



WHEN MAGIC IS REPLACED WITH SCIENCE: SCIENCE POEMS OF DAVID MORLEY¹

BİLİM SİHİRİN YERİNİ ALINCA: DAVID MORLEY'İN BİLİM ŞİİRLERİ

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Abstract

In his seminal work, *The Golden Bough* (1890), Scottish anthropologist James Frazer argues that the phases of belief systems in different parts of the world can be divided into three. For him, the Age of Magic, is replaced by the Age of Religion which is then replaced by the Age of Science. Recent interests in contemporary British poetry confirm Frazer's prediction. Due to postmodernism, which sidelined mainstream attitudes in poetry, and the rising influence of science and technology on the society, science poetry came into being in the latter half of the twentieth century Britain with writers like Hugh MacDiarmid, Edwin Morgan, Robert Crawford, W. N. Herbert, Allen Fisher, Peter Redgrove, Lavinia Greenlaw and Pauline Stainer. Anglo-Romani poet David Morley is one of the pioneering figures of British science poetry. Morley's science poems aim to take science out of the laboratory into the public arena. Trained as a biologist, Morley in his poems underlines how interest in magic has been replaced by science in today's technological world and emphasises science's inseparability from contemporary experience. In addition to this, Morley employs the scientific method in writing a number of his poems, such as his field-trip poems, which rely on scientific observation and the acquisition of data. Thus, Morley's poems can be read as scientific experiments in terms of their methodology and the analogies they raise. For him, technoscientific discourse, progressively invading mankind's life, is not likely to disappear from the poetic arena, hence its presence is continuously acknowledged in his poems. In this light, this study will analyse British science poetry as represented in David Morley's poems, which besides underlining the replacement of magic by science, also shows the poet-scientist in action, while collecting data and creating a poem based upon his findings.

Öz

Ufuk açıcı *The Golden Bough* (1890) ("Altın Dal") adlı eserinde, İskoç antropolojist James Frazer, dünyanın farklı yerlerindeki inanç sistemlerinin üç aşamaya ayrılabilirliğini iddia eder. Frazer'a göre, Sihir Çağı, Din Çağı'yla, bu ise Bilim Çağı'yla yer değiştirmiştir. Çağdaş İngiliz şiirindeki yeni eğilimler Frazer'ın öngörüsünü destekler. David Morley İngiliz bilim şiirinin öncü isimlerinden biridir. Ana akım yaklaşımları şiirde kenara iten postmodernizm ile bilim ve teknolojinin toplum üzerinde giderek artan etkileri sonucu bilim şiiri, yirminci yüzyılın ikinci yarısında İngiltere'de Hugh MacDiarmid, Edwin Morgan, Robert Crawford, W. N. Herbert, Allen Fisher, Peter Redgrove, Lavinia Greenlaw ve Pauline Stainer gibi yazarlarla ortaya çıkmıştır. Anglo-Roman şair David Morley, İngiliz bilim şiirinin öncülerindedir. Morley'nin bilim şiirleri, bilimi laboratuvarından dışarı çıkarıp halka açmayı amaçlar. Bir biyolog olarak eğitim görmüş olan, Morley şiirlerinde büyüye karşı var olmuş olan ilginin günümüzün teknolojik dünyasında nasıl da bilimle yer değiştirdiğinin altını çizer ve bilimin güncel deneyimden ayrılmazlığını vurgular. Buna ek olarak, Morley, bilimsel gözlem ve veri toplamaya dayalı birçok şiirinin yazımında, arazi gezisi şiirleri gibi, bilimsel metodu kullanır. Bu nedenle Morley'nin şiirleri, metodolojileri ve kurdukları analogiler bakımından bilimsel deneyler olarak okunabilir. Morley'e göre, giderek insanların hayatını istila eden teknobilimsel söylem şiirsel alandan büyük ihtimalle kaybolmayacaktır ve işte bu nedenle bu söylemin varlığı şiirlerinde sürekli olarak beyan edilmektedir. Bu bilgiler ışığında, bu çalışmanın amacı İngiliz bilim şiirini, sihrin bilimle yer değiştirmesinin altını çizerken şair-bilim insanını veri toplar ve topladığı bu veriler ışığında şiir yazarken iş başında gösteren David Morley'in şiirlerini analiz etmektir.

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While analysing belief systems of different cultures in *The Golden Bough* (1890), Scottish anthropologist James Frazer arrives at the conclusion that the timeline of belief systems can be divided into three stages: “the movement of the higher thought, so far as we can trace it, has on the whole been from magic through religion to

¹ This article is an abridged version of the third chapter of my unpublished PhD thesis entitled “A Poetics of Contemporary Science Poetry: The Poems of Edwin Morgan, Robert Crawford and David Morley.”

science" (1658-1659). Accordingly, Frazer identifies the first stage as the Age of Magic that is replaced by the Age of Religion which is lastly replaced by the Age of Science. The crowning of the Age of Science has given rise to many technoscientific developments which affected the social as well as the literary structures. Contemporary British science poetry came into being as a result of such a change as well as a postmodern shift in paradigms; to quote Carol Ann Duffy, out of a need to "present it, as it is" (McAllister 72). While there occurred a rising interest in un/nonpoetic discourse, science poetry flourished to represent the technoscientific age with its appropriate idiom. To this end, British poets like Hugh MacDiarmid, Edwin Morgan, Robert Crawford, W. N. Herbert, Allen Fisher, Peter Redgrove, Lavinia Greenlaw and Pauline Stainer employed technoscientific language, allusions and imagery in their poems to represent contemporary experience which cannot be thought without the effects of science and technology in our lives nowadays.

Anglo-Romani poet, David Morley's poetry is reflective of this shift of interest in poetry. Morley's poetry reflects the change of interest from magic and religion to science in society, just like Frazer has claimed. Relying particularly on life sciences, such as botany, zoology and marine biology, Morley's poems reflect how contemporary British science poetry may rely on scientific methodology, hence composing poems which rely on field-trip notes, laboratory experiments, observations, scientific reports and factual data, just as easily as any other poetic subject. Stressing science's inseparability from contemporary urban experience, Morley's poems can be read as scientific reports which give information to the readers about the materials and methods employed and the analogies that they raise. Particularly life sciences constitute Morley's main interest in addition to a keen awareness of recent ecological problems. In this sense, Morley's poems are reflective of Frazer's earlier arguments that contemporary age is an Age of Science. The aim of this article, then, is to analyse British science poetry as represented in David Morley's poems, which besides pointing to the replacement of magic and religion by science, also shows the poet-scientist in action, while collecting data and creating a poem based upon his findings.

Morley's educational background constitutes a significant part of his interdisciplinary interests. Having studied zoology at the University of Bristol (Kuhfield), upon graduation Morley received a scholarship from the Freshwater Biological Association for research on acid rain ("David: Biography"), where he worked until the "closure of his ecology laboratory by Margaret Thatcher in 1988"

(“Environmental”). Describing himself as “*an ecologist and a naturalist*” (Kuhfield), the closure of Morley’s laboratory proved to be “*a catalyst for him to re-focus his work on his other passion – poetry*” naturally (“Environmental”). Arguing that “*poetry could be misunderstood as inaccessible or irrelevant in today’s fast paced society,*” Morley relies on science and technology to make poetry more accessible to audiences (“Environmental”). Particularly his *Scientific Papers*, *Invisible Kings* and *Enchantment* function as a trilogy in which Morley’s interest in science and technology is evident.

Scientific Papers (2002) opens with a quotation from Osip Mandelstam whose contemplations on Darwin lead to Morley’s notion of poetry, which he expresses as follows: “*I have in mind the law of heterogeneity which encourages the artist to seek to unite in one from the greatest number of sounds, concepts of various origins, and even antithetical images*” (*Scientific* 9 italics original). Morley asserts that sciences and humanities are antithetical, which, nevertheless, can be brought together in a harmonious union: “*The concept of this text is that each piece of writing is a scientific paper in itself, a series of findings. The practice of writing science and poetry are, for me, carried out with the same eye and ear, and in the same laboratory of language*” (Morley *Scientific* 85 italics original). Recalling his fellow poet-scientist Miroslav Holub’s ideas that sciences and humanities share the same medium; which is that of language, Morley expresses the central metaphor and the principles that his collection rests upon as follows:

An acceptable scientific paper must be the first disclosure containing sufficient information to enable other people to do three things: assess your observations, repeat your experiments, and evaluate your intellectual processes. Your position has everything to do with a system of reporting that is concise and readily understandable. Each paper must be susceptible to sensory perception and essentially permanent. Without publication science is dead. (Morley *Scientific* 11 italics original)

Similarly, Holub identifies the singular purpose of a scientific paper as “*to make statements that are not an end in themselves, but the matter of verification for future experimentation or for a present or presented theory*” (56-57). Morley’s *Scientific Papers*, hence, embraces interdisciplinarity in an attempt to transcend academic specialisations, while illustrating how the interests of sciences and humanities “*in the universe are widely different, yet in no true sense are they hostile or mutually destructive*” (N. Walker and M. Fulton Walker 275). Moreover, Morley’s *Scientific*

Papers in its present form reflects Holub's ideas about scientific papers which, according to Holub, should be "based on a proven narrative structure of introduction, technical elaboration, and almost instantaneous presentation of the findings where the graphic, numeral, or condensed textual statements sometimes attain the value of a revealing metaphor" (58). Consequently, in his collections Morley retains all these qualities through his poetic representations of scientific experimentation, observation and findings.

Thus, Morley's poems reflect Frazer's idea of magic as the primary feature that helped explain natural phenomena for ancient civilisations in the first place which ultimately is replaced by science. According to Conrad-O'Briain, as both magic and religion are inexplicable phenomena, science "begins where myth ends" (32). In a way, science is rationalised magic, for as soon as "magic or divine power begins to be explained in terms of the manipulation or understanding of natural law and technology, science [...] is at the door [...]. The wizard or supernatural being becomes the scientist, mad, benign, or otherwise" (Conrad-O'Briain 33). Therefore, it can be said that science itself has a magical quality, especially where a scientifically unqualified person is concerned. Analysing Edgar Allan Poe's lengthy prose poem *Eureka* and "Sonnet to Science," Matterson infers that

Poe represents a fairly clichéd poetic theme, in which science is represented as the destructive enemy of the mythopoeic imagination. Science demythologizes our world and leaves it impoverished, leaves nature bereft of our enriching imaginings. Science is the enemy of imagination. [...] [However,] [w]hile science may be represented as a destructive force, it is also our contemporary in a way that the pagan gods of nature are not.
(126)

Thus, rebuffing the alleged hostility between magic and science, Matterson posits that science is "nevertheless a vessel for truth and progress, a 'true daughter' of time" (127). What is proposed then is to avoid archaisms and to capture the realities of one's current age instead. In this respect, faith in science dictates Morley's poems. Juxtaposing magic and religion with science, Morley's poems nonetheless confirm that science has permanently replaced magic and religion. In line with Conrad-O'Briain's notion that "however marvellous [...] machines are, they are not magic," according to Morley "[c]ompared to them magic is inferior and indignus, 'inferior and unworthy'" (30). Noticeable via the titles of his poetry collections, Morley employs the clash between magic and science, and occasionally,

religion and science as a recurring theme in his poems, such as “Second Sight,” “Gypsy Woman’s Death,” “St Lucy’s Day” and “An Ice-Queen.”

To begin with, “Second Sight” portrays the speaker’s memories of her mother, whose interest in a variety of paranormal books reveals her eccentric nature and keen interest in anything occult:

[O]ur neighbours’ greedy sympathy

on seeing the curtains shut all summer,
strangers call by...

Inside, my mother’s book-lust
Spread like weed; Parquat titles:

The World, The Flesh, The Devil,
back-copies of WHICH?

At twelve, I paired *Walpurgis*
with ‘the latest in slow cookers’ (Morley *Releasing* 12 2-10)

Dismissed as toxic, the books that the speaker’s mother reads contrast directly with the vocabulary the speaker employs which demonstrates her scientific knowledge. In addition, through *Walpurgis*, “*a traditional holiday celebrated on April 30 in northern Europe and Scandinavia*,” which is a holiday similar to Halloween, and the pun on “witch” the speaker’s dislike for not only all things supernatural but also for all things spiritual is strengthened (“*Walpurgis*”). Thus, presenting this religious holiday as outdated, the speaker emphasises the outmodedness of the Age of Religion, too. To stress her dislike of the supernatural and the mystical even further, the speaker makes fun of her mother by putting their address down as “*coven*,” meaning a group of witches, due to her mother’s occult activities (Morley *Releasing* “*Second Sight*” 12). The mother, on the other hand, reading Tarot cards, feels empowered when she “*open[s] futures / where she [holds] all the cards*” (Morley *Releasing* “*Second Sight*” 12 19-20). The rest of the poem extends the speaker’s mockery to a feigned interest in her mother’s activities as her successor:

November's flood
brought a flotsam of fresh business.

Curled in a similar grace,
I pretended an inheritance:

served tea like sacrament,
picked warts off the seed-cake.

That first séance was nerveless
cathartic giggles;

we re-tuned our hands like surgeons,
pulled up the dead like floorboards. (Morley *Releasing* "Second Sight" 13 27-36)

Beneath her pretense, science surfaces as the speaker's true interest, while she draws parallels between a séance and a surgical operation. She lists the props that are needed during an operation and the herbs that are necessary to make the séance look like a genuine one, as if it was truly a surgical process. Her lover's "resistance" and unwillingness to join her in the final lines echo the speaker's own disinclination towards her mother's activities (Morley *Releasing* "Second Sight" 13 44). Although it is part of her heritage and culture, the speaker, pointing to the ridiculousness of her mother's activities, disavows the practice of magic and religious superstitions and makes it clear that she will not be following in her mother's footsteps.

On the other hand, "Gypsy Woman's Death" revolves around the superstition concerning a gypsy woman whose curse results in the death of a man who initially had a pact with her: "*The carp of her tongue, the black shoal of gossip. / Her oath caught short by the district nurse's sly whisper*" (Morley *Scientific* "Gypsy Woman's Death" 16 1-2). Positioning the former poem's rational speaker against a woman of ambiguous origins as such, the poem, like the previous one, juxtaposes belief in science with faith in occult. While the husbands of the woman's daughters, fearful of the woman, decide to set fire to her caravan, one of them appears and, realising that the gypsy woman is gone, sets fire to the court order that has sealed the caravan. What happens later fulfills the gypsy woman's oath as the man starts skinning himself: "*His bond is his own, and the white bone. / The spaghetti about his wrist – more tubes and colours than a telephone cable*" (Morley *Scientific* "Gypsy

Woman's Death" 16 12-13). The oath is, thus, fulfilled with the image of a man dissecting himself surgically.

Morley's "St Lucy's Day" refers this time to a religious festivity that is celebrated in northern Europe and Scandinavia on the winter solstice ("St. Lucy's"). Legends have it that St Lucy, whose name means light in Latin (*Lucia*), blinded herself when a pagan nobleman declared that he was haunted by her eyes ("St. Lucy's"). St Lucy's Day celebrates the end of winter and the arrival of Spring on the 13th of December each year ("St. Lucy's"). As is foreseen by Frazer, similar to the replacement of myths and legends (magic) with religion, Morley's poem replaces religion with science. The poem describes contemporary experience on St Lucy's Day:

Snow wakes you. [...]

Fine parallels follow the shuffling cars.

.....

The weather is a television with its aerial down.

An iceman instructs the trees to play dead.

Ponds are trapdoors you drop to death through.

.....

The angels are above you with CCTV.

.....

Christmas is the madman in red and a snowplough.

(*Scientific "St Lucy's Day"* 81 1-2, 6-8, 10, 15)

Likening the sight of snow-fall to a television which has fuzzy image and imagining the frost on the trees to be caused by an iceman, while ponds function as trapdoors through which people can fall through, Morley combines the spiritual with the technological through the images he evokes in the poem. His playful associations continue as he presents a picture of contemporary society in which angels watch over people with close-circuit television and modern-day celebrations of Christmas are associated with getting drunk on duvets. Presenting how rituals and spiritual holidays are dominated by technological life-styles currently, Morley, yet, refrains from passing judgment on anybody.

With its title which recalls a fairy tale, "An Ice Queen" problematises faith and belief in a fairy-tale mirror world. However, this fairy-tale world has a major difference; its rules are regulated by science: "We, you, I – in our mirror she finds an

error / nothing so trite as a crack or cross: its mass / of metal slips with her gravity's lunge" (Morley *Invisible* "An Ice-Queen" 53 1-3). The reflection in the mirror

shifts in us, a craving; we long to serve,
 lounging in the cellar's dark matter, for any mark
 of notice [...]

 [...] she was ice-clear, those near
 the light of her work left off their own work
 to tend to hers, feed her starveling grate. How late
 she recognized their shades, who served, who paid
 (Morley *Invisible* "An Ice-Queen" 53 9-11, 13-16)

Optics is at work here as light and shadow strive to create the duplicated image on the surface of a mirror. The gazer is identified as an ice queen at once to whose service energy rushes to bend light in order to reflect her form. Explaining the physics behind the creation of mirror-imagery, Morley then infers that the gazer and her duplicate are one: "*Those fascinated by her gravity, try / counting back to when you became so: so the same / vanity trips us, traps us in our error. She is that mirror / we grow hard to gaze into. Then melt through*" (Morley *Invisible* "An Ice-Queen" 53 21-24). This, almost magical, experience confirms Morley's idea of science as explicable magic.

For Morley, both science and technology have a magical quality in them. Additionally, they require a firm belief in them, which is similar to the way religion operates. Hence, Morley entertains the idea of technology as modern-day magic and expresses his strong belief in science and technology specifically in his dedicatory poems to his father. In these poems technology is encountered as a neutral agent which bends according to the will of the person using it. "Heirloom," which is the first poem of Morley's "Four Poems to My Father," draws parallels between the speaker's father's profession as a lather and his own occupation as a poet. Resembling his father's handiwork to his own poetic creations, the speaker, who can be possibly identified as Morley himself, remembers how his father "*snicked his wrist of verse. / All I recall is the swarf / where he worked, / plumes of acetylene, / ghost-chatter of lathes...*" (*Releasing* "Heirloom" 8 5-9). As a child the speaker recalls how he was enchanted with these machines. Rather than working on wood or metals, his father was more likely producing poetry in the child's imagination: "*this*

cutting / the metal of speech, / commas like weld-scars; / his life-work with steel: / a rounding" (Morley *Releasing* "Heirloom" 8 10-14 italics original). Parallels between working with wood and metals, and with words are made visible with his father's constant efforts to cut, brush and mould the materials. Likened to the process of working on a poem's form to edit, prune and eventually shape it, his father's handiwork is identified also as the inspiration behind Morley's wish to become a poet.

Likewise, "Errand" recounts the speaker's visit to his father's workplace, and his spellbound reactions to the way machines work:

Earth moved like sugar, boiling
 against the metal of a dumper.
 A machine dropped, dropped its yellow snout,
 nuzzling at joists
 it hammered in.

When I got to my father, I would learn
 the heat of that impact, how you might
 light paper from it two hours on...

The air meanwhile would shiver with fire
 a fineless dust, the shouts of impact

(Morley *Releasing* 10 3-12)

Shimmering air, defined as "*a fineless dust*" in the child's eyes, mesmerises the child and arouses his curiosity. The machine, which is anthropomorphised with a yellow snout and earth boiling in a dumper, serves as a series of marvels for the child. Subsequently, the child's sense of wonder at how these machines work triggers his curiosity to learn more about science and technology. Noticing his father among the welders, as he is "*cutting thin-plate / to microns. Not visored, he / stood out from that coven / of kneeled and sparking men,*" the speaker's association of the group with a "*coven*" on the other hand, once again emphasises the magical quality of science for the child (Morley *Releasing* "Errand" 10 14-17).

The last poem of the series, "Metal-Work," also narrates one of the speaker's visits to his father's workplace. As the lathe "*kept cutting-out / [...] little deaths,*" of sheet-metal, the speaker

watched calipers twitch
 legs skinny,
 an avocet's;

but looked beyond:
 to drill-heads primed,
 fluted like wands
 of steel (Morley *Releasing "Metal-Work"* 11 2, 3, 14-20)

The comparison of primed drill-heads to wands of steel shows the speaker's perception of science as explainable magic. Finalising the procedure by halving the work, his father's drills speak for themselves in the end, which indicates the molding of science in human hands. As is also restated in "The Goodnight," the indication is that science and technology bend according to human will: "*Light we taught to obey our touch / is surrendered to the switch*" (Morley *Scientific "The Goodnight"* 39 13-14). Morley, indeed, does not condemn the use of technology. Because, the way he sees it, it is the human agency that is responsible for its negative or positive use. Accordingly, so long as human will does not waver, science and technology will continue to fascinate humanity with their charm and benefits.

In addition to his affirmation that both the Age of Magic and the Age of Religion have been eventually replaced with the Age of Science, Morley's poems reflect how scientific methodology can be employed while writing science poems which depend on observation, experimentation and data collection. In this sense, Morley's use of scientific methodology is innovative, and his science poetry is rich, particularly in terms of what may be called his field-trip poems in which he examines various kinds of fauna in relation to their biological aspects, physical structures and migratory habits. In this respect, his poems "Movings: A Field Observation," "Runner," "In a Deer's Eye," "Samizdat on the Nature of Ice," "Mathematics of Light," "Redwings and Magnetism," "Hawk-Roosting' Revisited," "A Static Ballroom," "It Requires Nothing," "The Water Measurer" and "Moss Eccles Tarn, Far Sawrey, 1983" can be read as scientific reports on how certain biological or habitual systems work.

To begin with, "Movings: A Field Observation" is concerned with an act of birdwatching. Observing the migratory habits of kittiwakes of the gull family, the speaker also notices turnstones, a plover, a blue tit and a black bird during the activity. The speaker observes the migratory patterns of the kittiwakes as follows: "*It was the stronger tongue of Africa / made them drink shores clean / of limestone and*

gutturals / and prepare" (Morley *Releasing* "Movings: A Field Observation" 34 7-10). However, the speaker admits that he would prefer watching turnstones to kittiwakes: "*This season is their own. / They are time, these birds, / and hours and years: minute / particularity and perfect flight*" (Morley *Releasing* "Movings: A Field Observation" 34 15-18). The poem ends with the sighting of a large group of migratory birds. Admiring the punctuality of turnstones, his perpetual observations lead to a judgment regarding the birds' regular habits. In this sense, Morley's poem functions very much like a scientific report which arrives at a conclusive data based on steady inspection.

Morley's "Runner," which is re-published as "The Motion of Deer" in *Scientific Papers*, provides information about a hunt by giving voice to the insights of the hunter and the hunted in turns. The first part of the poem, subtitled "1. Killing a Doe," narrates the hunt as follows:

A stone takes all the hand, for stone
wants to be down at speed

or quickly placed. It requires
knack to get it right –
to split the difference

between the stone's falling,
and a precise cranial bone
of a panicky deer –
this is how it runs... (Morley *Releasing* "Runner" 38 13-21)

The stone which has to have the same speed with the doe necessitates meticulous calculation. Giving data about the physics involved in killing a doe, the poem afterwards describes how the doe runs:

This is how deer run. There is no mystery.
The leading hoof scouts forward

in search for levels,
the tailing three make do
with taken ground.

Sometimes the earth prepares
mistakes: maze-sphagnum, pot-holes...

so brakes are slammed on every hoof,
the cleats close up like scared anemone;

there is no cease but
grace notes in their running
(Morley *Releasing* "Runner" 39 22-32 italics original)

The movements of the deer are described in minute detail, while her hoofs are likened to mechanic brakes. The dangers that threaten the animal are not limited to the ongoing hunt but also include natural threats that may get it killed just as well. The second part of the poem is a re-writing of the first but with slight differences and expressive omissions:

A panicky deer takes all the hand for stone,
wants to be
down at speed or –

quickly brakes are slammed on every hoof,
the cleats close up –
scared anemone.

Sometimes the earth prepares mistakes.
This is not birth.
the getting-up on legs, but

split the difference between falling
and precise cranial bone,
there is no mystery. (Morley *Releasing* "Runner" 40 55-66)

Subtitled "In a Deer's Eye," this part reflects the exact same scene this time from the deer's point of view. The omissions in the poem indicate the deer's panting for breath, as she is on the run. The major difference between the two poems is marked by the endings of the two different sightings. While the former concludes with the deer gracefully running, the latter ends with a panicky sense which underlines the life-or-death issue of the hunt. The statement "*there is no mystery,*" which is placed right after the citation of the cranial bone, is indicative of this, for the change in line structure, rather than moving forward to imitate the running deer's movements, comes to a standstill that implies the ultimate stop of the deer. Thus, showing two aspects of a singular occasion, organic unity is preserved in the poem via the representations of the doe's breathy final remarks.

Scientific observation is central to “Samizdat on the Nature of Ice,” too, which depends on Mandelstam’s experiences during his exile years in Voronezh. A samizdat is a form of “*underground publication*” which was popular in the Soviet Union and the Eastern Bloc countries printed to escape the strict censorship on freedom of expression and criticism of the state (“Creating”). The poem reveals its political implications gradually. In the beginning, however, it playfully points to Mandelstam’s confusion over the words glacier and glazier in his own poetry by making a poetic connection between the two. Starting with an account of the glaciers on top of the mountains, Morley steadily replaces glaciers with glaziers:

I’d read about glaciers and I’d seen glaciers. How a stream runs
under their bellies, sluices from their lower reaches. [...]
.....
[...] And the taste of its water, both sweet and sullied
or tender as blown glass. Which explains how in poems I confuse
glaciers and glaziers. (*Mandelstam* “Samizdat on the Nature of Ice” 42 1-2, 4-6)

Allusions to Mandelstam’s exile become apparent from this point onwards. His confusion over glacier and glazier is understandable for, during his exile years, Mandelstam and his wife never owned a mirror as a consequence of which he would form “*an ice-mirror from a puddle*” to make themselves presentable to each other (*Morley Mandelstam* “Samizdat on the Nature of Ice” 42 12). That is why, glaciers are connected to glaziers in Mandelstam’s mind. In the third part of the poem, Mandelstam gives scientific information about tricks to stop ice “*melting from contact with live hands*” or “*being / flashed to crystal by every moment*” (*Morley Mandelstam* “Samizdat on the Nature of Ice” 42 15, 15-16). Mandelstam has gained this knowledge during his

[...] placement
in the St Petersburg factories: a trick used by glaziers: slip
plate-glass in silk and, between forefinger and thumb,
gently pinch the opposing ends. It gives birth to a
pressure: it tensions lines of force which are
hurtling through the mass like waves.
(*Morley Mandelstam* “Samizdat on the Nature of Ice” 42 16-21)

Through this, Morley suggests that one does not necessarily have to be a scientist to understand or practise science but sometimes, due to limited resources, enforced circumstances, or simply because of experience based on experimentation and observation, one may gain practical knowledge based on deductions.

Mandelstam's experiences are also a central concern of "Mathematics of Light," which combines his experiences with yet another scientific observation:

The wavelengths of daylight
register on bright equipment:

fluttering across a spectrum
from infra-red to ultraviolet.

Discover me at an ice age,
at a midnight of colour,

in a place where rainbows
unbind themselves completely... (Morley *Mandelstam* 48 1-8)

Making references to Newton's *Opticks*, which is primarily on the properties and production of light, the poem extends its references to Keats's "Lamia" and Dawkins's *Unweaving the Rainbow*. While daylight creates rainbows across a spectrum, the speaker employs scientific terminology to tell his beloved in codes to meet him at midnight so that they can be completely free in a place where rainbows are unwoven and they would be invisible to the watchful eyes of the authorities. Contrary to Keats who blamed science for replacing nature's beauty with cold philosophy, Morley as a contemporary poet disregards the notion of science as cold philosophy and regards it as equally charming.

"Redwings and Magnetism" reminds of "Movings: A Field Observation." Like the previous poem, "Redwings and Magnetism" is also about a scientist who observing redwings, endlessly enters data about them to her computer:

How small is the god of those migrating bird-rivers:

.....

She will climb from her bed and airbrush their science.

.....

She makes herself dark coffee, taps in the data.

How those ten thousand birds flee in her thought,
unfolded and healed by the heat of her argument.

.....

warmed the cold lives by a limpid knowledge:
 how small is the god of those migrating bird-rivers.
 (Morley *Scientific* "Redwings and Magnetism" 62 1, 3, 13-15, 19-20)

Similar to "Mathematics of Light," in "Redwings and Magnetism" information regarding the redwings' migratory patterns is provided through data that is collected and submitted in an analytical fashion. Due to the "heat" of the scientist's argument, redwings' habits are acknowledged which in turn warms the readers' hearts to their "cold lives". Once again contrary to Keats's argument, Morley sides with the idea that science is a warm philosophy rather than the other way around. Lastly, the speaker identifies the scientist as the "god" of this huge flock of birds, for, although small in size, the scientist provides fundamental data on the birds by filling in the gaps concerning their habitual patterns.

The subject of the next poem, "Hawk-Roosting' Revisited," is quite familiar:

Predation-strategies 'rehearsed'
 i. e. activity diurnal, predatory;
 Rapid Eye Movement when dormant.

Hierarchical niche-structure, theoretically,
 Habitat when inactive: forest canopy

.....
 100% attentive to prey stimuli;
 proactive at a feeding opportunity

(Morley *Scientific* "Hawk-Roosting' Revisited" 63 1-5, 7-8)

"Hawk-Roosting' Revisited" is a re-writing of Ted Hughes famous poem "Hawk Roosting" precisely from a scientific perspective. Kennedy, deeming Hughes's outlook on nature as romantic as Keats's, adds that the "language of Hughes's poem – dream, manners, convenience, please – gives the hawk a consciousness it does not possess. Morley's rewrite shows us hawk as an organism responding to stimuli and one that is vulnerable to change" (172-173). Introducing itself in an impersonal manner, the hawk is described as if it were a machine whose robotic sound presents facts about itself. Thus, giving information on its predatory patterns, habitat and individual qualities in a factual manner, Morley's hawk lacks Hughes's hawk's over-confidence: "Highly-pressured, environmentally, / Future absence from food web: probably" (*Scientific* "Hawk-Roosting' Revisited" 63 16-17). Moreover, the ending of the poem contrasts directly with that of Hughes's where the hawk, so full of itself, claims that it will not consent to change but keep things as

they are. Morley's poem, on the other hand, subverts the assertive notions of Hughes's hawk which not only shows the predatory bird as the prey but also highlights current environmental problems which may probably lead to the bird's extinction. Thus, Morley underlines the fact that in a world regulated by Darwinian natural selection, even those which are categorised as hunters may fall prey to their circumstances, if they cannot adapt to the changes in and regressions of their habitats.

Among Morley's poems which depend on observation and experimentation, "A Static Ballroom" stands out, for the poem describes a laboratory analysis in action. In the poem, the focus is on a speaker who analyses "*a static ballroom*" as she

presses her eye to the lens of a microscope,

 Her sight stamps the earth where she has buried herself.
 Her visions rushes through its lenses; and she

runs through those galleries, bursting the door
 where she finds them, it, a static ballroom – of dancers

 [...] She arcs
 across the glass floor of the scarlet ballroom

in a micrograph of her own blood plasma
 (*Invisible* "A Static Ballroom" 51 3, 6-9, 13-15)

What is observed by the scientist through the microscope is a sample of her own blood within which she "*buried herself.*" As a result, while analysing the sample, she analyses herself, thus becoming both the object and subject of the poem. Separated with the use of a dash, previously active state of the blood cells comes to a stand-still under her gaze. As her gaze glides upon them, the scientist notices that this is the "*first time she knows herself this thoroughly. / The last time she will be in such company*" (Morley *Invisible* "A Static Ballroom" 51 17-18). Knowing oneself is associated with knowing one's physical body better in the poem. At the end of the poem, the scientist rejoices at the immediacy, and intimacy, of the experience knowing that she will never observe the same blood cells in her lifetime again, for, once taken out of the body, the cells will die, which also explains their ultimate static form that is in stark contrast with their former activity.

As the ultimate experiment, however, “It Requires Nothing” introduces death as life’s last, and perhaps the most intriguing, experiment:

The last experiment needs no special equipment.
 It won’t take place in a laboratory or hospital.
 Sterile or sullied surfaces: It doesn’t matter.
 You can remove those plastic gloves,
 that white coat.

.....
 Remove personal belongings: spleen, heart, pancreas.
 This is the final experiment. It requires nothing.
 Close your eyes. (Morley *Scientific* 17 1-5, 8-10)

Analysing dying as a part of scientific research, the speaker describes in a systematic manner the steps to be followed. Leaving one’s clothes and then her/his material form behind, death becomes the ultimate experiment for the scientist who follows the steps of the experiment obediently but has no idea what awaits her/him at the end. The poem, besides treating the process of dying in an impersonal manner which exposes the scientists’ obsession to know more about not only this life but also about after-life, mimics the stages of a scientific process, which acquires data through observation and experimentation.

As for “The Water Measurer,” it is about a scientist who collects data on water samples. The speaker is observed, while he strikes

his pose and recalibrate[s] his estimates as if he has misplaced
 his notebook, or perhaps his mind, with all that staring at water.

.....
 He tests and counts, counts and tests, [...] never satisfied with the data of darkness of statistics of sunlight.
 It seems he holds his nose at the thought of getting it right, or of not getting it not right, never or not quite like the water-fly in Hamlet
 (Morley *Enchantment* “The Water Measurer” 13 3-4, 11-14)

The above-mentioned lines reveal the careful attention and minute detail paid to the process of data collection. Never fully satisfied, the scientist is always eager to continue her/his tests to formulate a statistic. As for the allusion to “*the water-fly in Hamlet*,” it pinpoints the fly just as important as The Water Measurer in the poem, however small it is. The scene in which the water-fly makes an appearance in *Hamlet* is Act V, scene ii, where Osrick, the royal fop, informs Hamlet about the duel that will take place between Hamlet and Laertes. Through Osrick,

Hamlet criticises the artificial manners of the fop, and by extension the English court, in the play:

HAMLET: [...] (*aside to Horatio*) Dost know this water-fly?

HORATIO: (*aside to Hamlet*) No, my good lord.

HAMLET: (*aside to Horatio*) Thy state is the more gracious, for 'tis a vice to know him. He hath much land, and fertile. Let a beast be lord of beasts and his crib shall stand at the king's mess. 'Tis a chough, but, as I say, spacious in the possession of dirt.
(Shakespeare *Hamlet* V. ii 82-89)

Hence, associating Osrick with an insignificant creature which loiters around a rich body of water with no apparent aim, Shakespeare criticises the usurpers in the court. The Water Measurer, who is seen in action while collecting data and keeping records of his observations initially, transforms into a Hamlet-like figure towards the final lines of the poem. In contrast to the water-fly, which has no apparent aim in life, his constant deliberations of “*getting it right or not getting it right,*” recalling the famous “*to be, or not to be*” soliloquy, marks him as such. In this respect, the scientist, according to Morley, represents someone who seeks answers to the mysteries of the universe and accordingly, he is invaluable to humanity when compared to a water-fly.

“Moss Eccles Tarn, Far Sawrey, 1983” is also about two scientists who are on their way to collect data. Because their van breaks down, on their quest to do so, the scientists instead of going uphill end up at the bottom of a hill:

Nick will back me up in this – when we finally get the van to roll
against its natural earthward loll, when the farmer comes by
at five with fodder and the god-like strength of his tractor –
that we'd come up with every practical solution for the insoluble:

.....

and then wisdom dawned across the fields just before four
so we dozed an hour, under the radar of owl and nightjar

(Morley *Enchantment* “Moss Eccles Tarn, Far Sawrey, 1983” 16 4-7, 10-11)

Misfortune meets the scientists on their way to “*an evening's field trip to observe emerging midges*” which turns into “*a nightlong skin-close study of their feeding habits*” due to the failure of the van (Morley *Enchantment* “Moss Eccles Tarn, Far Sawrey, 1983” 16 2, 3). Thus, getting to know the midges better than they had foreseen, the scientists' fortunate decision to sleep under the sky proves to be

an enlightening experience for them, as they gain wisdom by becoming one with nature under the watchful eyes of an owl and a nightjar.

As has been shown, Morley's science poems are innovative in terms of their use of scientific methods and techniques. Juxtaposing faith in magic and religion with a firm belief in science, Morley's poems prove Sir James Frazer's claims that magic and religion will be eventually replaced by science. In his poems, Morley relies on technoscientific language and topics in order to emphasise the central role science and technology occupy in contemporary age. Particularly his poems, which depend on observation, experimentation and collection of factual data, as is the case with his field-trip poems, aim at illustrating the processes by which scientists gather data as well as emphasising interdisciplinary relations between humanities and sciences. In his field-trip poems particularly, Morley closely observes the scientist-poet in action, reflecting the experimentation, observation and data provision processes involved with the provision of factual information within an analytical framework. Due to his keen interest in biology and ecology, flora and fauna frequently populate his poems, through which he reflects data regarding the biological aspects, physical structures and habits of these. Alerting his readers to the technoscientific world, his poems are mostly concerned with presenting scientific papers, as the title of one of his collections aptly exemplifies.

WORKS CITED

- Conrad-O'Briain, Helen. "Chaucer, technology and the rise of science fiction in English." *On Literature and Science: Essays, Reflections, Provocations*. Ed. Philip Coleman. Dublin: Four Courts Press, 2007. 27-42.
- "Creating an Underground Press: Samizdat in the Soviet Union and The Eastern Bloc." tavaana.org. n. p. n. pag. Web. 13 March 2015.
- "David Morley: Biography." n. p. n. pag. Web. 17 November 2014.
- "Environmental Poetry, Guerrilla Poetry and Poetry Bombing." Monash University. n. p. 25 August 2014. n. pag. Web. 12 December 2014.
- Frazer, James George. *The Golden Bough: A Study of Magic and Religion*. Auckland, New Zealand: The Floating Press, 1890.
- Holub, Miroslav. "Poetry and Science: The Science of Poetry / The Poetry of Science." *The Measured Word: On Poetry and Science*. Ed. Kurt Brown. Athens, Georgia: University of Georgia Press, 2001. 47-68.

- Kuhfield, Jemima. "David Morley: (United Kingdom, 1964)." *Poetry International Rotterdam*. n. p. 30 June 2013. n. pag. Web. 13 December 2014.
- Matterson, Stephen. "Edgar Allan Poe and the orangutan." *On Literature and Science: Essays, Reflections, Provocations*. Ed. Philip Coleman. Dublin: Four Courts Press, 2007. 115-128.
- McAllister, Andrew. "Carol Ann Duffy Interview." *Bête Noire* 6. Hull, U. K.: University of Hull, 1998. 69-77.
- Morley, David. *Enchantment*. Manchester: Carcanet, 2010.
- . *Mandelstam Variations*. Todmorden, Lancashire: Littlewood, 1991.
- . *Releasing Stone*. Todmorden, Lancashire: Nanholme Press, 1989.
- . *Scientific Papers*. Manchester: Carcanet, 2002.
- . *The Invisible Kings*. Manchester: Carcanet, 2007.
- Shakespeare, William. *Hamlet*. London: Penguin, 1980.
- "St. Lucy's Day." *Encyclopedia of Christmas and New Year's Celebrations*. n. p. 2nd Ed. 2003. n. pag. Web. 20 May 2015.
- Walker, Noojin and Martha Fulton Walker. *The Twain Meet: The Physical Sciences and Poetry*. New York: Peter Lang, 1989.
- "Walpurgis Night: Holiday." *Encyclopedia Britannica*. n. p. n. pag. Web. 07 March 2015.