is the relevance of showing “everything” (including the code and all things “under the hood”) to the culture of control. There is a potentially surprising tie-in in that respect between DH (see most recently Hawkins *Access and Control in Digital Humanities*) and poetry (cf. Sumner *Lyric Eye. The Poetics of Twentieth Century Surveillance*) to be developed on in a future publication.

self-sampling loops—that navigates the dangers, and, as briefly exemplified above, accidents, of liveness with a holistic and consistent stigmergetic approach. In the process, performance emerges as the *now(//)here* of community, data, and artificial intelligence networking.

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