Valence and Ambivalence: Science and Poetry in the Philippine Anglophone Tradition

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VALENCE AND AMBIVALENCE: SCIENCE AND POETRY IN THE PHILIPPINE ANGLOPHONE TRADITION

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In the first two sections of this paper, the author surveys the troubled history of science and modernist poetry, and identifies the operations of metaphor and analogical thinking as the foremost contract zone between these two "realms." He then discusses, in the third section, the salience of this insight in relation to the question of Philippine poetry in English, which he argues to be, by definition, representationally complex and ironic. This leads him to the idea that modernist-inspired "avant-garde" experimentations have generally not "prospered" in the Philippines's anglophone poetic tradition precisely because their "condition for possibility" (a scientificized cultural ground) cannot be said to have fully taken root in this neocolonially indentured country in the Global South. On the other hand, a critical awareness of this tradition's linguistic and cultural complexity should reveal that "self-reflexive" moments (typically exclusively associated with modernist aesthetics) are, after all, already very much in evidence in it. The paper ends with a presentation of science-themed poems by a selection of outstanding Filipino poets.

Keywords:
Poetry, *Science*, *Philippine Literature*, *Modernism*, *Representation*

THIS PAPER COMES OUT OF A SHEAF OF LECTURE NOTES FROM WHICH I READ, on a couple of occasions, in the recent past, as part of a module on the humanities for the Science, Technology and Society subject in the General Education curriculum of the University of the Philippines, Diliman.[1] It will have, broadly, four sections. In the first, I will be a giving a summative account of the poetic discourses of Western modernism as they pertain to the

question of science and technology. In the second, I will reflect upon that well-known "contact zone" between poetry and science: metaphor. In the third, I will present some preliminary arguments concerning the issue of anglophone Filipino poetry and its "mimetic" resistance to the kinds of self-reflexive poetics—premised upon modernist biases—that shut out referentiality for the sake of a "scientistic" model of language. And finally, in the fourth part of this paper, I will be presenting a few "representative" Filipino poems that thematize a variety of contemporary scientific concerns.

Common knowledge tells us that, in the West, science and poetry describe, at present, completely different and even conflicting realms of experience. According to some, what has widened the rift between the two is modern poetry's increasingly alienated stance, as well as the technologizing, corporatizing and even militarizing of science, which have turned off the aghast poet on one hand, and induced a much-maligned defensive empiricism within the scientific community, on the other. But the truth is that, at least as far as the Western poetic tradition of the last one hundred years is concerned, science and poetry have come to enjoy a complex and interesting relationship—of concord and discord, of agreement and disagreement, of valence and ambivalence. Admittedly, the last century has seen the privileging of science as a cultural practice, at the same time that poetry has become increasingly marginalized and arcane as an artistic activity.

It is interesting to note, however, that poetry has in fact also sought to establish its cultural validity by resorting to scientific metaphor. In other words, most visibly in the practice of the modernists and the contemporary avant-garde, poetry has not shunned science at all—either as a topic or as an approach to knowledge; if only to remain relevant and legitimate, poetry has, in so many ways, embraced science. Moreover, poets have time and again sought to prove that their practice is superior to that of their more "rational" counterparts, because rather than break down knowledge to its constituent parts (what scientific analysis routinely performs), what they aim to do in their works is to make knowledge urgently coherent by "personalizing" or "humanizing" it. In other words, according to this "aesthetic" argument, poetry seeks not to objectify experience, but rather to link it back to the human person. In this sense we may say, at least from the evidence of the past century, that poetry has, indeed, by turns celebrated and critiqued science (Armstrong 2001, 79).

Generally speaking, we can discuss this "shifty" connection between poetry and science in terms of how poets have "thematized" scientific theories, personalities, and histories, how they have conceptualized poetry and science as fields of knowledge and experience, what arguments they have proposed concerning poetry's claim to a "higher" form of cultural legitimacy, what statements they have made about the effects of technologies of communication on the poetic experience, and, finally, how they have utilized "scientific metaphors" in explaining their respective poetics (ibid., 77). Various poets in Europe and America have carried out these tasks over the course of the past century, in the form of both poems and critical commentaries.

The following paragraphs sketch, in a roughly chronological fashion, these different "aspects" concerning the difficult relationship between poetry and science in the Western literary tradition. Needless to say, for this rather cursory survey, I shall not be originating anything, but will merely be drawing on the existing scholarly studies of poetry critics and historians.[2]

In the nineteenth century, enormous scientific advances in Euro-America "demystified" the natural order, decentered "man" as its privileged axis, and subjected him to so many ineluctable "external" determinations. First, Darwinian evolutionism rendered human history as but a tiny moment in the vast epochs of evolutionary change. And then, sociology diversified histories of languages, cultures and peoples, and confounded traditional epistemologies from which to view and study them. Psychology, on the other hand, uncovered powerful secret and "unconscious" forces in the waking and dreaming lives of individuals. And yes, medicine demystified the body as a complex and vulnerable machine. Then, physics hypothesized enormous non-human forces and energies hitherto unimagined: radio waves, X-rays, unstable matter, atoms, ethers, vortices, and so on. Thus, among the different sciences, it was the fields of biology, sociology, psychology, biomedicine, and physics that proved most influential in the poetic discourse of the last century.

Within the same period, these disciplines also became subject to a variety of criticisms, many of which were articulated by artists and directed at the kind of knowledge these fields of science proffered. Among others, these critiques asserted the following: that scientific ideas are nothing if not mere

"instruments" by which we can recognize the ways in which we perceive and organize the real world; that science cannot really offer truth, only descriptions of it; and finally, that it is the complex perceptions of the artistic imagination rather than the discrete and bloodless abstractions of the scientist that can best apprehend and "reflect" reality. In all of these, we can detect undercurrents of the romantic insistence on the power of the sovereign imagination, and the lingering resistance against the demystification of the world that empirical science, in all its rigor, seeks to effect.

Needless to say, this line of argumentation—this kind of criticism—first voiced in the early part of the last century, continues to be made to this day. Indeed, the concept of the universe after Einstein has become so abstract and hypothetical that it almost approximates poetry. Multidimensional geometries, particle and wave physics, the interchangeable natures of matter and energy, relativistic quantities—this new kind of mind-bending science has produced a world in which there is only indeterminacy and no cut and dried facts; a world in which the subjective and the objective realms interpenetrate and dissolve; needless to say, a world that can be and indeed has been reclaimed by the creative arts, chiefest of which may well be poetry.

Suffice it to say that the enormous advances in technology in the last century were both rejected and welcomed by modernist poets. While many of them saw technology as the adversary of the imagination, not a few embraced the machine age. The more discerning poets, however, were more "nuanced" and ambivalent about their feelings toward technological progress: while the impressive complexity of mechanical dynamism presented them with a new metaphor for the creative process, at the same time they also recognized and lamented the "impersonal" horror attending the specter of disarticulated or dismembered machines.

An immediately noticeable effect of new technology on poetry may be seen in the way the typewriter rendered the poem as a particular design on the page. Needless to say, in the early twentieth century, typography came to be a part of the poetic medium itself, and the poem's visual presentation underwent fundamental changes. What's important to remember here is that with the advent of new technologies of production, language in a way became sundered

from consciousness—which is to say, speech became separated from speaker. Doubtless, the advent of typography made it even more possible for writers and critics to think of language as a pure and self-enclosed system.

The technologizing of writing also made it possible to look at the poem as the manipulation of efficient design. Modernist poets saw themselves as surgeons or engineers who will not use any word randomly in their works, and who will not waste lines of verses on subjective feelings or impressions (Steinman 1987, 113-32). What is interesting is that literary criticism of the last century was quick to defend modernist aesthetics, and adopted a scientistic stance in the process. In particular, Russian Formalism and American New Criticism aspired to turn literary commentary into an objective science, isolating the poem and reading it closely for either the preponderance of its defamiliarizing devices or the harmony of its otherwise incongruous elements and techniques.

Darwinism's impact on literature was ambivalent, too: It inaugurated an image of the world as an orderly system, but at the time also as a purely material process characterized by random mutations and variations, to which humans, like all other creatures, struggle valiantly to accustom themselves as a matter of survival. Moreover, evolutionary logic focused the poet's attention on nature's vitalism or cyclical energy—its "rhythmic urge"—that is said to inform all life. And indeed, channeling the Darwinian thesis, a few modernist poets saw poetic energy as a manifestation of the libidinal "life-force" (Clarke 1996 159).

The new physics of the twentieth century also influenced modernist poetry's notions of poetic design. Ezra Pound, for example, saw in the patterns of electromagnetic forces an analogy for the mysterious flow of energies in primitive art, and for the poetic image as a "radiant node or cluster," which he later called the Vortex: the confluence of historical and artistic forces that serves as the core of a new aesthetic (Bell 1981, 163). The work of the linguist C.S. Pierce also serves as an important influence for modernist poets, for it paved the way for the idea of poetry as an "interpretive field"—an activity of signification in which poet, poem, and reader all participate and interact (Beer 1996, 297). A case in point would be William Carlos Williams, who formalized "field theory," an important consequence of which is the notion of the poem as

a confluence of many other texts—which is to say, the theory of the poem as a field of intertextual influences and relations.[3]

After the horrors of the Second World War, the disabused poets could, understandably enough, no longer casually celebrate these various prized links between science and poetry. After all, it was science and technology that engendered Nazi eugenics and the Atomic bomb that destroyed Hiroshima and Nagasaki, and spurred the nuclear arms race as well as the "military-industrial complex"—a global institution that foments endless conflicts and wars across the world. It is interesting to note, in this regard, that disillusionment with the promise of scientific benevolence was what probably prodded contemporary poetry to take a more confessional turn. Wary of modernism's celebration of technological innovation, from the end of the Second World War onward, poets in the West have turned their attentions away from the scientific and toward the more domestic and "intimate" realms of experience.

We do need to say, however, that nowadays, science continues to fascinate poets, especially those whose ambitions include engaging with all available forms of contemporary knowledge (very often, these poets come from the ranks of the new experimenters or the contemporary "avant-garde"). Some are interested in scientific theories that provide accounts of the control and dispersal of information. One such example is chaos theory, which has given a few contemporary British poets a model for understanding the ways patterns can spontaneously emerge from within seemingly random systems. Another area in which science may be said to have influenced poetry is information technology. Software and computer programs have been used by poets—quite often, the proceduralists of Europe and the language poets of America—to generate and thereafter randomly permutate texts. This kind of project is similar to the earlier modernist activity of interfacing literature, science, and mathematics, already to be seen fully expressed in the works of avant-gardes in the beginning of the last century.

And then, massive revolutions in media technology have also affected and altered the material production of poetry: optical discs, flash drives, e-books, and other digital "hyper" media, together with the internet, offer new and interesting possibilities for the design and dissemination of present-day

poetries, which now can be rendered not just in plain text, but also in hyper- and multi-media. Because all poems necessarily exist in a medium, and because all media are technologies (which is to say, practical applications of scientific principles), we might say that all poems are implicitly about the manner of their production or dissemination—always, on a metatextual level, implicitly about technology and science, hence. The difference lies, of course, in the way the salience of this mediated/mediatized "form" is made particularly crucial and therefore foregrounded in a particular work—as in those works of a "digital" character—and what this salience thereby implies on the level of "thematic" significance.

In the contemporary Western scene, there are a number of examples we can cite of radical intermeshings of science and poetry—in fact, of the literally organic and immanently "structural" deployment of scientific methods and knowledges in the production of poetic material. We may, for instance, look at the work of transgenic media artists Eduardo Kac and Christian Bök, who understand poetry as a synonym for poiesis or art-making, in the most general sense.

Kac's best known work is, of course, the famous Genesis "poem,"[4] which involved the transcoding of that foundational verse from the Biblical Genesis—about man being made in God's likeness, who is thereby given dominion over the natural order—first into Morse code, and then (using the artist's own special key), into genetic base pairs. He thereafter custom-ordered these genetic sequences and implanted the genes into an unnamed bacterium, which he grew in a Petri dish. By webcam viewers were allowed to see this dish, which was lit by an ultraviolet lamp—that would cause mutations in the live specimen—that they could thereby activate from their keyboards, if they so desired.

The point of the experience is the paradoxical undoing of the verse itself, for the only way the viewer can show his disagreement with its message—about humanity's privileged power over nature—is by activating the mutagenic light, which would alter its sequential expression and therefore undo its encoded message in the organism. But what we must remember is that this act itself necessitates exercising human agency over the natural. On the other hand, the opposite poses a different but equivalent "moral" quandary: by

agreeing with the message of the verse the viewer who does not activate the light will effectively be allowing nature to proceed unencumbered by human intervention. Similar transgenic multimedia poems have been assembled by Kac, as his website proudly advertises.

On the other hand, another intriguing example of the extremely intricate valences to which poets in the West have brought the idea of the poem may be seen in the still unfinished Xenotext project of the Canadian experimental poet Bök, author of the best-selling book Eunoia, in which a chapter uses only one vowel—a procedure known as univocalics. In Xenotext, Bök basically wants to encode a poem into DNA that will then be implanted into the bacteria called Deinococcus. Bök's goal is not just to inject a recoverable text into the genetic material of a single-celled organism.[5] His project is to insert a poem in the organism that will enable it to synthesize a new protein that can be read as a second, entirely different poem.

As Bök himself explains: "I'm not just hijacking the organism to turn it into an archive for storing my poem. I'm also transforming the organism into a machine for writing a poem in response… I'm trying to make my poem a living thing that in turn writes a poem." In order to carry out this project, on his own Bök studied basic biochemistry, and devised, with the help of genetic scientists, a computer language program that would sift through the eight trillion possible combinations of twenty-six paired letters, in search of that one combination that would produce a sensible dictionary of English "word pairs." Notionally, one word of any pair in the original poem would create a protein that composed the other, and so on and so forth. (Needless to say, true to postmodern form, this description comes from the poet's own "concept paper," posted in various places on the worldwide web).

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In this part of my paper, I wish to speak on a more personal note. As should be apparent by now, the question of poetry's undecided relationship with science is not a new one. Easily one remembers not only the well-known academic conflict between artists and scientists (where terribly important things like resource-allocation and university funding are concerned), but

also the proverbial antagonism between idealism and pragmatism, spirituality and materiality, culture and nature, the mind and the body. I am sure the opposition makes sense on many levels, which is why it has persisted, in these and all its other guises. I am also sure that in a country as poor, hapless, and underdeveloped as ours, for many, the opposition holds firmly, and the choice of which to champion and prioritize is nothing if not blindingly clear.

The choice, to me, is far from clear. I speak as someone who is identified—and who self-identifies—with the arts, but who nonetheless has always had an abiding fascination with and an affinity for the scientific method and all its elegant exactitudes. In fact, I can say that, the foregoing survey aside, in my practice of the literary arts, I have occasionally discovered convergences between what I now believe to be comparable and even overlapping knowledges and concerns.

I remember that, years and years ago, when I was still teaching freshman English, I would now and then pause in the middle of a lecture, in order to register mathematical analogies for such "compositional" lessons as sentence subordination and coordination, the logical fallacies, the various expository types, and the formulation of such indispensable things as outlines and thesis statements. Then and there it would occur to me that like science and math, writing is conceptually premised on principles of identity and difference, exclusion and inclusion, sets and subsets, the definite and the indefinite, the particular and the general.

Reflecting more on this "common ground" between the synthetic and the analytic persuasions, I have come to see that these dual loves do answer to the same name, and it is a name which I—after so many poetry collections and creative writing workshops—should only know too well: metaphor.

As a general term for figurative language as well as for all forms of associative, parallel or analogical thought, metaphor (Martin 1994) may be said to be the foundation not only of the arts, but also of the sciences, which cannot help but use models or paradigms with which to explain phenomena. Think of the Big Bang, galactic and atomic "systems," wormholes, string theory, knot theory, fractals, black holes, dark matter, helixes, number lines, rays,

angles, planes, rotations, covalent bonds, pulsars, fuzzy logic, and all the other wonderful substitutions and magical images science and mathematics have no choice but to conjure, especially as they attempt to represent and understand the uncertain, the possible, the new.

This argument is, of course, somewhat old-hat. The German philosopher Friedrich Nietzsche already proposed as much in his book, On Truth and Lie in an Extra-Moral Sense, published in 1873. And I quote:

> We believe that we know something about the things themselves when we speak of trees, colors, snow, and flowers; and yet we possess nothing but metaphors for things — metaphors which correspond in no way to the original entities.... Nature is acquainted with no forms and no concepts, and likewise with no species... Every word instantly becomes a concept precisely insofar as it is not supposed to serve as a reminder of the unique and entirely individual original experience to which it owes its origin; but rather, a word becomes a concept insofar as it simultaneously has to fit countless more or less similar cases — which means, purely and simply, cases which are never equal and thus altogether unequal. Every concept arises from the equation of unequal things. Just as it is certain that one leaf is never totally the same as another, so it is certain that the concept "leaf" is formed by arbitrarily discarding these individual differences and by forgetting the distinguishing aspects. (Nietzsche 1976, 42)

In other words, for Nietzsche, the very words human beings use—yes, even the scientists—are themselves merely figures of speech, metaphorical distillations or "generalizations," that attend to the commonalities and never the discrete differences in the world's sundry objects, which cannot be fully represented by words at all, in all their intractable actuality and specificity. This is the case in all of language, which does not only fail to encode reality in a positive sense, but only produces meaning relationally—in a system of verbal units, which signify only by virtue of their differences from each other (as we know, this is an insight that modern linguistics will arrive at in the century after Nietzsche).

In science as in art, metaphors are "stories" that serve an explanatory function. Poetry uses such tropes unapologetically, while any given science will typically not describe itself as metaphorical in the very least (these personifications are all my own). Even as they effectively elucidate the objects

under consideration, the responsible scientist will be quick to deny that his metaphors can actually replace the things that they are meant to merely indicate or explain.

It is a fact, however, that in many of the sciences, there are metaphors that have become so commonplace and "naturalized" that hardly anyone perceives—let alone questions them—anymore.[6] For example, the mechanistic paradigm underlies the idea of the heart as a pump, of the solar system as a system, and of society as a kind of "political machine." On the other hand, the pathology paradigm is typically found in economic discussions of over-consumption as a viral disease, and of capitalism as a kind of terminal cancer (which by all indications it probably is). And then the militaristic paradigm underlies any ordinary account of the workings of the human immune system, which typically deploys such words as engulf, protect, destroy, recruit, surveillance, activate, and so on and so forth. Perhaps the metaphor that has come to dominate all of science is the same rampant metaphor that has come to represent the very act of thinking itself, and we have Plato's Myth of the Cave to blame for the founding of the empire of the cognitive gaze: See what I mean (Jay 1993)?

I suppose it is just right that I should be particularly attuned to the presence of metaphors, for as an (ever-)aspiring poet and facilitator of poetry workshops, I have made it my business to look for—and look after—such fragile, rare, and magnificent things! And because it is clear to me that both the sciences and the arts do in fact traffic mutually in metaphorical logic, I do not see how promoting one is not ultimately the same as promoting the other, or that the scientific should necessarily be valued more than the artistic kind of work (and vice-versa). However, as the above examples of scientific clichés show, I do realize that what tends to distinguish the two is the infinitely higher turn-over rate of metaphors in the latter when compared to the former.

As long as a metaphor works, science can be expected to keep it, and this is precisely why the scientific temper is ideally an exercise in vigilance, lest its models and schemata ossify into conveniences, and come to completely replace the irreducibly real things to which they attend. In my poetry workshops, on the other hand, everyone is encouraged to come up with their own metaphors (at least, that's the plan), which in a poem function not merely

as simple substitutions, but as ironies or paradoxes. While a poetic metaphor posits a resemblance between two unlike objects, it does not champion the cause of identity at the expense of recognizing difference. The paradox of poetic metaphors is that they do not obliterate the literalness of one thing even while they transform it figuratively into another.

In poetry, a metaphor like "seashells are broken pieces / from God's own bright teeth" (from Edith Tiempo's "Bonsai"[7]) is an interaction of both the principal and the subsidiary terms—between the tenor "God's teeth" and the vehicle "seashells." Needless to say, this "simultaneous" kind of embodied consciousness, this complex form of perception apprehends the sameness and difference of seashellness and Godness all at once, and its effect is to generate questions and evoke a sense of unity as well as of incongruity in the reader. Finally, as a beautiful metaphor for the incarnate nature of the Divine in the world, it serves to remind him of the enigmatic complexity of experience and of reality itself. This steadfast acknowledgement of and commitment to mystery is, in my view, what constitutes poetry's primary mimetism—its chiefest virtue—which science, to the degree that it seeks to strictly demystify, separate, whittle, and analyze reality down to its most discrete parts, will find it extremely difficult to approximate or achieve.

* * *

For the third part of my paper, I will turn to our own anglophone poetic tradition. Off the cuff I can tell you that, judging by the scant evidence, Filipino poetry in English has not, by and large, taken on the topics or "methods" of science—at least, certainly not to the same or even remotely comparable degree that the modernist and present-day avant-garde poets in the West have. For a possible explanation, easily I can point an accusing finger at the general state of underdevelopment of the scientific and technological "domains" in the Philippines.

As common sense should tell us, this situation simply derives from the hopeless immiseration of large sections of the Filipino population on one hand, and the neocolonially indentured condition of the economic and political systems of the country on the other. If Filipino scientists and technologists are

themselves helplessly "inchoate" and/or preliminary in their efforts and are only now starting to pick up, then how indeed can we expect the artists—least of all, the literary—to do, or to be, any better, as far as the question of promoting a more science-inflected (poetic) discourse is concerned?

And yet, aside from these obviously germane explanations, one other reason that I see for the general absence of any important and sustained "confluences" between the poetic and scientific temperaments in our literature is the same reason that I can invoke for the general absence of the kinds of verbally reflexive and self-referential experimentations that the modernists first carried out in the early part of the twentieth century, and that have now become almost normative in the avant-garde circles of the American institutions for creative writing in the present time. I am referring, of course, to the complex and necessarily ironic effects, hereabouts, of using English as an expressive or even artistic language in the first place.

In particular, I am thinking of the unfinished task of our anglophone writers to make English signify effectively the most basic local realities they are seeking to represent, given the increasingly hybrid and multi-lingual conditions that they find themselves working in. In other words, English in our literature remains an ironic language—ironic because, on one hand, historically it shouldn't even have been an option, to begin with, and ironic because, on the other, the everyday reality of most Filipinos is not monolingual or monocultural at all[8]—and therefore the labor of making it carry the weight of intensely transcultural and syncretic realities remains a challenging and altogether daunting one, to be sure. In contrast to the monocultural Western modernists, who turned their backs on the realist imperative in order to foreground the scientifically observed materiality and mediating power of the verbal medium itself,[9] our poets are still mostly mimetic or representational in their orientation, and this is possibly because the task of making English carry the complex meanings of a neocolonial culture describes a primary and ongoing struggle for most of our anglophone writers, still and all.

Inasmuch as the problem with writing in English in the Philippines is still largely about the problem of getting it to represent the plural realities and ironies of our lives, the allure of the more scientifically experimental and

self-reflexive forms of poeticizing has simply not proven strong enough for many of our poets. We need to remember that, after all, the mimetic function is a social accomplishment, and not a natural attribute. Language only refers to extralinguistic realities if existing convention deems it can. It has been the conclusion of Western linguistic theory of the previous century that language cannot, in and of itself, be referential, and while this view essentializes language as anti- or nonreferential, we need to keep in mind that language per se is not naturally any of these things. Language is a medium of signification, which is culturally determined, which functions culturally, which embodies culture itself. As such, language varies in its function, according to the obtaining conventions of meaning and meaning-making. What kind of literary or poetic culture is being considered, in the first place? What language community, what formal considerations in interpretation, what notions of readership, what authorial functions are in place?

In the West, the linguistic turn's "bracketing out" of the referent is the result of Euro-American civilization's scientific revolution, which interestingly enough coincided with its "crisis of representation." Suffice it to say that just as not all the world has undergone a scientific and technological overhaul, then in like manner not all the world has suffered from the crippling effects of this representational crisis (at least not in a qualitatively identical sense). Not all the world's cultures have deemed language to be inherently involuted and "hermetic"—meaning, folding or turning back into itself exclusively, and therefore incapable of representing anything other than the differential nature of its freely floating signifiers. Not all the world has shunned diachrony in favor of synchrony, and turned the study of language into an analysis of its "systematicity." And so, the scientistic "rationale" for modernist writing (the self-enclosure of the inherently unmotivated sign system), to the degree that this practice channels the precepts of modern linguistic (Saussurean) discourse, proves itself far from universally valid or insightful.

And then again, even as we register our demurral against this new universalism, we may need to rethink the question of referentiality as being, after all, broader than just the mimetic, which is simply one kind of representation language can make. All language is referential in this sense, all language points to or "refers"—first to the world (we may call this function

mimetic or extralinguistic), next to elements in the linguistic system (either intra- or interlinguistic), and then to the bigger conceptual system or theory of meaning-making that overarches the particular linguistic activity being considered (metalinguistic).[10] This implies that a text, any text, possibly evinces all these referentialities, and that we can possibly distinguish among cultural systems according to the emphasis or lack of emphasis they give to certain referentialities, to the exclusion of the others. This also obviously underscores the crucial role the act of interpretation plays, which is finally what determines not only the meaning of a text, but also the manner in which it is read.

Turning to Philippine poetry in English, and its seeming lack of concern for science, what we need to bear in mind as we grapple with its "nature" is the question of the "appropriate interpretive paradigm." In particular, we need to rethink the falsely universal, Western-minded modernist or postmodern position that seeks to impute if not to prescribe a largely self-referential motive to our own mimetic texts, that would seem to have been most likely written under a different set of linguistic and literary assumptions. Needless to say, in reading our own poems we need to, first and foremost, spell out the conditions that determined their production and consumption. Any other attempts to "deconstruct" our anglophone poems—to my mind deconstruction is in many ways just a more voguish term for the activity of pointing out the internal contradictions in texts—would have to begin by taking into account the dominant signification/reading that has come to subsume them (we can say that what gets deconstructed, really, is the dominant interpretation, using the text itself as a "dismantling tool"). Without this requisite acknowledgement of the overt and subtle workings of a determinate "contextuality," the reading will end up being ill-fitting or uninformed.

The analogy that just now comes to mind for this situation is that it would be like looking for instances of modernist "narrative collage" or postmodern "bricolage" in the Hindu Panchatantra Tales or in Buddhism's Jatakamala or perhaps in any of the Philippines's early awit or corrido (or turning to a parallel example in the physical sciences, it would be like looking for neat Newtonian principles in a decidedly crazy, Einsteinian cosmos). The sheer "lack of fit" (which is to say, the gross inappropriateness or incongruity) between the interpretive paradigm and the culturally specific elements of

signification that poetic or literary texts in general fundamentally assume (at the moment that they are composed, at their various sites of reading), should be egregiously obvious in these hopefully hyperbolic examples.

Of course, it hasn't helped our literary situation any that literary or even cultural studies in the Philippines remains, by and large, staunchly humanistic—which is to say, universalist and positivistic—and therefore theoretically naïve. The orthodoxies of critical theory, while largely already assumed in the contemporary West, are only now being seriously considered hereabouts, and their effects remain to be deeply felt across the humanistic and scientific disciplines. We can, perhaps, enumerate the most basic of these "theoretical commonplaces" (Barry 2002, 34-36): one, that the so-called facts governing our lives are socially constructed political enforcements that are contingent and provisional; two, that the interested nature of these constructions proves that politics and power are all pervasive, that ideology (on which power relies) is inescapable, and that there is never any fully disinterested inquiry into social phenomena; three, that because language constitutes and constructs, rather than merely reflects or represents, reality, our entire experience of the world is inalienably textual; and finally, that totalizing and universal concepts are fictions that we must distrust, because they erase the specific situations and circumstances that engendered them.

Just to back-track a little—as well as to stress a historical and altogether germane point—we can say that it is not entirely pure coincidence that the skeptical attitude adopted by the early twentieth century modernists toward the question of linguistic transparency and referential meaning was premised upon a European linguist's "scientific" unpacking of the inner mechanisms of language. I am referring, of course, to the theoretical interventions of Ferdinand de Saussure, to which the roots of the immensely influential, "science-inspired" movement called structuralism in the West may be traced.

Demurring from the diachronic and referential paradigm of his discipline, Saussure, in a moment of "scientific illumination," took language as a self-enclosed system of unmotivated signs, whose meanings are arbitrary, and stabilized only by convention.[11] According to this theory, language isn't a reflection of objects in the world and of experience but is a system of signs

that exists separate from them. Moreover, language constitutes rather than transparently records (or "encodes") our world, and it is not the worldly objects themselves that contain meaning but rather only our linguistically constituted mind that attributes significance to such. This happens so efficiently and "naturally" that, for example, our words for flavors, colors, and smells summon them into being—"make them real"—rather than merely denominate them. It only follows that within such a system, meanings are relational—that is to say, its constituent units or words are defined in relation to other words, and not in isolation. Finally, Saussure observed that a common relationship between words is mutual or binary opposition, whereby both terms achieve meaning only as a contrast to the other.

Obviously, the Saussurean thesis that language is arbitrary, relational, and constitutive greatly influenced many Western artists and thinkers, who started to think of social realities in terms of systems that are self-contained, in which individual elements are relational and thus interconnected in structures of increasing complexity (we might say that such an obsession with structural relationships and their levels of complication describes a fundamentally "scientific" attitude toward the question of human phenomena). Also, Saussurean linguistics effectively severed the "mystical" and scientifically indefensible "correspondence" between words and reality, between signs and things.

Thus, as the American avant-garde poets we earlier discussed saw it, the poem's verbal materiality (or performativity) itself became poetry's new object of interest, its new object of inquiry. The upshot of this was their fascination with the self-referential aspect of language-use, and their poetic productions became not only formally experimental and structurally complex, but increasingly involuted and reflexive, eventuating in the many forms and practices of contemporary avant-garde aesthetics and "language poetry," that now abound in various parts of the West. But because this view on language is itself culturally specific—and because, as we are already well aware, its assumptions cannot take into account the translational and plurivocal linguistic realties of a neocolonized and culturally simultaneous country like the Philippines—we may need to take issue with the prescriptive supersession or obsolescence of the mimetic mode, and the endorsement of the staunchly self-referential as the only legitimate mode for Philippine poetry at the present time.

On the other hand, we do need recognize the possibility that while Euro-American globalization has brought both the mimetic and nonmimetic modes of poeticizing to our country, these practices may not be as mutually exclusive in our case as they may have effectively been in the Western episteme whence they came. Again, we consider the fact that this is an episteme that has suffered from a historically specific, protracted, and profound skepticism, since the end of the Second World War. Curiously enough, this historical passage was relatively the same period when the present global dispensation—with its centers of economic growth all situated in the former imperial powers of Europe, and the consequent damning of their ideologically non-aligned former colonies to the endless immiseration of underdevelopment—was decreed and enacted by the Marshall Plan, as it was hatched in the headquarters of the global American empire in Washington DC (see Lazarus 2004, 5). How simply and unproblematically referential can our poetry in English really be, when at the very least, on the level of the metalinguistic, the typical Filipino mimetic poem, unlike any of the brilliantly self-referential and complex textual performances enacted by contemporary postmodern American poets, points or refers not so much to elements within itself as to the cultural and historical inequities, discrepancies, mistranslations, hybridities, and syncretisms that constitute it? Needless to say, these various social processes are the very condition of the Filipino anglophone poem's possibility—which is to say, a poem in English written by a non-American living in this pauperized corner of the Global South.

We may thus argue, in view of this, that the two general lines of "poetic descent" identified by Western critics in their own tradition—the mimetic and the nonmimetic, or the "extrinsic" and the "intrinsic" (Brogan 1994, 233-236)—are often ironically conflated in postcolonial poetries, for the simple reason that their signifiers, being drawn from the mixed or syncretic languages of colonization, cannot be expected to ever function fully or exclusively propositionally, transparently or "extrinsically," to begin with. Using this perspective we may conclude that, already, the Filipino poem in English, being grounded in the historical irony of colonialism, is "intrinsic" or verbally involuted, representationally ambiguous, and self-reflexive, right from the get-go. Because Western poetics assumes an unproblematic and homogeneous linguistic ground, the only way it distinguishes these two broad "traditions" in the Western lyric tradition is by emphasizing the role that verseform plays in the

case of each. In extrinsic poetry, which is typically seen as mimetically descriptive and narrative, words are able to better facilitate interior visualization because poetry's prosodic means—all the kinds of opportunities afforded by verseform—have been suppressed. In the intrinsic line of descent, we are told that reference is minimized, ignored, or denied, and that the words become wholly of interest in themselves, as pure sound form or visual form (or as both). Poems written in this mode demonstrate, sometimes to excess, the full range of poetry's prosodic or structural devices, and in the history of Western literature, they have come from such diverse and "difficult" modernist or postmodernist movements as Pure Poetry, Language Poetry, Sound Poetry, and Concrete Poetry.

Again, in our case, we must register and insist upon the obvious difference, as decreed by our specific form of postcoloniality: The "unnaturalness" of English as a language that precariously "coexists" in the heady flux of local languages in the Philippines makes it virtually impossible to be perfectly transparent to its meanings; it only follows that the poetry written in it simply resonates the characteristically postcolonial opacity— the problematic "gap"—between referent and sign. Little wonder, then, that thus far, Filipino poets writing in English have mostly eschewed the scrupulously intrinsic manner of poeticizing. Wittingly or not, our anglophone poets have all along been producing mimetically complex and verbally self-reflexive poetry even as they themselves may believe that, for the most part, they have simply been writing plainly descriptive or narrative verse.

And so, as Filipino poets practice them, both the mimetic and nonmimetic kinds of poetry, to the degree that they remain sited and situated in our culture, and to the degree that they are conducted in the global media of textuality and English, profess comparable neocolonial "affects" or "desires." In fact, because referential writing in a second language, in a language of colonization, and in a hybrid cultural situation like ours, is not and cannot be simplistically referential, then, counterintuitively, the gesture of evacuating English of its (in our case, necessarily problematic) referents possibly betrays the even more inexorable colonial desire to turn the colonial presence into a fetish, by and through which it may be so tremblingly possessed. The thing about fetishes is that—as we ought to know—it is finally all in vain. Likewise, at this point in a climatically imperiled, ruthlessly neoliberalized, and globalized history, fetishism presents itself as a rather retardataire aesthetic gesture.

Furthermore, I see another possible danger in pursuing the overinvested and underexplained desire to "scientificize"—which, as we have seen, is in many ways the same thing as "postmodernizing" or turning linguistically indeterminate and textually self-reflexive—our poets' mostly representational and "confessional" poetries, and it is the same danger that inheres in the use of global information technology, which has the power to install, in our imaginations, as an affectional reference-point, the phantasm of a First-World modernity that we never really had. Already, the new global media's sundry powerful simulacra—movies, electronic books, television shows, youtube videos, games, and so on—are exiling us from the gritty reality of our literal selves, and all this "simultaneity" simply serves to obfuscate how terrifyingly inequitable and uneven the processes of neoliberal globalization really are. Despite its promises, egalitarian globality is as much an illusion as the unlikely prospect of science and technology actually becoming uniformly developed across our violently sundered world.

Just now, I'm thinking that the fact that many of our poets persist to write referentially may also actually indicate a kind of "prescience," on their part: Maybe they continue to write this way because they instinctively know how pointless procedurally intrinsic or strictly self-referential writing in English possibly is. Maybe it is because they already understand that this kind of writing proceeds out of a concept of the fragmented or incongruent subject that is either much too luxurious or much too "redundant" to be entertained. Indeed, it is possible that their refusal to valorize the fragmentation of multiple subject-positions—which, as we know, has been the logical conclusion of differential linguistics in the history of Western consciousness—as a "more positive" alternative to the "unified" self of our brand of referential writing, comes out of an unconscious realization that such would be a brute exercise in futility.

After all, being neocolonized subjects, our Filipino poets understand only too well that to champion the nonmimetic and the "fractal" and fragmentary would be tantamount to celebrating the cultural deracination and subjugation that already harrowingly afflict us as a people. Needless to say, to the degree that the more thoroughgoing, "scientific" kind of poeticizing is also necessarily self-referential and nonmimetic, then committing oneself to such a poetics would be tantamount to undoing the urgent and collective attempt we Filipinos need to

keep mounting to integrate the many uneven and often conflicting aspects of our being, and bring these to bear on a beleaguered "sense of national self" which an unfinished colonial history continues to fracture and threaten with extinction.

* * *

Allow me to conclude with a few poems that involve, in varying textures and to varying degrees, matters of science, written by some of the better-known Filipino poets. This "involvement," as should be easily obvious, is strictly and simply thematic—expressing these respective poets' sentiments and views on certain pressing issues of an undeniably scientific tenor, mostly ecological, and critical (if not cautionary). Evidently, these poems are lyric poems in the traditional sense: spoken by an "I," meditative in tone, unified in structure, and focused on a single experience. But precisely because they are in English, I find implicit in them an ironic or "complicitous" critique against imperialism's double-dealing universalism—this is a lyric gesture which I have elsewhere attributed to a Philippine-specific postcolonial poetic practice (see Garcia 2007, xi-xxiv); sadly, I do not have the time to dilate further on this matter here.

The first two poems are by the National Artist and beloved mentor Edith L. Tiempo, the last one is by fellow Thomasian Eric Gamalinda, a much-missed poet and novelist who is now living in New York City, USA. In between are a poem written by a poet-judge from the southern city of Cebu, a poem by a member of the Philippine Literary Arts Council (which came out with a "Versecology" issue of the poetry journal Caracoa, in commemoration of Earth Day 1990), a poem by a Filipino microbiologist, as well as my own paltry attempt.

"Wandered Far" is Tiempo's memorable rendition of the scientific concept of the water cycle as well as that well-known Darwinian thesis concerning the primordial aquatic origin of all landlubberly animals, including, most certainly, humans. The speaker is arguably a woman, whose experience of watering the different flowering plants in her garden sometime around sunset prompts her to meditate on the lovely and multifarious forms of life that all thrive on this vital liquid element. As we shall see, this leads her to intuit, in both the sentient world and in herself, the "watery oneness" of all living creation.

Wandered Far
by Edith L. Tiempo

(The sea is warm and tidy
In my body
In jug and jar
Wide water wandered far.)

Late afternoon is best.
Clear droplets shower
From the sprinkler and the hose,
And the garden is drenched,
The porous soil quenched
From the dripping spatter
On the begonias and the tall rose-
Stems; sprays of sanderiana
Lift up each gorgeous corolla,
And moist on the ground in bordered rows
The pied buds of the portulaca.
The sun is in the west.

I think of a horse somewhere
In some pouring rain,
His heat steaming, his skin bathed cool,
Of my dog giddy in puddle water,
Of sparrows and their tweet and flutter
On a bird bath; of an empty lair,
The hairy hotbed of the deer,
Who trots off through the green lane
To the knife-cold edge of the pool,
Meeting his bowed shadow there,
Tongue and throat drenching, slaking
In the drowsy forest.

It is the sea in us,
From the deep cobalt
Brine, through tortuous
Springs, waters that roam.
Rising as vapor, cloud and mist,
Falling as showers and rains
To lave our breathing
Lest we parch and perish,
For we crawled off the sea bringing
The cupful in our veins
And the memory to cherish:
Life and color
Gurgling in the garden hose.

The sea in us
(It has been years and years),
The old mark of our water home:
Salt in our wounds, the wet salt
Of our body's humors.

(Tiempo 1993b, "Wandered Far")

The second poem, also by Tiempo, makes an interesting reference to Einstein's special theory of relativity, which among other things asserts that the observed independence of the speed of light on the observer's state of motion fundamentally affects the notion of simultaneity (meaning, as this poem puts it: Present and past are relative and positional, in the same way that the stars that produced the fanciful twinkling lights that just now we see on clear moonless nights may have actually already expired in actuality). There are two events being juxtaposed in the poem, both involving the same adult speaker and child, and both involving the latter's "wondering cry" at the magnificence of a perishable nature (then "stars," on the one hand; now "rambler roses," on the other). This short but astonishing work by Tiempo is perhaps a very good example of that kind of poem that embraces science at the same that it extols art's superiority over it. For here, the famous Keatsian conceit with which the poem opens—that "art is long," while "life is short"—is in fact embodied by both the poem and the loving human bonds across generations that it presupposes, in and through which finite creatures, heavenly and earthly both, achieve immortality, and "endure as one."

Rowena, at Camp Lookout
by Edith L. Tiempo

It's now a century
Since Keats heard the soft pipes play
A darkling tune,
Blowing and breathing
From cold marble stone.
Now the cold stars burn
Blue holes above this slope,
And she cries, "Old magic trick! That star's
No more—that light
Is from a million years ago!"

The thought I render sotto voce
Is spoken to the past—
Another time, another place
Catapulting, meteor-like,
To this young girl on the slope,
That far child that she was,
Crying out (as now) a startled praise:
("Look, rambler roses all along the vine!")

That past day flinging here, star-fashion,
So that finished rose and vanished star,
In a wondering cry,
Endure as one.

(Tiempo 1993a, "Rowena, at Camp Lookout")

In the following poem, Cebuano poet and regional trial court executive judge, Simeon Dumdum, Jr., resituates the otherwise dour Newtonian "laws" of motion away from the sterile physics laboratory to a messy and tragicomic rural scene, that involves a potentially predatory moment, being schemed by a lecherous man against an unwitting provincial lass. We may say, tongue in cheek, that this poem "humanizes" scientific principles by humorously deploying them—in this case, using the folksy narrative of one man's concupiscent cupidity, that gets thwarted finally by his own much-deserved comeuppance at story's end. What makes this resolution interesting is the way gravity and inertia are depicted as being not so much indifferent forces, as simultaneously enabling and karmic ones. In other words, in this poem, causality and consequence do come in pairs (as Newton had convincingly argued), but not always in the way we want or expect.

The Gender Bias of Newtonian Physics
by Simeon Dumdum, Jr.

Romance? For him it is bus rides
On mountain roads beside a farm girl
With scented hair and strong breasts
And her luggage of kitchenware
(Perhaps a kettle that she might place
On the rack above)

And making sure she would sit next to him,
A little monk with only a haiku in mind,
And his shoulder would fit into her armpit
As into a sheath. And his hand? It seemed
Liberated by sleep from the clasp of prayer
And now hopping like a frog with every jolt of the bus
Towards her thigh, there to rest and wait—

For the moment before the cliff and the valley,
When the bus would make a sharp turn
And send everything flying—
The heads to jerk towards the window
And the peace of an ancient morning,
The frog to make the jump into the pond
Of her lap, and the kettle to fall
With a clang, on the crown of his head.

(Dumdum 1999, "The Gender Bias of Newtonian Physics")

As I mentioned earlier, the Caracoa issue from 1990 was devoted to the question of the environment. Predictably enough, given the still-unfinished Cold War, a number of the poems included in this issue channeled the lingering universal fears of a thermonuclear holocaust. This next poem is a pretty straightforward (almost banal) articulation of this paranoid fear, and to me the interesting thing about it is that it uses the ecological movement's favored color—green—ironically (the author must have been thinking of the viridian-complected image of the Incredible Hulk, who of course was, during this time, popular culture's poster-boy for radioactive mutation gone terribly wrong).

Verdigris
by Felix Fojas

One drab, grey-colored night
A jolly green giant
Mushroom mysteriously flashed
In my mind's horizon
With the blinding chorus
Of a thousand green suns
And the whole planet Earth
Became a many splendored green:
The sky was green
Green was the rain
Even a child's molten scream
Was shocking green.
Then I woke up feeling
All fresh and green:
Lo! I was proudly wearing
The greenest halo I've seen
And was plucking a green harp
In a radioactive heaven.

(Fojas 1990, "Verdigris")

In the 1980s, the microbiologist Gode B. Calleja put up the independent publishing firm, Kalikasan Press, and under this imprint his very interesting collection of poems, Genes in a Cell, came out early in the following decade. The book's back cover blurb reads:

> A light history of life and matter—in verse. All the buzzwords of current faddish science are here: antimatter, DNA replication, quarks, leptons, plasmid, E. coli, positron, Gaia, etc... A scientist turned poet, or a poet turned scientist: it is difficult to tell.... Why can't it be both? (Calleja 1991)

Indeed, the book delivers amply on this promise, as the titles of its pieces readily reveal: "A black hole has no hair," "More plasms, from spasms," "Counsel to a young gene in search of a cell yet," and "Bacteria have their problems, viruses."

Here is one of the more interesting pieces in Calleja's book. In this poem we see an interesting juxtaposition of the ostensibly "inequitable" qualities of the female and male sexes. The speaker here would seem to make an appeal to possibly irate feminists, on behalf of the "beleaguered" male species, whom biology predisposes to a kind of helpless honesty—especially as concerns the matter of sexual expression and reciprocity.

A woman and a man
by Gode B. Calleja

Whereas female orgasms can be faked,
penile erections can not.

Where differences there are none
between a woman and a man,
let us not ascribe differences.
Let us not invent them,
out of ignorance, prejudice.

But where there are differences,
let us not deny them, let us affirm them,
let us rejoice, let us celebrate.

(For a female feminist friend)

(Calleja 1991, "A woman and a man")

In a recent collection, Misterios and Other Poems, I wrote a 60-poem lyric sequence that was occasioned by my fellowship and residency in the Netherlands. Among other things, news about the worsening tension in the oil-rich Middle East as well as the inclemencies of freakish weather and extreme climatic disturbances—courtesy of the worsening problem of global warming—insinuated its way into the book's first section, which is titled "Poems from Amsterdam." Here, then, is my feeble attempt at a poetic response to one of our generation's most compelling transnational issues (this "task" had struck me then to be an entirely scientific undertaking;

the thrill was that it took me, writing the piece, to an unexpectedly "mythic" conclusion.):

> Paroxysms of rain are drowning cities
> but the whole world is thirsty for oil—
> is waging wars across deserts to get it.
>
> Millennia of human thought and industry
> can only arrive at the same bright spot:
> fire that blazed in the first cosmic breath
>
> and now blazes in the hearts of the engines
> that turn and power and warm our lives.
> And this dependence wasn't always the case,
>
> though oil had always oozed out like gleet
> from crags on the wounded earth's surface.
> Ochre, pitch, or the color of straw, it was used
>
> by the ancients to mummy their dead,
> glue together hewn blocks of their temples,
> caulk the seams of their boats, even heal
>
> the mangy hide of their lumbering beasts.
> And before fueling the first torch or lamp,
> it was sold as a tonic and an unguent for gout,
>
> and was despised when it spurted out of wells
> from which fresh water or brine was expected.
> And what exactly is oil? In the beginning
>
> it was life, crude and numberless in the sea,
> or on land as crawling animal or vegetation,
> that settled and settled and layered into shale,
>
> pressed and heated and distilled by bacteria
> into liquid or gas, and trapped inside domes
> of permeable stone. This took eons, of course,
>
> for now we have oil, the condition of our being
> and the source of its woes, including the arrows
> and slings of outrageous weather, glaciers melting,
>
> rainforests reduced to brown kindling by drought.
> And to think it all began from white heat in a cell—
> in a body that burned out and burns on in the world.
>
> In the beginning, as in the end, is the light.
>
> (Garcia 2005, "Poems from Amsterdam," LII)

And lastly, as suggested by the title, Gamalinda's "Zero Gravity," implicates one of the last century's most phenomenal scientific accomplishments, the first lunar landing by humans in the summer of 1969. And yet, while the speaker obviously revels in the "cosmic" thrill and promise of this spectacular and extraordinary "technological" event, it is still the mundane and everyday world of human misery and suffering that matters—that remains with and in us—in the end.

Zero Gravity
by Eric Gamalinda

The dry basin of the moon must have held
the bones of a race, radiant minerals,
or something devoid of genesis, angel-heavy,
idea-pure. All summer we had waited for it,

our faces off-blue in front of the TV screen.
Nothing could be more ordinary—two figures
digging dirt in outer space—while mother repeated
Neil Armstrong's words, like a prayer

electronically conveyed. The dunes were lit
like ancient silk, like clandestine pearl.
In the constant lunar nights this luminescence
was all we hoped for. A creature unto itself,

it poured into the room like a gradual flood
of lightning, touching every object with the cool burn
of something not quite on fire. If we stepped out
Manila would be blank ether, way station,

a breathless abeyance. It didn't matter,
at that moment, where our lives would lead:
father would disown one brother,
one sister was going to die. Not yet unhappy,

we were ready to walk on the moon. Reckless
in our need for the possible, we knew
there was no turning back, our bags already packed,
the future a religion we could believe in.

(Gamalinda 1999, "Zero Gravity")

As this limited "sampling" of science-oriented poems written by Filipinos demonstrates, the extent to which science has pervaded the consciousness and concerns of Filipino poets writing in English has

been confined, more or less, to the thematic and the representational. Specifically, Filipino poets seem interested in using scientific concepts and theories as occasions for meditating on ordinary, everyday, needless to say entirely "referential" concerns: love, survival, familial loyalty, inequality, justice, and whatever else. This isn't remotely comparable to the science-inflected poetry of contemporary avant-garde poets in the West, whose poetic practices have tended to shun referentiality, and to internalize scientific precepts on the level of structure and form, rather than simple representational content (needless to say, these poets are not burdened by the same colonial endowment, are not "fractured" by the same violent history). Nonetheless, despite this disparity, the concern for rendering immediately relevant and "humanizing" the otherwise cold and disembodied principles constantly being discovered in the various fields of scientific inquiry remains comparable between these two divergent—just now, I'm thinking, possibly unrelated—traditions.

Notes

Read by the author under the title “Valence and Ambivalence: Notes on the Troubled History of Poetry and Science,” for the Panayam Lecture Series, Institute of Creative Writing, Faculty Center Conference Hall, University of the Philippines (Diliman), 24 November 2010.

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1 The University of the Philippines (Diliman) requires all its students to take the General Education Subject officially called “Science, Technology, and Society.” Coordinated by Mathematics professor Fidel Nemenzo, these classes now consist of lectures given by different professors coming from different fields in the natural and social sciences, as well as in the humanities, in the university; these various “experts” take turns reflecting on topics related to the course’s general theme: the contact-zones between science and art.

2 Much of the following summary of the history of modernist appropriations of scientific knowledge draws from the article of Tim Armstrong. See Armstrong 2001, 76-88.

3 This “theory” was more fully spelled out by Charles Olson. See Olson 1989, 106.

4 A summary and explanation of this transgenic work may be found online, posted on Kac’s own website. See Kac 2010.

5 The complete text of Bök’s “Xenotext” is also online. See Bök 2008.

6 The following examples are merely the more common ones, but the subject of the unavoidable metaphoricity of scientific thinking is a well-known and much-debated one. See, for example, the compilation of essays on this topic in Hallyn ed. 2000.

7 Tiempo 1993a, 29.

8 This is one of the arguments I proposed in my reflections on the question of the “universal” register that predominates in Philippine anglophone poems. See my monograph Garcia 2007a.

9 Even as she deconstructs the realistic claims of the great realistic English novelists of the nineteenth century (comparing and contrasting them with other artistic genres, and examining the evidence of their own self-awareness), scholar Alison Byerly’s masterful study presupposes a monocultural ground of these authors’ attempts at literary verisimilitude. See Byerly 1997.

10 This is my appropriation of the categories proposed by T.V.F. Brogan in his article on “Representation and Mimesis” in Brogan ed. 1994, 254-55.

11 The proceeding summary of the features of structuralist theory—the linguistic turn—comes from Barry 2002, 41-49.

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