

“Snared in an Atomic Mesh”: Transcendent Physics and the Futurist Body in the Work of Mina Loy

Rachel Fountain Eames

In 1929, when the *Little Review* editor Jane Heap asked Mina Loy what she looked forward to, the poet’s answer was short and succinct: “The release of atomic energy”, she said, adding that her life continues “inevitably” because “time and space are an intellectual hoax” (*The Little Review* 49). Whether taken as serious or ironic, these comments reflect an ongoing preoccupation with the new physics that can be seen in Loy’s writing, from the startlingly scientific language of her earliest poems through to her much later reflections on the bombings of Hiroshima and Nagasaki. In the latter, a short piece titled “Tuning in to the Atom Bomb”, she describes a curious sense of guilt:

Serene, amid scintillas of sunlight gilding our narrow garden, writing of the danger induced by extracting force from Power, suddenly, seismically was I overcome by an eccentric sense of guilt; as though speared by an echo of some forgotten wisdom sunken in ancient time, forbidding all revelation of some perilous secret.

Excentric guilt! I did not *know* the secret.
(*Stories and Essays* 286; emphasis in original)

Why should a female British expatriate poet feel personal guilt about devastation on the other side of the world? How could Loy be implicated in the deaths of over 200,000 people in an international conflict with which she was not directly involved? What could she be accused of? To be sure, she could not have imagined in 1929 that her words would be echoed almost two decades later, in Einstein’s public statement after the nuclear bombs were dropped: “The release of atomic energy has not created a new problem. It has merely made more urgent the necessity of solving an existing one” (373). But perhaps Loy was looking back on the strain of physics that runs like a charge through her own work and the way her writings often idealized ideas of atomic dissolution. Notice the urgency and seriousness underlying Loy’s characteristic punning language of ex-centricity in this piece, the contrast between danger thousands of miles away and the serenity of her garden and the drama of seismic, perilous energy and information. The subject is morbidly serious, and yet she cannot resist the pun – *eccentric* / *excentric* – to imply the outward radiation of emotive experience from deep within, mirroring the sun’s rays, in an almost cruel echo of the nuclear explosions. Loy often draws on physics in this way, at the boundary of satire and sincerity, and I suggest that this thread, which begins with her exposure to Futurism, can offer insight not only into the currency of the new physics for Loy, but its multiple role within wider modernist and avant-garde circles.

As she established her reputation, becoming the first poet to bring Italian Futurism to America with her 1914 manifesto “Aphorisms on Futurism”, Loy grew to value physics as a means of articulating her concerns. These were as varied and mercurial as the forms she used to convey them – she moved between critiquing avant-garde social circles, promoting female sexual liberation, and developing her own metaphysics, embracing different forms, poetry, prose, drama, painting, and novel-memoir – but references to inter-atomic relations, high energy physics, and

radioactivity remained in her work throughout her life, occurring and reoccurring in different contexts with surprising regularity. Drawn from bellicose Italian Futurism and contemporary spiritualist discourses, Loy's writing often seems to reify atomic dispersal as the apotheosis of human evolution. Loy found in the new physics a flexible, dynamic and authoritative framework through which to articulate her own experiences of modernity, allowing her to negotiate discourses of embodiment and spirituality in startlingly innovative ways. In particular, models drawn from the rapidly changing particle physics of the day offered her new ways of imagining the human body and its interactions.

When Loy set out to start writing poetry, scientists were reimagining the invisible dominion of matter. In 1906, J. J. Thompson had been awarded the Nobel prize for his discovery of the electron, the subatomic particle that had confirmed both that atoms were not the fundamental unit of matter, and that their behaviour was governed by electrical charges. Between 1909 and 1913 the orbital model, firmly situated at the heart of Classical dynamics, was integrated into particle physics to describe the shape of the atom. A growing understanding of radioactivity, the photoelectric effect, and experimentation with Röntgen rays (X-rays), had dislodged Thompson's popular "plum pudding model" by suggesting that atoms were more often unstable and reactive than stable and that, therefore, the atom described by the old model would eventually dissolve or collapse. In 1911, Ernest Rutherford proposed a new model characterized by a dense nucleus orbited by a cloud of sparsely distributed electrons. This planetary model was revised in partnership with Niels Bohr by 1913 and came more closely to resemble a solar system, by affixing these electrons to concentric closed orbits (Rutherford 669-688). The Bohr-Rutherford model took energy radiation into account to present a new system in which equilibrium and radiant activity could be explained (Bohr 2-3). Bohr's previous work had shown that the 'spectra of the stellar nebulae and that of the solar corona' could be accounted for by a system of rings denoted by a consistent inverse square law; his vision of the electrons in an atom, which form set orbits around the nucleus, shares this model (5-6). It demonstrated Einstein's mass-energy equivalence on an atomic scale; matter and energy became linked as a complex system of electrical charges in motion. As this chronology shows, contemporary ideas about subatomic particles were linked with emergent technological phenomena, electricity, X-rays and radio-waves, and radium, that quickly captured the public imagination.

Responding to these discoveries, Loy positioned the human body at the intersection of active forces; the bodies described in her writings strive toward or break equilibrium, gaining electromagnetic force and gravity through dynamic atomic movement. Her most interesting and outrageous images are those of empowered (often sexual) bodies colliding and reacting with one another; her subjects "tumble together", "knock sparks off each other", orbit and collide, blur and combine (*The Lost Lunar Baedeker* 58-59).¹ They are active and reactive, often figured in the language of the cosmos or the atom, sometimes both at once. The striking depictions of the sexual body in her early poetry, with its rough-edged descriptions of "Pig Cupid", "erotic garbage", and "spermatozoa / At the core of Nothing" (53), as well as the unflinching calls to action of her polemical "Feminist Manifesto" (1914), have encouraged readings which foreground Loy as a "sex-radical" (Duplessis 53), battering down turn-of-the-century squeamishness, "debunking phallogocentric syntactic norms" (Swathi & Chatterjee 257) in order to discuss the female body in terms fitting of the New Woman. Readings by Rachel Blau DuPlessis and Steve Pinkerton, which discuss the wider implications of Loy's depictions of sexuality, have been valuable in addressing her importance as a

commentator on female erotic autonomy, while others such as Ellen McWhorter have extended discussion of embodiment in Loy's work to include a gendered examination of intuition in a period in which technology "could speak for the body" (3). However, when we step away from the widely noted "eroticism which revels in bodily functions, concentrating on skin, tissue, and fluids" (Kinnahan 56) to consider the function of atomic bodies in Loy's work, we can see the degree to which the physics informed her developing poetics, shaping her theories about the human body and its future. By discussing Loy's use of "the corporeal real world body, bodies of matter, and bodies of text" (2), Jacinta Kelly offers a new way of reading Loy which attends to "the body" beyond its gendered and sexualized permutations. I wish to focus on the second of these – "bodies of matter" – but I do so to demonstrate that Loy's corporeal bodies are rarely presented without consideration of their position in the modern physical universe, where they exist simultaneously at the subatomic, corporeal, and cosmic scales.

Like most modernists, Loy had no immediate schooling in physics, but witnessed and took part in the growing scientization of modern art in the early twentieth century; she moved in artistic circles through which there passed a vibrant and continually evolving discourse about new understandings of matter and the universe and how they might be applied to the arts. Her close relationships to the fathers of Italian Futurism, F. T. Marinetti and Giovanni Papini, and her interest in forms of mysticism such as Christian Science which, by its very name, rested its reputation on the societal capital of science, formed the backdrop for continuous experimentation with the language and forms of physics and other sciences in Loy's writing. By examining how Loy's understanding of physics emerged from her exposure to Futurism, particularly her responses to the writings of Marinetti, I will show the breadth of meaning ascribed to the language of physics within Loy's early work, first as a ground for her searing satires of the Futurist movement, and then as a startlingly varied reference point for her examination of female physical, spiritual and psychological experience.

Beginning with Loy's satires of Italian Futurism, I will examine how her parody of the bombastic ideology's embrace of physics and emerging technologies led her to frame human relationships in the language of matter and subatomic interrelation. I go on to explore the impact of this framework on Loy's formal innovations through her interests in wireless communication, *lirismo telegraphique*, and fractured syntax, which bridge both her satirical work and her more spiritual poetry. I will then turn to Loy's long poem "Parturition", a close reading of which exemplifies Loy's more serious engagement with the potential of the imagery and terminology of physics in exploring the relationship between human physiology and psychical experience. By following this strain of physics through Loy's oeuvre, we can see how her writing is deeply infused with a passionate, aspirational rhetoric of atomic dispersal, an ontology which was devastatingly challenged by the news of the atomic bomb.

Parody Physics: Loy's Futurist Satires

In 1908, F. T. Marinetti was looking to the future. Working on a manifesto titled "Elettricimo" or "Dinamismo", he wanted to shake the very foundations of modern art. This became "The Founding and Manifesto of Futurism", a dramatic statement of artistic intervention that exploded onto the front cover of the Paris newspaper *Le Figaro* on 20 February 1909. The Italian poet lambasted all art that had gone before, promoting a new artistic sensibility grounded in the technology, dynamism, and the cutting-edge physics that shaped the modern world. "Why should we look back", he asked:

when what we want is to break down the mysterious doors of the Impossible?

Time and Space died yesterday. We already live in the absolute, for we have already created velocity which is eternal and omnipresent. (51)

This hymn to the virtue of "the habit of energy" and "the beauty of speed" (51), and its rhetoric of dynamism and motion conceived in technological and scientific terms, captured Loy's imagination as she and the Dadaist poet Frances Stevens pored over his work during the Great War (Re 801). It made waves among the expatriate crowd Loy lived with in Florence, and drew her towards Italy, where she lived between 1913 and 1914. She made her publishing debut with "Aphorisms on Futurism" (1914) which brought Italian Futurism to an American audience in Alfred Steiglitz's *Camera Work*, wrote numerous Futurist satires and her famous "Feminist Manifesto" (1914), and produced her first long poem, "Parturition" (1914). Futurism offered a means of shedding the flaccid experience of earlier art-forms in exchange for something more taut and transcendent. Marinetti's vision rested on the artistic potential of technology and science, the powerful machine and the electrified atom. Its aspirational language of challenging the impossible, taking control of the material world, and transcendent creation fascinated Loy; it sparked the most prolific creative period of her life, leading to "the most substantial literary response to Futurism ever made by a woman under direct influence of the movement" (Schmid 1).

"Aphorisms on Futurism" is charged with the same language of velocity, matter, and collision:

THE velocity of velocities arrives in starting.
IN pressing the material to derive its essence, matter becomes deformed.
AND form hurtling against itself is thrown beyond the synopsis of vision.
(LLB 149)

For both writers, physics offered a pulsing language of movement and dynamic activity, expansion and contraction, that perfectly embodied their desire to smash through old ways of thinking and revivify the arts. To utilize physics is to take control of the universe, and Futurism is the means of unlocking that potential, unleashing a creativity that dominates time and space itself: "TIME is the dispersion of intensiveness. / THE Futurist can live a thousand years in one poem" (150). An untitled poem from the same year condenses these ideas into a neat but evocative formula:

There is no Space and Time
Only intensity,
And tame things
Have no immensity. (LLB 3)

Aware of the dynamism of the Futurist project, Loy relates "intensity" and "immensity" – force and scale – in a way that mirrors both the power of Marinetti's speed and Einstein's revolutionary notion of mass-energy equivalence ($E=mc^2$). This tension between the intense and the dispersed would take on wider spiritual connotations in Loy's later works, but here, as in "Aphorisms", it is taken as one of the fundamental laws of the Futurist universe, a universe that is primarily physical, defined by its "activity", the perpetual motion of material bodies, their power, dynamic interaction, and emissions. These are the forces the Futurists wanted to enlist and control, but already Loy noticed a potential contradiction in this plan: if you cannot tame something without diminishing it, how can the Futurist take hold of universal force without

neutralizing its creative power?

Control is central to Marinetti's manifesto, and the idea that science seeks knowledge in order to bring the universe to heel is a notion has inspired (and sometimes plagued) scientists for centuries. Evoking planetary physics, Marinetti places the artist in the role of scientist, steering humanity toward a more powerful future: "We intend to hymn man at the steering wheel, the ideal axis of which intersects the earth, itself hurled ahead in its own race along the path of its orbit" (51). At the intersection of plastic art, technology, and literature, Futurism was to be grounded in an aesthetic sense transformed and revived by science: "Futurism is based on the complete renewal of human sensibility that has occurred as an effect of science's major discoveries" (143). In "Destruction of Syntax – Radio Imagination – Words-in-Freedom" (1913), Marinetti's call to integrate physics into a new literature is not limited to the natural field of perception but pushes beyond into a new world only recently made visible by scientific instruments. Literature, he says, must take into its scope "the infinite smallness that surrounds us, the imperceptible, the invisible, the agitation of atoms, Brownian movements, all the thrilling hypotheses and all the dominions explored by high-powered microscopes". Futurists must become scientists, and Futurist science is a practice of exploration and dominion. But Marinetti does not want to adopt a scientific approach at the cost of the artistic, rather he seeks a synthesis: Futurist as artist-scientist, free to draw upon either mode of exploration to create innovative work. "I want to introduce infinite molecular life into poetry not as a scientific document, but as an intuitive element. It should be mixed in with art works . . . since the fusion of both constitutes the integral synthesis of life" (147-148). Marinetti weds the biological and the physical: the human driver is a manifestation of atomic dynamism and human intention, of man's ability to manipulate matter through technology and human will, while "infinite molecular life" is fused with human artistic intuition. This welding of scientific observation and artistic intuition, figured in the experimental language of synthesis and integration, presented a path for art that was distinctly suited to modern experience.

While "Aphorisms" revels in futurist self-assurance, "leap[ing] from affirmative to affirmative" (*LLB* 150), Loy was troubled by the unashamedly masculinist and misogynist frame of the Futurist movement. Living among them in Italy, discussing their theories of art in the circles of Paris and Florence, she formed close bonds with their patriarchs, Marinetti and Giovanni Papini. In a movement that openly proclaimed its "contempt for woman" (Marinetti 86), Loy was adopted as the "exceptional" woman, a term she mocked and wrestled with in equal measure. Indeed, she found much to ironize in the behaviour of these bombasts, and many of her early works lampoon the masculinist pseudo-intellectual exchanges she overheard here. Although Futurism's complex relationship with women and "the feminine" was not limited to Marinettian misogyny, it is this aspect Loy experienced and critiques in her satires (Re 801). In poems like "Three Moments in Paris" (1914), she parodies her role as a woman subjected to, rather than taking part, in these conversations. Here, she affects the bovine lethargy Marinetti objected to in the female influence:

And sleepily I sat on your chair beside you
 Leaning against your shoulder

 As your indisputable male voice roared
 Through my brain and body
 Arguing dynamic decomposition

Of which I was understanding nothing (*LLB* 15)

Loy introduces us to the male-dominated world of the Futurists, where she is passive and lethargic, but then, using language she would later use to characterize the sum of Marinetti's influence on her, she wakes up:

But you who make more noise than any man in the world when you clear
your throat
Deafening woke me
And I caught the thread of the argument
Immediately assuming my personal mental attitude
And ceased to be a woman (15)

The tension here between intellect and lethargy, masculine and feminine, critique and energy, sets out Loy's conflicted views on the movement which, for her, was as tied up with personal social dramas as intellectual ones. Her exasperation is obvious as the men boom across each other, and her own involvement boils down to flippant, knowing self-dismissal: "Anyhow who am I that I should criticize your theories of plastic velocity?" (15). But it was perhaps this exasperation, and the playfulness with which Futurism laid out its tools of war, technology, and physical decomposition, that kept Loy interested in working with Futurist themes long after she claimed to have disavowed it. Certainly, her interests during this period were much broader than early criticism of Loy, focused on her gender politics, might suggest, and while the mode of satire Loy developed to poke fun at Futurism is most obvious in these years, its language carries through her later works.

One of several ironies in "Three Moments in Paris" is that Loy understood far from nothing of these intellectual discussions and was quick to respond to what she heard. She was more than happy to co-opt Marinetti's scientific influences on her own terms, and her work clearly bears relation to his concerns about the representation of bodies of matter in literature. "Be careful," Marinetti warns:

not to assign human sentiments to matter, but instead to divine its different governing impulses, its forces of compression, dilation, cohesion, disintegration, its heaps of molecules massed together or its electrons whirling like turbines. There is no point in creating a drama of matter that has been humanized. ("Technical Manifesto" 122)

Adopting the aesthetic of such dynamic movement to describe deeply human experiences, Loy's poetry turns the Futurist mechanism of atomic dynamism inwards as a means for exploring the relationship between physical and psychic states, their boundaries and their overlap. In "Songs to Joannes" (1917), the bodies of Loy's lovers read precisely like humanized matter, imbued with human motivations, orbiting, attracting, fusing and reacting with one another to dramatize sexual liberation, its tensions and its resolutions. An example of this can be seen in the drama of attraction and repulsion of section VIII:

Keep away from me Please give me a push
Don't let me understand you Don't realise me
Or we might tumble together
Depersonalized

Identical
 Into the terrific Nirvana
 Me you – you – me (*LLB* 58)

In section XIV, the "impact of lighted bodies" sends sparks into chaos, with the motion of this humanized matter mirrored in Loy's frenetic internal spacing and line breaks:

Today
 Everlasting passing apparent imperceptible
 To you
 I bring the nascent virginity of
 – Myself for the moment
 No love or the other thing
 Only the impact of lighted bodies
 Knocking sparks off each other
 In chaos (*LLB* 58-59)

While mirroring Marinetti's "governing impulses" (122) of matter, these remain love poems concerned with human romantic and sexual forces. Marinetti's decision to reject feminine emotion in favour of brute construction materials makes Loy's use of physics for poems grounded in female sexual experience all the more striking and ironic. Loy's foregrounding of the human body's material interactions generates poems charged with Futurist energy, a poetry which imbues female experience with cosmic and atomic weight.

By contrast, her satires often flatten male experience into parodic dramas of matter governed not by masculine will but by the inevitable forces of the physical world. If physics proved useful for the exploration of complexity in human relationships, it also offered an alternative understanding of the world that could be employed for comic effect. Here "simplifications of men" move through space like atomic marionettes, slaves to the forces they adulate ("Human Cylinders", *LLB* 40). The dramatic reduction of Marinetti to a "Man of absolute physical equilibrium" (19) in "Sketch of a Man on a Platform" (1914), for example, uses analogy to thermodynamics ironically to strip the Futurist of his power. Loy satirizes her relationships with Marinetti, presenting him as he invited himself to be seen, as an embodiment of his movement. A stark inversion of Marinetti's vision, in which man takes full mastery of his physical environment, Loy's Futurists act like free particles in space, pushed and pulled around by forces beyond their control. Contradicting the high speed of Marinetti's machine aesthetic, in which stasis and "contemplative stillness" ("The Founding and Manifesto of Futurism" 51) is anathema, Loy depicts the Futurist as a massive object with strong gravity:

Among the men you accrete to yourself
 You are more heavy
 And more light
 Force being most equitably disposed
 Is easiest to lift from the ground (*LLB* 19)

The process of accretion connotes a unified idea of both planetary and material growth, the object accumulating more and more particles through gravitational or inter-atomic attraction. Marinetti's body takes on the properties of a nucleus, exerting field of force

which draws men, like electrons, into an "equitably disposed" (19) orbit around him (Burke loc. 198). In order to get Futurism off the ground, the ideas which enthuse Marinetti and make him singular must be adopted and employed equally by his followers, reducing his exceptionalism. For a Futurist to settle, even long enough to form a movement, is to endanger his agenda.

Of course, Loy was not herself immune to Marinetti's attractions. They were lovers when this poem was written and, though mocking, the lines are underpinned by sexual tension, leading a section that compares Marinetti's combativeness with his sexual force. Poems like this show that Loy was deeply attentive to the deceptive power of Marinetti's charisma, but while it might be tempting to think that her resistance to Futurism's guiding ego allowed her to adopt its analogies without endorsing its ideologies, this is not quite true. Conover writes that while "it is doubtful [Loy] would have agreed with [Marinetti's] characterization of war as 'the world's only hygiene', she fully embraced his enthusiasm for war and his antipathy toward pacifism" (179). She was quick to volunteer as a nurse when war broke out in 1914, and her letters to Carl Van Vechten record her misgivings about not being able to go to the front herself. "My masculine side longs for war", she admitted, complaining at the lack of "some sort of military training [for] women who want it" (Conover 179). This "war fever" is awash with Marinetti's vision of conflict as a virile and vivifying aesthetic experience. Loy assisted the surgeons, she said, "entirely devoid of sentiment – entirely on the chance of getting near a battlefield & hearing a lovely noise! . . . You have no idea what fallow fields of psychological inspiration there are in human shrieks & screams . . . I will write a poem about it – & you should hear what a tramp calls the Madonna when he's having his abdomen cut open without anesthetic" (Burke 4018-4024). Here she seems enthusiastically to endorse Marinetti's "lightning agitation of molecules in the mouth of a howitzer", and "tides of screaming faces and arms" ("Geometrical and Mechanical Splendour" 176).

In this context, electromagnetism and the atom, technology and machines, were the harbingers of an explosive and exciting future for humanity. Marinetti's "Electrical War" (1911) describes a "haunting vision of the future . . . wholly revived, shaken up, and bound together by the new electric forces!" This power heralds a wireless future:

Penetrating into every muscle, artery, and nerve of the peninsula, the energy of distant winds and rebellions of the sea have been transformed by man's genius into many millions of kilowatts, spreading everywhere yet needing no wires, their fecundity governed by the control panels, like keyboards, throbbing under the fingers of the engineers. (101)

In Marinetti's deeply masculinized world, the act of penetration is unambiguously positive and vitalizing. This is a future in which the will of man is liberated by his total mastery of the physical environment: "Because heat and coolness and ventilation are regulated by a flick of the hand, they [the men of the future] finally know the fullness and resistant solidity of their willpower" (102). It is a bio-electrical utopia in which electrical energy is not only restorative and fecundating, but a proponent of hastened biogenesis:

Every car carries a gigantic steel arm on its roof that . . . spreads the fecundating seed in all directions. And it is electricity that hastens its sprouting . . . everywhere electricity stimulates vegetal cells . . . and directly excites vegetative energy . . . (102)

In her 1914 play, "The Sacred Prostitute", Loy's personification of the movement, the caricature FUTURISM, mimics an auctioneer, selling this vision "in all its sublime invisibility" to an audience of awe-stricken men who take him as "a prophet":

Gentlemen – The FUTURE

. . . I offer you a magnificent Future – entirely constructed on speculation.
(*Stories and Essays* 193-195)

FUTURISM interrupts a discussion about women with an explosion of gunpowder, shouting nonsense abuse reminiscent of Marinetti's *Zang Tumb Tuum* (1912-1914); his "every gesture propounds vulgarity intensified to Divinity", characterized by ironic adverbs "pathetically", "martially", "magnificently" (191-197). The female characters in the play echo the speaker of "Three Moments in Paris", resigned in the face of FUTURISM's dogged energy, and Loy evokes the augmented Futurist's "x-ray eyes" and "ears of steel" to suggest not only the vulgarity of Futurism's applications of technology – the idea that x-rays could allow vision beyond the realm of common decency was among the first popular jokes and concerns about the technology – but also the way it might blind the Futurist to natural beauty:

FUTURISM. But you have just the sort of body I like – suave.

LOVE. (*smoothing down her formless roseate garment*) How do you know?

FUTURISM. The Futurist has x-ray eyes, and ears of steel – He can see everything without looking at it, and stand any amount of noise – the evening breeze no longer reaches me, but the gentle vibrations of the *mitrailleuses* are still audible. (198)

This x-ray penetration allows the Futurist to ascribe a rigid body to the "formless", fluid feminine, while the sound of guns drowns out any hope of appreciating the romantic evening breeze. Ideas of form and formlessness pervade the futurist landscape, influenced not only by the movement's grounding in the visual arts, but also by contemporary technological innovations; the next section examines some of these developments, the ways in which Futurism sought to subsume them into new formal experiments, and their value for Loy's distinctively modern style.

Writing Without Wires: Futurist Forms

To the popular imagination of the 1910s, Marinetti's futures may not have sounded too farfetched. The 1909 Nobel Prize had just been awarded to the Italian electrical engineer Guglielmo Marconi for the development of wireless telegraphy, which "clearly excited the public imagination" (White 148). From Italy to Russia, the Futurist movement embraced the creative potential of wireless communication, with Marinetti championing "lirismo telegraphic" and one Russian Futurist, Velimir Khlebnikov, extolling the idea of radio as "the main tree of consciousness," a unification of the innovations of the "the works of the artist of the pen and the artist of the brush, the discoveries of the artists of thought (Mechnikov, Einstein)" (149). In "Electrical War", Marinetti presents wireless communication as a crowning achievement: "the energy of distant winds and the rebellions of the sea have been transformed by man's genius into many millions of kilowatts, spreading everywhere yet needing no wires" (101). This translated into a call for poets to unlock the "wireless imagination", freeing language and revealing its essence by removing the "connecting wires" ("Words-in-Freedom"

146) of traditional syntax. Contemporary reviewers, such as *Poetry*'s Harriet Monroe, were often bemused by Loy's "usually telegraphic – indeed, telescoping style" (96), but telegraphy offers an example of modern physics' tangible effect upon modern day-to-day life, and of its potential application to new verse forms. The fracturing of syntax in Loy's poetry, with its reduced punctuation and line spacing, exemplifies many of the virtues Marinetti suggests might be gained through telegraphic lyricism:

Condensed Metaphors. – Telegraphic images. – Sums of vibrations. – Knots of thought. – Closed or open fans of movement. – Foreshortened analogies. – Color Balances. – The dimensions, weights, sizes, and velocities of sensations. – . . . Analytical explanatory telegraph poles that sustain the cable of intuitive wires. ("Words-in-Freedom" 147)

This shows the breadth of concepts taken by the futurists from the new science: the language of condensers, telegraphy, wave theory, optics and dynamics blur with colour theory, musical movements, language and artistic intuition. Marinetti's theory of "words-in-freedom" encouraged immediacy of sensation by "brutally destroying the syntax of . . . speech", rejecting conventional word order and punctuation in favour of an "assault" designed to "render all the vibrations of [the artist's] 'I'" (145).

But in attempting to inject an "I" into literature through the stripping back of individual stylistics, or "destroying the canals of syntax" (146), Marinetti risks creating a production-line of Futurist carbon-copies, whose individuality is lost along with the connecting wires. Certainly, Loy's nameless Futurists are obvious stereotypes of Marinetti. Although Loy found value in words-in-freedom's ability to form connections through juxtaposition of nouns (e.g. "Desire Suspicion Man Woman" from "Songs to Joannes" (*LLB* 57)) and fractured lines, she also embraced its parodic potential. "Two Plays" (1915) shows Futurism at its most stereotypical, adopting a "telegraphic" style to blur stage direction and monologue. Just two pages between them, these mini-dramas give a brilliantly distilled example of Loy's parody, her characterization of the Futurist male, his ego and his language. "Collision" adopts words-in-freedom in its disjunctive language and fractured syntax, which begins in the stage directions but continues into the solitary character's speech (Schmid 4). The play opens:

Huge hall – disparate planes, angles – whiteness – central arc-light – blaze
Emptiness –
But for one man –
A dependant has shut the door –

Man: "Back! Bang door! Succession – incentive – ejection – idea – space – cleared of nothings – leaves everything – material – exhaustless creation!"

The description brings together typically Futurist features: the disjunction of emptiness and dynamic angles with a central electric light that forms the core of the drama, while the fragmentation of words into small chunks on the page, devoid of syntax, gives a sense of quanta – these are the particles that make up the scene, particles which gain meaning through their juxtaposition rather than syntactical coherency. What might initially seem to be a shorthand list of elements on stage is complicated as the telegraphic style continues into the Man's speech, a "succession" of words and clauses drawn from the Futurist register of energy, motion, and dynamic creation. Drawn to the radiant electric heart of the scene, the man "stares blankly into arc-light" before

pressing an "electric button" that instigates a series of dramatic mechanical sound and lighting effects to create a kaleidoscope of "disharmony". This "pandemonium" calms him as, through his engagement with electricity, he approaches a state of utopian electromagnetic transcendence:

Man: "At last – vibration is intensified to the requisite ratio – for every latent conscious and subconscious impulse to respond to automatically – completely – virility ceases to be implicated in disintegrant auto-stimuli – leaving the nucleus free for self-activity –

Expansion – Extension – Intension –
CREATION –"

This speech is dense with the multi-connotative language of Futurist science: physical vibrations join with psychological, particularly Freudian, impulse; the language of the scientist's meticulous measurement meets automatic action; virile multiplication and growth meets disintegration; and these contradictions and collisions, "modes of DISHARMONY" (*Rogue* 15) as Loy puts it, lead to an ultimate act of creation. The next section will examine how Loy's subversive application of these masculinized scientific aesthetics to the deeply female subject of childbirth lead to a nuanced interrogation of the relationship between creation, physics, physiology, and psychical experience.

New Physics for the Body and Mind: "Parturition" (1914)

In her long poem "Parturition", Loy embraces the new physics to explore a more serious subject. One of the first poetic depictions of childbirth from the female perspective, "Parturition" affords a depth to the female experience that is absent from Loy's depictions of Marinetti, in part fostered by its first-person viewpoint and lack of satire, but also by its attention to the psychic as well as physical realms of experience. An in-depth reading of the poem draws out the continuities and disjunctures between Loy's use of physics and that of her Futurist colleagues, demonstrating that Loy saw a deep link between physics and emotional and spiritual experience. Physics informs "Parturition" on several levels: the formal, the visual, and the conceptual. Furthermore, the figurations used here lay the groundwork for many of the spiritual ideas expressed in her later works, using physics to engage with serious contemporary concerns around new medical technologies, gendered anxieties about materiality and penetration, and the relationship between psychic and embodied experience.

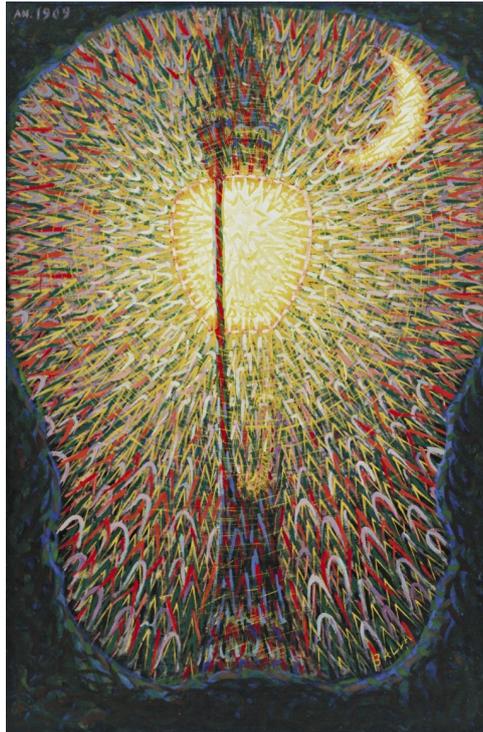


Fig. 1.

Giacomo Balla. *Street Light*. 1909-1911. The Museum of Modern Art, New York. <https://www.moma.org/collection/works/78382>.

By 1914, the circle became a futurist shorthand for the depiction of light as wave emission, and the pattern of concentric circles at the opening of "Parturition" evokes Bohr's model of the atom and the solar corona that inspired it. Futurist painters such as Sandro Boccioni and Giacomo Balla had adapted visualizations from physics into their geometry. Combining the "lines of force" of Faraday's electromagnetic experiments with dynamic geometries of concentric circles and intersecting planes, they sought new modes of representation "constructed on laws from science illuminated by our intuition, sensitive to new conditions of life created by scientific discoveries which suggested that 'all is movement'" (Boccioni qtd. in Threlkeld 48). When Loy describes the labouring body as the radiant heart of a forcefield of pain, this geometric symbolism introduces the same language of cosmic and atomic force and motion:

I am the centre
Of a circle of pain
Exceeding its boundaries in every direction

The business of the bland sun
Has no affair with me
In my congested cosmos of agony (*LLB 4*)

The strength of the pain is such that the sun's cosmic radiation is "bland" by comparison, and the speaker creates her own microcosm for which the birthing body forms the "nucleus" (4). This conflict, microcosm battling with microcosm, is mirrored in one of Futurism's most famous depictions of electric light, Balla's *Street Light* (c. 1909-1911, figure 1). Depicting the superiority of the modern and industrial over the

natural, the painting draws its techniques of representation from contemporary physics: the electric light formed both of concentric circles and lines of force, waves and particles. Electric light was reified in the futurist canon as an essential icon of the energy of modern life, and here the explosion of energy from the foregrounded streetlamp subjugates the natural light of the moon. In Marinetti's "Let's Murder the Moonlight" (1909), "the carnal moon, the moon of warm beautiful thighs" (58) is a dangerously feminine figure, "dripping with the intoxicating milk of acacias" who brings with her the seductive anathema of tiredness and lethargy. The (male) Futurist's solution is to murder her with electricity, rigging electromagnetic turbines so that "three hundred electric moons, with rays of blinding chalky whiteness, canceled [sic] the old green queen of love affairs" (59). Loy, whose first book of poetry, *The Lunar Baedeker* (1923), was framed as a guide to the moon, subverts this opposition; the female experience in "Parturition" eclipses the masculine sun and forms a powerful cosmos of its own. Lein has drawn attention to the heterosexual implications of electricity's reliance on the unification of opposing poles; her reading of section XII of "Songs to Joannes" posits Loy's interest in electrical light, particularly arc light streetlamps as "fascinating but ultimately limited models for human interaction" (621-623).

In this context, the curious shadowed outline of Balla's painting, which disrupts the concentric circles of the light, takes the form of the "monstrous vulva" Marinetti describes in "Let's Murder The Moonlight", at once a receptacle for and a challenge to the "terrific spasm" (61) of Futurist supremacy. Although the misogyny of the Futurist movement posed a significant challenge for Loy, and would eventually lead her to distance herself from Marinetti's ideals, this poem offers a corrective to the Futurist reduction of womanhood by engaging with the language, geometries, and core images of Futurism to create a deeply layered depiction of a necessarily feminine experience.

Loy's personified, hostile cosmology in "Parturition" fuses the interplanetary and atomic scales with the biological function of pain-receptive nerves:

In my congested cosmos of agony
From which there is no escape
On infinitely prolonged nerve-vibrations
Or in contraction
To the pinpoint nucleus of being (*LBB* 4)

Unifying physics and biology, Loy turns the body into a microcosm of feeling, with the shift in scale mirroring the radiant pulses of the body at its centre, outward then inward to the "nucleus". The image of the nucleus joins the cellular and atomic diction of biology and physics, bringing the processes of the nervous system in line with a wider universal system, connecting the human body with the universe. Interestingly here, time is subject to spatial expansion through the extension of wave vibrations. The prolongation of the "nerve-vibrations", electrical impulses running from the point of pain to the brain where it is processed and perceived, is mirrored in poem's formal choices, with long vowels and polysyllabics "infinitely prolonged nerve-vibrations", becoming the longest line of the stanza, before snapping back to the shortest with sudden contraction.

By 1914, the concept of the physical vibration had accrued a multitude of connotations. The distinctions between various manifestations of vibration – in the fields of physics, biology, and spiritualism – had become increasingly blurred. Linguistic elision contributed to this blurring, with "vibration" and "wave" used interchangeably in many circles, so that analogies which crossed between fields and

forms were common. Light and sound waves met brain waves and nerve vibrations in the popular imagination. As Enns and Trower explain, "[e]xperiments in physics and physiology, also revealed the existence of vibrations beyond the threshold of human perception, such as X-rays and radio waves, and people suddenly became aware that the environment around them was saturated with invisible and inaudible vibrations" (2). For the Futurists, vibrations symbolized the perpetual motion of matter on a scale imperceptible to the human eye, a scale to be reached for by the artist seeking new realms of representation, as Marinetti writes: "We want to . . . scatter [the "I"] into the universal vibration and reach the point of expressing infinitely miniscule entities and molecular movements" (176). This rhetoric and adulation of the vibratory world of matter appears throughout Futurist writing and formed the basis of Boccioni's foundational theories of Futurist art. Vibratory physics seemed to offer scientific validity to occult phenomena, from astral projection to telepathy, drawing the attention of eminent physicists and intrigued laypeople alike. For Loy, the vibration provided a rich analogy through which to unify ideas of physics, biology, and spirituality, with the idea that "different forms or frequencies of vibration were . . . exchangeable variations of a singular universal form of energy" (2).

Perhaps influenced by her reading on the "Theory of Vibrations" and "Vibratory Mechanics", many of her works describe a fluid movement between these different frequencies, often focussed on the relationship between the human body and an external, ethereal universe (YCAL MSS 778/5, Folder 158). In her unpublished memoir, *Islands in the Air*, birth is a process of restriction and containment: the "winged perception . . . snared in an atomic mesh" (9). This image of embodiment as a trap is central to Loy's notions about the body and useful for understanding her desire for "the release of atomic energy". Vibrations passing beyond the body through time and space, envisaged as a bio-electric transmission of energy, restore a lost sense of cosmic connectivity, allowing the mind to reach beyond its "atomic mesh" and find peace and unity in a space between wavelengths. In "Parturition", the speaker's desire to reach beyond the material into the ethereal bliss of a disembodied reality is blocked by her corporeal body: her nerves have their own vibrations which expand and contract, making her pain inescapable. The tension between the material body and wave-mind here resembles Bergson's description of psycho-physics. In *Time and Free Will* (1910), Bergson suggested that "[E]very state of consciousness corresponds to a certain disturbance of the molecules and atoms of the cerebral substance, and that the intensity of a sensation measures the amplitude, the complication or the extent of these molecular movements" (6). Even the mind, then, cannot escape the "atomic mesh". A theory which fused biology and physics in an attempt to explain human consciousness, psycho-physics reinforced the idea that the body is constrained by the conditions of its own atomic structure. Fortunately for Loy, however, theories of vibration as energy emission offered hope for the expansion of human potential beyond the body, encouraging imagined futures in which the human body might function as a radio receiver for extrasensory vibrations (Henderson, "Vibratory Modernism" 128-131; Enns & Trower 1-5).

The constant fluctuation and dissolution of atomic matter in Loy's work figures the potential for the self to reach beyond the body alongside serious contemporary anxieties about embodiment that had been sparked by new medical technologies. Ideas of x-ray penetration and electrical stimulation of the body held simultaneously invigorating and disturbing connotations, both in medicine and in the matter of individual psycho-spiritual evolution. Rays moving in and out of the body as easily as light through air had revealed – to public astonishment – a view of the corporeal body

dematerialization. For the Futurists, who relished the insecurity of perpetual motion, matter was a reservoir of untapped potential and perpetually moving electrical energy. They were happy to declare "that movement and light destroy the materiality of bodies" (Boccioni et al. 65), which offered just the "complete renewal of human sensibility" they sought. For others, however, it offered a disturbing image of a world on the brink of atomic decay. This new threat of dissolution was persistent and vivid enough in Loy's imagination that she would go on to write that "perhaps, according to atomic physics, there is no actual flesh" ("History of Religion and Eros" 248). In "Parturition", Loy depicts the liminal state of birth through the balance between gain and loss: between life and death; peace and pain; the doubleness of pregnancy and singularity of motherhood; between the gain of a child – a new, distinct body – and the loss of the bodily unity of pregnancy. This emotional experience is treated ambiguously throughout the poem so that rather than offering an unbridled celebration of new life, Loy problematizes the emotional, psychic, and physical consequences of childbirth through a series of conceits that draw together and interrogate, rather than resolve, this matrix of physical and biological anxieties. These complex binaries form part of a wider matrix of unified polarities within the poem, most obviously captured in the terms of physics at the moment of "climax".

"An Endless Chain-reaction of Terror": Physical Transcendence and the Atom Bomb

Loy's attempt to bring a feminine "cosmic" voice to Futurist physical analogies is not as uncharacteristic of the movement as her satires might suggest. Boccioni shared her interest in psychology, emphasizing "states of mind", an intuitive, rather than technical, apprehension of modern science, and the synthesis of concrete and mental experience. Loy's depiction of consciousness as a system of physical states is also mirrored in the female Futurist Maria Ginanni's "Variations" (1917), which shares Loy's language of "physical transcendentalism" as an expanded mode of human experience:

I have found absolute completeness by grabbing onto your loose consistency, fire-fly air! Dissociating, totally scattering the atoms of my brain with your seething pullulation you bring it complete rarefaction, the perfect destruction of all exact limitations. I set sail for regions perfectly devoid of consistency—I dissolve into complete absence, Nothing. And through the abolishment of all consciousness, of all exactitude, through this reduction of my thinking forces to their minimum, I can instead grasp the essence of the all: the Infinite. (467)

Here, as in 'Parturition', scattering and dissolution lead to transcendence. For Loy, the dissolution of the self as a unit through giving birth brings a disappointing plateau of the emotions and a sense of confusion as to why the mother lives on: "I should have been emptied of life / Giving life" (*LLB* 6), followed by a sudden and immediate opening up, in which the speaker gains access to a wider plane of evolutionary understanding. The radiative force moves out beyond the mother in this moment, dissipating to leave only a "Scarcely perceptible / Undulation" (6), waves of new life following revelation. In this moment, the nucleus-body dissolves, becoming immaterial, pure wave-form. For Loy, as for Ginanni, the moment of transcendence is coupled with "complete absence" and "the abolishment of all consciousness". In depicting the apex of psychic and physical crisis, Loy embraces linguistic and metrical experimentation, turning her poem into its own "ego-laboratory" ("History of Religion

and Eros" 237). At its peak, the centre cannot hold. Language and perception begin to break apart as her speaker rapidly accretes knowledge in a flurry of extrasensory revelation:

Stir of incipient life
 Precipitating into me
 The contents of the universe
 Mother I am
 Identical
 With infinite Maternity
 Indivisible
 Acutely
 I am absorbed
 Into
 The was – is – ever – shall – be
 Of cosmic reproductivity (*LLB* 6-7)

For much of Loy's career, the concept of atomic dissolution held largely positive connotations of hope, creation, reproduction, expansion, and transcendence. Extolled as a means of self-enlargement and power by the Futurists, the new physics offered her a multivalent language of atomic bodies, radiation, force and interaction as a means to explore the complexities of modern sexuality and female experience. She saw in the systematic world of science an opportunity to lampoon the hyper-modern rhetoric of the Futurists while developing her own psycho-physical cosmology, fusing scientific ideas with spiritual ideals. By contrast, the "shattering terror" (*Stories and Essays* 286) of the atom bomb demonstrated a dramatic inversion of the aspirational values Loy had long ascribed to atomic dispersal. This "inexplicable shock" (286), the ultimate end, perhaps, of Marinetti's trajectory of bellicose dominance over matter, rather than bringing Loy insight or control, brought "an endless chain-reaction of terror transpiercing" her body, transforming her, in language reminiscent of "Parturition", into a "nauseous nucleus of fear" (*Stories and Essays* 287). Having been complicit in the embrace of physics as a useful, utopian tool of modernity, the much-anticipated revelation of the atom's "secret" – its potential for untold and inhuman destruction – dramatically challenged Loy's earlier perspective, forcing a reassessment of the aspirational values she and many others had previously ascribed to subatomic phenomena.

Notes

1. A majority of my quotations from Loy's poetry are taken from this edition, hereafter referred to as *LLB*.

Works Cited

- Balla, Giacomo, Umberto Boccioni, et al. "The Exhibitors to the Public" *Futurism: An Anthology*. Edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 105-109.
- . *Street Light*. 1909-1911. The Museum of Modern Art, New York. <https://www.moma.org/collection/works/78382>.
- Bergson, Henri. *Time and Free Will*. George Allen & Unwin Ltd., 1910.
- Boccioni, Umberto. "The Plastic Foundations of Futurist Sculpture and Painting." *Futurism: An Anthology*. Edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 139-141.
- Boccioni, Umberto, Carlo Carrà, et al. "Futurist Painting: Technical Manifesto." *Futurism: An Anthology*. Edited by Lawrence Rainey, Christine Poggi, et al., Yale University Press, 2009, pp. 64-67.
- Bohr, Niels. 'On the Constitution of Atoms and Molecules', *Philosophical Magazine*, vol. 26, no. 1, 1913, pp. 1-25.
- Burke, Carolyn. *Becoming Modern: The Life of Mina Loy*. Farrar, Strauss and Giroux, 1996, Amazon Kindle e-book.
- DuPlessis, Rachel Blau, "'Seismic Orgasm': sexual intercourse, its modern representations and politics." *Genders, Races, and Religious Cultures in Modern American Poetry 1908-1934*. Oxford UP, 2001, pp. 52-61.
- Einstein, Albert. *Einstein on Politics*. Edited by David E. Rowe and Robert Schulman, Princeton UP, 2007.
- Enns, Anthony, and Shelley Trower. *Vibratory Modernism*. Palgrave Macmillan, 2013.
- Ginnani, Maria. "Variations." *Futurism: An Anthology*. Edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, p. 467.
- Henderson, Linda Dalrymple. "Vibratory Modernism." *From Energy to Information: Representation in Science and Technology, Art, and Literature*. UP, 2002, pp. 128-131.
- . "Editor's Introduction: I. Writing Modern Art and Science – An Overview; II. Cubism, Futurism, and Ether Physics in the Early Twentieth Century." *Science in Context*, vol. 17, no. 4, 2004, pp. 423-466.
- Kelly, Jacinta. "Purging the Birdcage: The Dissolution of Space in Mina Loy's Poetry." *Limina*, vol. 18, 2012, pp. 1-12.
- Kinnahan, Linda A. *Poetics of the Feminine: Authority and Literary Tradition in William Carlos Williams, Mina Loy, Denise Levertov, and Kathleen Fraser*. Cambridge UP, 1994.
- Krikor, Mihran. *Röntgen rays and electro-therapeutics : with chapters on radium and phototherapy*. 2nd ed, J. B. Lippincott & co., 1910.
- Le Bon, Gustave. *The Evolution of Matter*. Translated by F. Legge, Water Scott Publishing Co., 1907.
- Lein, Julie Gonnering. "Shades of Meaning: Mina Loy's Poetics of Luminous Opacity." *Modernism/modernity*. vol. 18. no. 3. 2011. pp. 621-623.
- Loy, Mina. *Insel*. Melville House Publishing, 2014.
- . "Response to 'Questionnaire'". *The Little Review* 12. May 1929, p. 46.
- . *Stories and Essays of Mina Loy*. Dalkey Archive Press, 2011.
- . *The Lost Lunar Baedeker*. Edited by Roger Conover, Carcanet Press, 1997.
- . "The Bird Alights." *Islands In The Air*. YCAL MSS 6/4. The Beinecke Rare Books and Manuscripts Library, Yale University, Folder 59, p. 9.

- . "Two Plays." *Rogue*, Aug. 1915, pp. 15-16.
- . YCAL MSS 778/5. The Beinecke Rare Books and Manuscripts Library, Yale University, Folder 158.
- Marinetti, F. T. "Geometrical and Mechanical Splendour and the Numerical Sensibility." *Futurism: An Anthology*, edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 175-181.
- . "Technical Manifesto of Futurist Literature." *Futurism: An Anthology*, edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 119-125.
- . "The Founding and Manifesto of Futurism." *Futurism: An Anthology*, edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 49-54.
- . "Let's Murder the Moonlight." *Futurism: An Anthology*, edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 54-62.
- McWhorter, Ellen. "Body Matters: Mina Loy and the Art of Intuition". *European Journal of American Studies*, vol. 10, no. 2, 2015, pp. 3-18.
- Monroe, Harriet. *Poetry*. YCAL MSS 6/5. The Beinecke Rare Books and Manuscripts Library, Yale University, Folder 129, p. 96.
- Pinkerton, Steve. "Blasphemy and the New Woman: Mina Loy's Profane Communion". *Blasphemous Modernism: The 20th-Century Word Made Flesh*. Oxford Scholarship Online, 2017, pp. 51-77.
- Poggi, Christine. "Introduction to Part Two." *Futurism: An Anthology*, edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 305-330.
- Re, Lucia. "Mina Loy and the Quest for a Futurist Feminist Woman." *The European Legacy*, vol. 14, no. 7, 2009, p. 799-819.
- Rutherford, Ernest. "The Scattering of α and β Particles by Matter and the Structure of the Atom." *Philosophical Magazine*, vol. 6, no. 21, 1911, pp. 669-688.
- Schmid, Julie. "Mina Loy's Futurist Theatre." *Performing Arts Journal*, vol. 18, no. 1, 1996. pp. 1-7.
- Swathi, Krishna S. & Srirupa Chatterjee. "Mina Loy's PARTURITION and L'écriture Féminine". *The Explicator*. vol. 73, no. 4, pp. 257-261.
- Threlkeld, Isabella B. "The Emergence of Futurism in Italy: 1900-1916 – The Influence of Science on Art." Unpublished MA Thesis, University of Nebraska, 1971.
- Vetter, Lara. *Modernist Writings and Religio-Scientific Discourse*. Palgrave Macmillan, 2010.
- Walter, Christina. "Getting Impersonal: Mina Loy's Body Politics from 'Feminist Manifesto' to *Insel*". *MFS Modern Fiction Studies*. vol. 55, no. 4, 2009, pp. 663-692.
- White, John J. *Literary Futurism: Aspects of the First Avant Garde*. Oxford: Clarendon Press, 1990.
- Wittman, Laura. "Introduction to Part Three: Stars-In-Freedom and the Dark Night of Futurism." *Futurism: An Anthology*, edited by Lawrence Rainey, Christine Poggi, et al., Yale UP, 2009, pp. 409-419.