



Poetry as a Tool For Outreach in Quaternary Science: Examples From the 20th INQUA Congress

ENGAGEMENT PAPER

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ABSTRACT

In this paper I present a series of poems written as Poet-in-Residence at the 20th International Union for Quaternary Research (INQUA) Congress in 2019 and evaluate my experience of their composition and the effectiveness of their dissemination via social media from my perspective as a poet and geoscientist. The poems, which mainly focus on research papers presented at the conference in sessions on climate change and cultural legacies, ice-sheet dynamics, and fluvial landscape evolution, illustrate how many themes within Quaternary science, and their relevance to the history, contemporary identity, and future sustainability of human society, can inspire poetic responses. Although the social media reach was relatively modest, engagement with the poetry by other scientists and poets indicated that there is interest within the Quaternary science community for exploring poetry as a method of communicating research. Consequently, recommendations for similar activities in future conferences include organising more participatory and performative activities during the conference programme such as workshops or readings to develop this interest, and varying the methods of dissemination using different social media platforms.

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INTRODUCTION

The value of art-science collaborations is increasingly being recognised across a wide range of research fields (Macklin and Macklin 2019; Tooth et al. 2019; de Mora et al. 2020; Reinsborough 2020). For artists (encompassing a broad range of creative practitioners, from visual artists, to musicians to creative writers), such collaborations can provide access to new technologies, data and concepts (e.g. the Anthropocene debate) which can inspire new interpretation and creativity. For scientists, increasingly expected to ensure effective outreach and impact of research, this can offer opportunities for outreach and communication of new findings to non-academic audiences and new ways of approaching scientific problems (Tooth et al. 2016; 2019). The potential of poetry, in particular, for exploring scientific themes and for effective science communication has recently been explored (Osbourn 2006; Griffiths et al. 2017; Illingworth 2019a; Illingworth 2019b; Illingworth 2020; Nesci and Valentini 2020). Composing and/or performing a poem, through the use of imagery, simile and metaphor, can offer alternative ways of inspiring interest in scientific ideas and of communicating them to new audiences, possibly helping, in scientist and poet Sam Illingworth's opinion, to 'enhance the long-term retention of scientific content' (Roberts-Artal, 2018). This is perhaps particularly true in the geosciences owing to the historical and contemporary popularity of poetry, or poetic prose, related to landscapes, such as the work of John Tyndall (Jackson et al., 2020), Constance Naden (Boswell, 2014), Rachel Carson (Aalto, 2020), Seamus Heaney (Everett and Gearey, 2019), Norman Nicholson (e.g. 'Beck'; Whalley 2014) or Simon Armitage (e.g. *Stanza Stones*; Habermann and Keller 2016). The inclusion of poetry workshops at international scientific conferences, whether as readings, 'slams' or residencies, has become more common in recent years (Januchowski-Hartley et al. 2018). For example at the European Geosciences Union General Assembly in 2018, Sam Illingworth worked alongside Cartoonist-in-Residence Matthew Partridge (Roberts-Artal, 2018). In subsequent meetings these activities have evolved and have become popular programme fixtures (e.g. see Andy Emery's creative writing at the EGU General Assembly 2021 (EGU 2021)).

More work is needed, however, to critically reflect on the effectiveness of various approaches. Does Quaternary science lend itself well to communication through poetry? What are the best ways to disseminate these poems to various audiences? In this paper I (i) present poems written during the 20th International Union for Quaternary Research (INQUA) Congress held in Dublin, Republic of Ireland in July 2019 during which I acted as Poet-in-Residence; (ii) reflect on the poems' reach and on the experience for me as a published

poet and geoscientist; and (iii) suggest some tentative recommendations for similar activities in future.

THE POEMS

Inspired by Poet-in-Residence activities at other conferences, I approached the organising committee of INQUA 2019 to ask whether I could act as Poet-in-Residence, setting out my experience as a published poet and as a geoscientist. They agreed, and were very open and flexible regarding potential activities, approaches, and dissemination methods. They did not set requirements but did offer to assist with any aspect of the activities, particularly regarding using official conference communication channels and dissemination methods to raise awareness of the activities and outputs. The approach taken to the residency was to review the online conference programme beforehand, identifying sessions and papers that I thought had the potential to inspire poems, while also trying to identify sessions on unfamiliar themes during which I could engage with new material and help communicate it beyond the conference.

The intended audience was broad – I expected to reach other geoscientists at the conference, but I also intended to reach scientists and academics in other fields as well as non-academic audiences with interests in science and poetry, thus achieving both 'inreach' and 'outreach' (Côté and Darling, 2018). I chose to use Twitter as the main method of dissemination because (1) it was the main social media dissemination channel used by the conference organisers, and so would reach many delegates (2) the large number of Twitter users in the science communication and literary world that already existed on Twitter could offer ready networks for dissemination and (3) Twitter was the main type of social media that I used to share my poetry at the time.

Four short poems were written during the conference and published using my Twitter account (@HywelGriffiths) using the hashtags #INQUADUB19 (the hashtag used by the official conference Twitter account), #inquapoetry (a new hashtag that would enable users to find all poems written as part of the project), and #scicomm (to link into global science communication networks) (see [Table 1](#)). Poems were presented as images in Twitter 'threads' with accompanying context, to enable the poems to be more easily formatted as I wanted them to be, to be prominent relative to other tweets using the hashtags, and to maximise their reach (Côté and Darling, 2018). Although some lines and fragments of potential poems, inspired by other conference papers and posters at the conference were scribbled in my notebook, no other complete poems were written during the conference due to time constraints.

POEM	IMPRESSIONS	TOTAL ENGAGEMENTS	LIKES	RETWEETS AND QUOTE TWEETS	WEB LINK
<i>Introduction</i>	3507	200	20	7	https://twitter.com/HywelGriffiths/status/1154340372404944896
<i>The Patch</i>	6240	162	33	7	https://twitter.com/HywelGriffiths/status/1154517217633013766
<i>The West Antarctic Ice Sheet</i>	2037	60	5	5	https://twitter.com/HywelGriffiths/status/1154773065710149635
<i>Arcas, Aguas, Atlas</i>	3643	83	26	4	https://twitter.com/HywelGriffiths/status/1155108407038369792

Table 1 Summary statistics on social media reach as of 13th February, 2021. Impressions are defined as the number of times people viewed the tweet and engagements as the number of times people interacted with the tweet (including likes, retweets, replies). Poems were presented as Twitter ‘threads’ providing context to the science – summary engagement statistics represent the sum for all tweets in a ‘thread’.



Figure 1 Exterior of Convention Centre Dublin, from across the River Liffey. Photo: Hywel Griffiths.

The first, introductory poem was inspired before arriving at the conference. Walking towards the conference venue it struck me that the distinctive cylindrical structure of the Convention Centre Dublin (**Figure 1**) resembled a sediment core, propped against the bank of the River Liffey. Within, there were floors like layers of sediment, scientists like grains of sand, or pollen, or diatoms, all with a story to tell:

A core leans
against a river bank,
and inside
a stratigraphy of ideas,
icy, water-lain and wind-blown,
waiting to tell their stories.

The second poem – *The Patch* – was inspired by talks in the ‘Losing Legacy – Climate change and cultural

heritage' session, and in particular Lee's (2019) talk on ice-patch archaeo-ecology in Greater Yellowstone. Ice patches are relatively small, stable areas of snow and ice in which archaeological material can be preserved for thousands of years. In Yellowstone, archaeology related to indigenous peoples can be preserved in these patches and is important for living cultures today (Lee and Puseman 2017). Areas which may today be perceived as 'wilderness' often preserve some of the best evidence of past human activity. During this talk I was struck by the interconnections between society, history, identity and geoscience, and as a result, found that the poem came easily:

The patch

From patch to shrinking patch
of icy preservation,
in Yellowstone, the lonely
slopes
are a wilderness alive
with cords and baskets,
tools and identity,
arrow shafts with marks of ownership,

singing,
over the sound of melting snow

in Salish, Kootenai and Blackfeet,

'this is our patch.'

The third poem – The West Antarctic Ice Sheet – responded to the first plenary lecture of the Congress – 'New frontiers in ice core science' (Wolff 2019). The lecture asked 'What is new and what is next?' and discussed the characteristics of the West Antarctic Ice Sheet during the last interglacial period. What struck me was the contrast between the resolution of analysis – the minutiae of the chemical composition of the ice core – and the scale of the continental changes that are linked to them, including growth and decay of ice sheets and the climate and landscape response:

The West Antarctic Ice Sheet

What is new, and what is next?

We ask as we inch along its ice,

as we inch towards
the presence of its absence,
the absence of its mass
in elements of water,

towards a pressure released,

and as we read
the new and the next
in each inch of ice,
we search for the rising seas,

the new and the next.

The final poem was inspired by Mather et al.'s (2019) talk on bedrock landsliding and fluvial landscape evolution in drylands, using examples from river systems in Spain, Morocco and South America. Consequences of the landslides included rerouting river drainage and creating lakes and outburst floods. In contrast to the free verse form of the preceding poems, this poem is a short strict-meter form of Welsh poetry called an 'englyn'.

Arcas, Aguas, Atlas

Slopes slide and valleys widen. On a fan
lakes form, catchments open;
flashes of evolution
rearrange where rivers run.

REFLECTIONS ON THE POEMS' REACH AND PERSONAL EXPERIENCE

Twitter summary statistics (*Table 1*) indicate a modest social media reach for these tweets, with a maximum of 33 likes and seven retweets. A maximum of 6240 'impressions' and 200 'engagements' were achieved. This reach is broadly in line with my own previous posts on Twitter, whether related to non-scientific poetry, fieldwork or general research, and scientific poetry, as well as material by other poets or creative writers inspired by scientific research, some as part of large conferences (*Table 2*). The majority of likes and retweets came from Quaternary scientists, other geoscientists and poets, ('inreach' – Côté and Darling, 2018) indicating an interest within, and outside, the Quaternary science community in this kind of activity, and a potential for extending the network of individuals who engage with Quaternary science. Twitter is a platform through which academics can 'push' their research (rather than expecting it to be 'pulled' by an audience) and there is evidence that paper citations are positively correlated with tweets about the paper (Klar et al., 2020). Science communicators can also often build bridges (Jünger and Fähnrich, 2020) with wider publics through their use of Twitter. There are, however, a number of important points to consider when choosing to use Twitter only. There can be a large sharing of communication between peers rather than true 'outreach' (Jünger and Fähnrich, 2020) and discussion can tend to be with other scientists (Côté and Darling, 2018). Above a threshold of 1000 followers, however, discussions draw broader and

TOPIC	AUTHOR AND TWITTER HANDLE	IMPRESSIONS	TOTAL ENGAGEMENTS	LIKES	RETWEETS AND QUOTE TWEETS	WEB LINK
Poem to the new year, 2021	Hywel Griffiths (@HywelGriffiths)	2401	242	20	5	https://twitter.com/HywelGriffiths/status/1344953678869000193?s=20
Research project fieldwork post	Hywel Griffiths (@HywelGriffiths)	1536	144	18	1	https://twitter.com/HywelGriffiths/status/1434276284859830281?s=20
Science poem on interstellar objects	Hywel Griffiths (@HywelGriffiths)	3288	61	11	10	https://twitter.com/HywelGriffiths/status/1100704767125401601?s=20
Increases in light pollution, linking to blog post.	Sam Illingworth @samillingworth	N/A	N/A	21	14	https://twitter.com/samillingworth/status/1438788831084482563?s=20
Sea levels and volcanic activity	Sam Illingworth @samillingworth	N/A	N/A	63	31	https://twitter.com/samillingworth/status/1423553525922029570?s=20
Kaleidoscopic ice	Andy Emery @AndyDoggerBank	N/A	N/A	12	4	https://twitter.com/AndyDoggerBank/status/1388100844889980928?s=20
Summary of artist-in-residence activity at EGU 2021	EGU @EuroGeosciences	N/A	N/A	24	8	https://twitter.com/EuroGeosciences/status/1389852615010394112?s=20

Table 2 Summary statistics of other Twitter poetry and science posts (October 17, 2021).

more diverse audiences (Côté and Darling, 2018). Using Twitter only can also exclude demographics who are less likely to use the platform. For example, UK Twitter users are younger, wealthier and better educated than other internet users and the general population, and are part of ‘elites’ in both the UK and US (Blank, 2017). This suggests that using Twitter only may exclude older, less affluent, and less well-educated people who do not have access to the platform due to the digital divide. While using other forms of social media (e.g. Facebook and Instagram) may reach a different audience more effectively (e.g. due to the more targeted use of images such as figures related to the scientific research, sound and video), it is unlikely to overcome all of the challenges of this divide.

While the use of images in my Twitter activity was an attempt to maximise the reach of the posts, this could have been further enhanced by making the posts, and the activities in general, more participatory and performative, and by using a greater range of hashtags. Bex et al. (2019) showed how it was difficult to generate discussion based on ‘news’ and ‘research’ posts, but that ‘opportunity posts’ encouraging participation and practice were more effective. In previous conferences (e.g. EGU) such activities have included poetry slams, to encourage other scientists, and a greater diversity of voices (and languages), to share their research through poetry. Indeed, Illingworth (2020) emphasised the importance of encouraging a diversity of languages other than English to communicate climate change

in an inclusive and effective way. A greater diversity of language, considering the international nature of INQUA could also have increased the effectiveness of the activity. The poems were written in English, and on reflection, poems written in Welsh (my first language) could have more effectively reached another audience. In addition, invitations could have been sent to INQUA presenters to submit their research to be shared via poetry, or sent to the audience, asking them to submit requests for poems on specific themes. The importance of practice (Januchowski-Hartley et al., 2018; Illingworth 2019b; Skinner, 2020) and performance, whether live (e.g. Nesci and Valenti, 2020), or recorded (e.g. podcasts; Illingworth 2021) for effective science communication has been emphasised and in the case of my INQUA poetry live performances, or video recordings shared on Twitter would have been the most effective way of ensuring this.

Côté and Darling, (2018) noted that successful outreach on Twitter required sustained engagement and consistent effort to develop and engage an audience. Discussions regarding the INQUA Poet-in-Residence began in January 2019, six months prior to the conference, but more could have been done in the run-up to the conference to raise awareness of the initiative, both on my personal Twitter account and through other channels (e.g. through emails to delegates etc). Prior arrangement with key organisations involved in science communication and literature online would also have expanded the potential reach of the poems

to interested audiences. However, Poet-in-Residence activities shouldn't be viewed in a short-term context only, but should consider subsequent publication, for example in poetry collections, as well as future readings which can extend the time over which poetry can draw wider audiences into Quaternary science.

From a personal perspective as a poet and geoscientist, engaging with other scientists' research in this way was a rich, rewarding experience. In common with previous personal experience of writing or studying poetry inspired by themes in geoscience such as flooding (Griffiths, Salisbury and Tooth 2017; Griffiths 2018) or volcanoes (Soldati and Illingworth 2020) and geomorphology and geology generally (Whalley 2021) the process of composition of these poems, and the final poems themselves, benefitted from the relevance of the papers' subject matter to the histories, identities and futures of human society. The poems also benefitted from the strong association with iconic places and landscapes (e.g. Yellowstone, Antarctica), again something which has led to successful poetic engagement with geoscientific themes in the past (e.g. Hallet and Caseldine 2011; Whalley 2014). The poems, particularly 'The Patch' also speak to the potential of landscapes associated with Quaternary science to be lenses through which other, broader themes can be explored (e.g. see Everett and Gearey 2019, on the significance of peat bogs in Seamus Heaney's poetry). Through these combined ways in which Quaternary science, poetry, and the poets and their audience interconnect, poetry can help to personalise the implications of climate change for individuals and communities (Illingworth 2020) and as such, the case for such activities in academic conferences, particularly in the geosciences, is strong.

POETRY AT FUTURE CONFERENCES

Collaborative projects such as these between scientists and poets, or by scientists who also engage in creative artistic activities, have shown that there is great potential for science to inspire new poetry and for poetry to engage new audiences with science (Januchowski-Hartley et al., 2018). At conferences, artist-in-residence activities have most often comprised writers (sometimes in collaboration with artists) composing poetry (mostly in English) inspired by papers. These have sometimes been chosen by the writer and sometimes suggested by the researchers, and have often happened alongside practice and performance (e.g. poetry workshops and slams). The often enigmatic nature of Quaternary science, drawing together scholars and practitioners from a wide variety of geosciences (e.g. geomorphology, geochronology, archaeology), frequently speaking to questions about

human histories, identities and futures, contributes to this great potential (Illingworth, 2020).

The poetry inspired by, and composed during, INQUA 2019 and the experiences described above suggest that poetic activities should be considered as part of future INQUA meetings and other geoscience conferences. However, the following are recommendations that should be considered to increase the effectiveness of such activities.

1. Poet-in-Residence activities should be included in organising committee discussions at an early stage so that a comprehensive plan of action can be devised and sufficient time spent on a sustained effort to raise awareness and ensure public engagement before the conference.
2. Poet-in-residence activities should be inclusive, including encouraging conference delegates to experiment with poetry as a form of research dissemination through workshops to develop practice and performative readings and slams in a variety of languages. Public audiences should be encouraged to attend, either in person, or virtually.
3. A variety of web-based platforms should be used to disseminate poems or other outputs, including Twitter, Instagram and Facebook, blog posts and podcasts. Longer-term dissemination in published collections should also be encouraged.

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COMPETING INTERESTS

The authors have no competing interests to declare.

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