The background of the cover is a stylized, mosaic-like landscape painting. It depicts a path or stream winding through a dense forest of trees. The sky is filled with soft, textured clouds in shades of blue and white. The overall style is reminiscent of a pointillist or mosaic technique, with individual colors forming larger shapes and textures.

# TOUCHSTONE

VOLUME 9.1 (FALL 2017)

EUGENIO MARÍA DE HOSTOS COMMUNITY COLLEGE  
THE CITY UNIVERSITY OF NEW YORK

# TOUCHSTONE

————— Volume 9.1 —————

HOSTOS COMMUNITY COLLEGE  
THE CITY UNIVERSITY OF NEW YORK

## **Touchstone**

### **Volume 9.1 (Fall 2017)**

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Cover image: Forest Wander, "Autumn Trees Country Road Fence," 2011.

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# Introduction

## *Jason Buchanan*

This year's theme for Touchstone is "New Approaches to New Environments," which is appropriate for a time in our country that, to put it mildly, represents a quickly changing environment. It feels like every day there is a seismic shift in the bedrock of politics, cultures, and communities that constitute our country. The world seems to fit the pattern proclaimed by Stephen Blackpool, from Dicken's *Hard Times*, when he said "Who can look on't sir, and fairly tell a man 'tis not a muddle?" At times, I can feel distanced from these changes due to my position in academia, but that's not really true. Look a little closer and it becomes very apparent that the students, staff, and faculty of Hostos are all trying to find a patch of firm ground to help stabilize them during these shaky times.

The essays presented in this issue cover a wide range of topics and subjects, but I believe all of them represent an attempt to find some solid footing. As scholars, thinkers, writers, and educators, the authors presented in this issue all explore ways people arrive at knowledge, whether it be individual or communal. These authors take up the commendable task of asking questions, even if they are not quite sure about the answer they will find. The act of the asking is, at times, enough to help get somebody finding their footing, if not a way forward. If the ground around us is constantly shifting, the authors of this issue of Touchstone are, like Sheamus Heaney, are using their "pen" to "dig" in the firmament a bit to see what they discover.

# Artistas Inventores e Inventores Artistas

*Laura Andel*

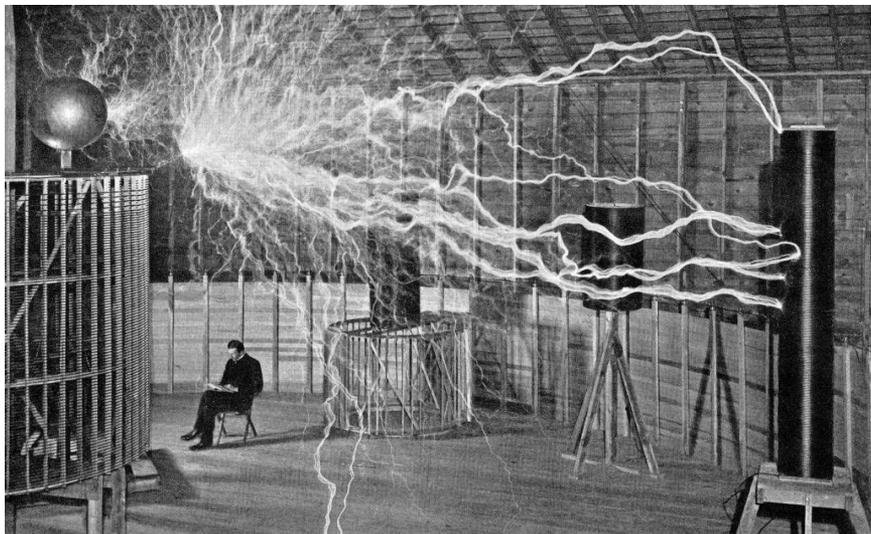
*"El duende... ¿Dónde está el duende? Por el arco vacío entra un aire mental que sopla con insistencia sobre las cabezas de los muertos, en busca de nuevos paisajes y acentos ignorados; un aire con olor de saliva de niño, de hierba machacada y velo de medusa, que anuncia el constante bautizo de las cosas recién creadas."*

-Federico García Lorca<sup>1</sup>

\*\*\*

**S**iempre me han cautivado las mentes creativas, tanto de artistas como de científicos e inventores. Existen muchos creadores en el mundo del arte y de la ciencia, entre ellos el inventor Nikola Tesla, una persona que es muy inspiradora para mí, no solo por su visión adelantada a la época, sino por su manera de crear. En mi opinión, la creación y la invención requieren del mismo tipo de curiosidad, sensibilidad y capacidad de observación. El compositor Igor Stravinsky<sup>2</sup> decía que la expresión "inventor de música" cuadraba mejor a su oficio que el de compositor<sup>3</sup>. Y se sabe que el inventor Nikola Tesla era conocido por presentar sus inventos al público de manera artística, e incluso muchos creían que lo que hacía era magia<sup>4</sup>. Tesla, o el hombre que iluminó al mundo, demostró en 1891 la transmisión inalámbrica de energía y en 1898 mostró la primera maquina de control remoto, iniciando así la ciencia de la robótica. Tesla también inventó la radio y contribuyó al desarrollo de las ciencias de la computación.

Fig. 1. Tesla en su laboratorio de Colorado Springs, 1899



Fotografía de Dickenson V. Alley, Century Magazine ©1899

Nikola Tesla dejó escrito cómo pensaba, imaginaba, investigaba y desarrollaba sus inventos. Durante el año 1919, escribió una serie de artículos que fueron publicados en Nueva York en *Electrical Experimenter*, una revista dedicada a la ciencia y la invención, y que más adelante serían publicados en conjunto en su autobiografía *Mis inventos*. Tesla describe en retrospectiva la importancia de escuchar los primeros impulsos creativos de la siguiente manera:

---

*Nuestros primeros esfuerzos son puramente instintivos, incitaciones de una imaginación vívida e indisciplinada. A medida que nos hacemos mayores, la razón se reafirma y nos volvemos cada vez más sistemáticos y astutos. Pero esos primeros impulsos, aunque no resultan productivos de manera inmediata, son cuestiones de la mayor importancia y puede que den forma a nuestros destinos. De hecho, ahora siento que si yo mismo los hubiera entendido y cultivado, en vez de suprimirlos, habría añadido un valor sustancial a mi legado al mundo. Pero hasta que no alcancé la edad adulta, no me di cuenta de que era inventor (Tesla, 2013: 2)<sup>5</sup>*

---

Este ejemplo expone el instante de la chispa inicial de la idea creadora. Es a partir de este momento que comienza el proceso creativo, siempre y cuando los primeros impulsos sean entendidos y cultivados. Este chispazo inicial, podría también relacionarse con lo que García Lorca describe sobre el duende y el momento previo a su aparición. El duende siempre está al acecho, pero como diría García Lorca en una conferencia:

---

*El duende no llega si no ve posibilidad de muerte, si no sabe que ha de rondar su casa, si no tiene seguridad de que ha de mecer esas ramas que todos llevamos y que no tienen, que no tendrán consuelo (García Lorca, 1984: 104)*<sup>6</sup>

---

El ejemplo citado de Nikola Tesla también deja entrever que para percibir la llegada del duende es necesario contar con cierta madurez emocional y sensitiva para presentir su cercanía y entender estas señales sutiles. Por eso, es importante escuchar la llegada del duende y aprovechar esta posibilidad. Hay que estar alerta para el encuentro con el duende.

Para que ocurra este destello inicial, que en el mundo del arte se lo conoce generalmente como inspiración, es necesario ubicarse en el lugar propicio para que ocurra tal encuentro, un espacio al que García Lorca describe cuando dice que el duende “se acerca a los sitios donde las formas se funden en un anhelo superior a sus expresiones visibles”. Otra interpretación de expresar este tipo de escucha atenta del instinto y la intuición la ofrece el violinista y compositor Stephen Nachmanovitch<sup>8</sup> en su libro *Free Play: La importancia de la Improvisación en la Vida y en el Arte* cuando escribe que “ser infinitamente sensible al sonido, la imagen y las sensaciones de la obra que tenemos ante nosotros es escuchar nuestra voz intuitiva”<sup>9</sup>. También Igor Stravinsky en su *Poética* musical expresa este estar atento a lo espontáneo e imprevisto cuando escribe: “Durante el transcurso de mi trabajo tropiezo a menudo con algo inesperado. Este elemento inesperado me choca. Lo noto. A veces le extraigo provecho”<sup>10</sup>.

Los conceptos de ángel, musa y duende desarrollados por el poeta Federico García Lorca en *Juego y teoría*<sup>11</sup> del duende describen la búsqueda y el encuentro que ocurre durante el proceso creativo. En este escrito, García Lorca habla acerca del

ángel y la musa, y explica que “el ángel guía” y “la musa dicta”. Con respecto al duende, García Lorca dice que “el duende es un poder y no un obrar, es un luchar y no un pensar”. Y continúa diciendo: “Ángel y musa vienen de fuera; el ángel da luces y la musa da formas. En cambio, al duende hay que despertarlo en las últimas habitaciones de la sangre”. García Lorca concluye con esto que “la verdadera lucha es con el duende”<sup>12</sup>.

A partir de lo que escribe García Lorca sobre la lucha con el duende, intuyo que se refiere a la necesidad de confrontarse a lo más profundo de uno para llegar al encuentro creativo, al despertar del duende. Intuyo también que esta lucha es una lucha con lo desconocido, con lo que todavía no está manifiesto. Pero, ¿con qué o con quién lucha uno realmente? Tal vez, parte de esta lucha es con los obstáculos que se interponen en el camino y que dificultan la conexión con la sensibilidad artística y la inspiración.

En cierta manera, para que se produzca el encuentro con el duende es necesaria esa lucha verdadera de la que habla García Lorca. La idea de que el sonido y la obra llega a uno, como traído desde fuera por el ángel o la musa, es quizás una visión romántica sobre la creatividad. Definitivamente, existen muchos caminos a tomar para que se produzca el encuentro con el duende, o el encuentro creativo. Existen caminos atractivos, aburridos, difíciles, simples... Y hay que transitarlos a todos.

Distintos autores describen de otras maneras lo que García Lorca llama la llegada del duende, pero estas maneras coinciden con que la llegada de la inspiración es un proceso interno. Por ejemplo, el compositor ruso Igor Stravinsky en su libro *Poética Musical* habla justamente de esta lucha y la “turbación emotiva que se encuentra en la base de la inspiración”. Y luego reflexiona:

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*¿No está claro que esta emoción no es sino una reacción del creador, en lucha con ese algo desconocido que no es aún más que el objeto de su creación y que debe convertirse en una obra? (Stravinsky, 2006: 72)*<sup>13</sup>

---

En este mismo libro, Stravinsky también describe el momento del encuentro creativo que vive un verdadero creador de la siguiente manera:

---

*La habilidad de crear nunca se nos da sola. Va acompañada del don de la observación. El verdadero creador se reconoce en lo que encuentra en derredor, en las cosas más comunes y humildes, elementos dignos de ser notados.*<sup>14</sup>

---

El encuentro creativo es quizás el encuentro con uno mismo. Lo importante es lograr una conexión íntima con nuestra propia obra y continuar con la búsqueda de esa resonancia. Para que suceda este encuentro, el creador navega en un océano con un cierto rumbo, pero el océano es enorme y hay mucho por conocer. Como bien describiría Federico García Lorca, “para buscar al duende no hay mapa ni ejercicio”, este encuentro creativo con el duende es imposible de prever, pero sí es necesario mantenerse alerta para llegar a este encuentro.

Por otro lado, la sabiduría taoísta describe poéticamente en el Tao Te Ching la importancia del principio del acto creativo en *El principio* diciendo:

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*No-existencia y existencia son uno y lo mismo en su origen;  
sólo se separan cuando se vuelven manifiestos*<sup>15</sup>.

---

De esta manera, la no-existencia ocuparía el lugar de lo que todavía no hemos encontrado, pero que existe para ser descubierto a través del acto creativo. Por eso, el *Tao Te Ching* en *Sabiduría de lo pequeño* dice:

---

*Relaciónate con las cosas antes de que entren en la existencia*<sup>16</sup>.

---

Esto se relaciona en cierta forma con lo que mencionan creadores e inventores sobre la importancia de estar atento a lo que nos rodea, ya que lo más inverosímil podría ser este germen creador. Las maneras de mantenerse alerta son variadas, ya sea manteniendo un espacio de trabajo o tal vez exponiéndose a nuevos aprendizajes y situaciones. Creo que hay ciertas experiencias que despiertan los sentidos. Por ejemplo, cuando uno se encuentra en un lugar nuevo, ya sea en un plano real o metafórico, los sentidos se avivan. Es mientras uno transita estos espacios donde

muchas veces ocurren los despertares creativos. En este nuevo entorno, se está más alerta tanto a lo cotidiano como a lo extraordinario porque uno se encuentra en un sitio diferente. Estar expuesto a nuevas experiencias puede ayudar al encuentro creativo, ya que estas vivencias pueden servir como ventanas a nuevos mundos.

A modo de conclusión, me gustaría reflexionar sobre el encuentro creativo que tuvo lugar durante la realización de la obra musical electroacústica *Soplo*. En esta obra, comencé la exploración sonora con unas dulzainas de hojalata que descubrí en los Andes ecuatorianos en 1986, y que por muchos años estuvieron guardadas en un cajón. Luego, sumé la tecnología, la cual utilicé para grabar y modificar los sonidos acústicos de los instrumentos musicales que más tarde serían utilizados en la obra musical. Y por último, incorporé una trompeta de cerámica con forma de caracol marino inspirada en un instrumento de la cultura Moche<sup>17</sup>, la cual modelé en arcilla con mis propias manos.

En *Soplo*, el comienzo del acto creativo comenzó con unas dulzainas de hojalata que por largos años estuvieron dormidas. Ahora puedo decir que para llegar a la obra *Soplo* he transitado muchos caminos, algunos completamente nuevos y otros viejos conocidos. Lo que siempre presentí fue la presencia del duende durante el proceso de búsqueda, a veces más de cerca y otras veces muy de lejos. Es verdad que el proceso de búsqueda creativa es arduo y a veces doloroso porque la búsqueda creativa está llena de obstáculos que hay que sortear.

Lorca diría muy acertadamente sobre este proceso que “solo se sabe que quema la sangre como un tópico de vidrios”<sup>18</sup>. Sin embargo, con la llegada del duende también llega el júbilo que uno vive cuando siente que el encuentro se ha dado, si bien sea por un instante. El inventor Nikola Tesla describe esta emoción refiriéndose al momento en que creó uno de sus mayores inventos comparándose con el personaje de Ovidio: “Pígalión no podía haber estado más emocionado al ver que su estatua cobraba vida”<sup>19</sup>, haciendo referencia al escultor que da vida a su propia obra.

El sonido es un componente esencial de toda obra musical. Pero encontrar el sonido que nos emociona implica una búsqueda, un transitar, un deambular, hasta que se produce tal encuentro. Durante la realización de la obra *Soplo* hubieron muchos encuentros, tal como describiría García Lorca, con una “calidad de rosa

recién creada, de milagro, que llega a producir un entusiasmo casi religioso”<sup>20</sup>. La mayoría de estos encuentros se dieron, por ejemplo, al momento de construir el instrumento musical en arcilla, al modelarlo con mis manos y al soplar el aire para que el instrumento suene. Durante estos momentos, sentí más que nunca la fuerza del soplo creador durante la búsqueda del Sonido.

### Citas

<sup>1</sup> GARCÍA LORCA, F. (1984), *Juego y teoría del duende*, Madrid: Alianza Editorial, p. 109.

<sup>2</sup> Igor Stravinsky (1882-1971) fue un compositor ruso y hoy en día es considerado como uno de los compositores más importantes del siglo XX.

<sup>3</sup> STRAVINSKY, I. (2006), *Poética musical*, Barcelona: Acanalado, p. 75.

<sup>4</sup> WISEHART, M. K. (1921), “Making Your Imagination Work for You: An Interview with Nikola Tesla”, *The American Magazine*, p. 64. Comentario a partir de: “I took a position in the middle of the laboratory, without any connection whatever between me and the machine to be tested. In each hand I held a long glass tube from which the air had been-exhausted. “If my theory is correct,” I said, “when the switch is thrown in these tubes will become swords of fire.” I ordered the room darkened and the switch thrown in —and instantly the glass tubes became brilliant swords of fire. Under the influence of great exultation I waved them in circles round and round my head. My men were actually scared, so new and wonderful was the spectacle. They had not known of my wireless light theory, and for a moment they thought I was some kind of a magician or hypnotizer. But the wireless light was a reality, and with that experiment I achieved fame overnight”.

<sup>5</sup> TESLA, N. (2013), *My Inventions: The Autobiography of Nikola Tesla*, Nueva York: SoHo Books, p.2. Traducción anónima disponible en línea y revisada por Laura Andel a partir de: “Our first endeavors are purely instinctive, promptings of an imagination vivid and undisciplined. As we grow older reason asserts itself and we become more and more systematic and designing. But those early impulses, tho not immediately productive, are of the greatest moment and may shape our very destinies. Indeed, I feel now that had I understood and cultivated instead of suppressing them, I would have added substantial value to my bequest to the world. But not until I had attained manhood did I realize that I was an inventor”.

- GARCÍA LORCA, F. (1984), *Juego y teoría del duende*. Madrid: Alianza Editorial, p. 104.
- 6** GARCÍA LORCA, F. (1984), *Juego y teoría del duende*. Madrid: Alianza Editorial, p. 104.
- 7** GARCÍA LORCA, F. (1984), *Juego y teoría del duende*, Madrid: Alianza Editorial, p. 105.
- 8** Stephen Nachmanovitch es un violinista, compositor, escritor y educador estadounidense nacido en 1950, autor de “Free Play: La importancia de la improvisación en la vida y en el arte”.
- 9** NACHMANOVITCH, S. (1991), *Free Play: La importancia de la improvisación en la vida y en el arte*, Buenos Aires: Planeta, p. 50.
- 10** STRAVINSKY, I. (2006), *Poética musical*. Barcelona: Acanalado, p. 76.
- 11** *Juego y teoría del duende* es una conferencia que fue dada un 20 de octubre de 1934 por Federico García Lorca en el Hotel Castelar sobre la Avenida de Mayo en la ciudad de Buenos Aires en la cual habla sobre el duende y describe la lucha interna que existe durante el acto creativo.
- 12** GARCÍA LORCA, F. (1984), *Juego y teoría del duende*. Madrid: Alianza Editorial, pp. 91-94.
- 13** STRAVINSKY, I. (2006), *Poética musical*. Barcelona: Acanalado, p. 72.
- 14** STRAVINSKY, I. (2006), *Poética musical*. Barcelona: Acanalado, p. 72.
- 15** LAO-TSE, Tao Te Ching. El libro del Tao. I: El principio. Edición desconocida.
- 16** LAO-TSE, Tao Te Ching. El libro del Tao. LXIV: Sabiduría de lo pequeño. Edición desconocida.
- 17** La cultura Moche se desarrolló en la costa norte de Perú entre los años 100 y 800 d.C. Los mochicas fueron considerados los mejores ceramistas del Perú antiguo.
- 18** GARCÍA LORCA, F. (1984), *Juego y teoría del duende*, Madrid: Alianza Editorial, p. 109.
- 19** TESLA, N. (2013), *My Inventions: The Autobiography of Nikola Tesla*, Nueva York: SoHo Books. Comentario a partir de: “I cannot begin to describe my emotions. Pygmalion seeing his statue come to life could not have been more deeply moved. A thousand secrets of nature which I might have stumbled upon accidentally I would have given for that one which I had wrested from her against all odds and at the peril of my existence”.

<sup>20</sup> GARCÍA LORCA, F. (1984), *Juego y teoría del duende*, Madrid: Alianza Editorial, p. 97.

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WISEHART, M. K. (1921), “Making Your Imagination Work for You: An Interview with Nikola Tesla”, *The American Magazine*, pp. 60-66.

# Bridging Mathematics, Physics, and Computer Science in an undergraduate research project “Modeling the Earth—Moon Satellite Orbit.”

*Alexander Vaninsky, Sc.D., Ph.D.; Daniel De La Cruz;  
Stephen Darko; Cory Tambourine; and Jesus Garcia.*

**T**his project is a part of the bulk of current research on finding extraterrestrial life and modeling its possible urbanization. The project is focused on a problem of rescue of the inhabitants in case of natural disasters or hostile actions of the objects of different nature. A possible solution to the problem is launching a satellite on a stationary orbit, where it circulates for indefinitely long time, and is ignited and directed toward the Earth when necessary. Literature sources reveal that such ideas were in mind since at least the 1960s and were developed as a part of the Moon—Earth projects.

In the course of the project, students will study: 1) Dynamics of the movement 2) Modelling using differential equations and 3) Investigating the trajectories using Maple software. It was surprising to find that a satellite does not follow a regular path but moves alongside a “bus-stop” trajectory. This result, when originally found, was a surprise for NASA researchers as well.

The Earth and the Moon rotate with constant angular velocity about their center of mass. This point was chosen as the origin of both a fixed and rotating coordinate system. The total of the masses was taken as the **unit of mass**. The mass of the Moon became

$$M_m=0.012298, \text{ and of the Earth, } M_e=0.987702.$$

A **unit of length** was taken as the distance between the centers of the two planets:

$$L = 384,400 \text{ km.}$$

As a result, the unit of velocity is 2290 mi/hr = 3690 km/hr. The Moon's rotational period of  $P = 27.32166$  days was set up as  $2\pi$  units of time  $T$ . This resulted in  $T = P/2\pi = 4.3484$  days, and the angular velocity  $\omega = 1$ . Kepler's Third Law states that  $P^2 = 4\pi^2 L^3 / G \cdot M$ , so in the new units,  $M=1$ ,  $d=1$ ,  $P= 2\pi$ , and  $G=1$ .

The dynamics of the movement is defined by the Law of Gravitation, which states that two bodies are attracted to each other with the force proportional to each of the masses and inverse proportional to the square of the distance between them:

$$|\mathbf{F}| = G \frac{m_1 m_2}{d^2}$$

This law was applied separately to the Satellite – Earth and the Satellite – Moon, resulting in a system of two differential equations of the second order in the fixed coordinate system. The initial conditions were set in the rotating coordinate system, since the positions of the Earth and the Moon are fixed: Earth  $(-0.012298, 0)$ , Moon  $(987702, 0)$ . To maximally use the rotation of the planets, the satellite starts with the farthest point and in the opposite direction.

In accordance with the Law of Gravitation, the gravitational force acting on each of the two masses  $m_1$  and  $m_2$ , located at the distance  $d$  from each other at the points  $A=(Y_1, Y_2)$  and  $B=(b_1, b_2)$  is as follows:

$$\mathbf{F} = G \frac{m_1 m_2}{|\mathbf{BA}|^3} \mathbf{BA}$$

The Second Newton's Law in case of two forces reads:

$$m\bar{y}'' = \bar{F}_E + \bar{F}_M$$

Since  $G=1$ , we obtain a system of differential equations in the fixed coordinate system as follows:

$$\bar{y}'' = -\frac{M_M}{\rho^3} (\bar{y} - \bar{b}_1) - \frac{M_E}{R^3} (\bar{y} - \bar{b}_2)$$

Where vectors  $\mathbf{y}$ ,  $\mathbf{b}_1$ , and  $\mathbf{b}_2$  are the locations of the satellite, the Moon, and the Earth, respectively,  $M_M$  and  $M_E$  are their masses.

The relationship between the coordinates  $(X_1, X_2)$  in the rotated coordinate system and  $(Y_1, Y_2)$  in the fixed coordinate system is  $\mathbf{Y}=\mathbf{A}\mathbf{X}$ , where  $\mathbf{A}$  is a matrix of rotation with the rotational frequency  $\omega =1$ :

$$\mathbf{A} = \begin{bmatrix} \cos t & -\sin t \\ \sin t & \cos t \end{bmatrix}$$

This matrix has the properties:  $\mathbf{A}^2=-\mathbf{A}$ ,  $\mathbf{A}^{-1}=\mathbf{A}^T$ , and

$$\mathbf{A}^{-1}\mathbf{A}' = \begin{bmatrix} 0 & -I \\ I & 0 \end{bmatrix}$$

By using the transformation  $\mathbf{Y}=\mathbf{A}\mathbf{X}$ , we obtain a system of differential equations in the rotating coordinate system as follows:

$$\begin{aligned} X_1' &= X_1 + 2X_2' + \frac{\mu(M - X_1)}{\rho^3} - \frac{M(\mu + X_1)}{R^3} \\ X_2' &= X_2 - 2X_1' - \frac{\mu X_2}{\rho^3} - \frac{MX_2}{R^3} \end{aligned}$$

Where  $(X_1, X_2)$  are the coordinates of the satellite in the Moon-orbit plane,  $M = 0.987702$  and  $\mu = 0.012298$  are the relative masses of the Earth and the Moon, respectively,  $R$  and  $\rho$  are the distances from the Earth and the Moon, correspondingly. The Moon and the Earth are located at fixed points  $(1-\mu, 0)$  and  $(-\mu, 0)$ , respectively, and

$$R = \sqrt{(X_1 + \mu)^2 + X_2^2} \quad \rho = \sqrt{(X_1 - M)^2 + X_2^2}$$

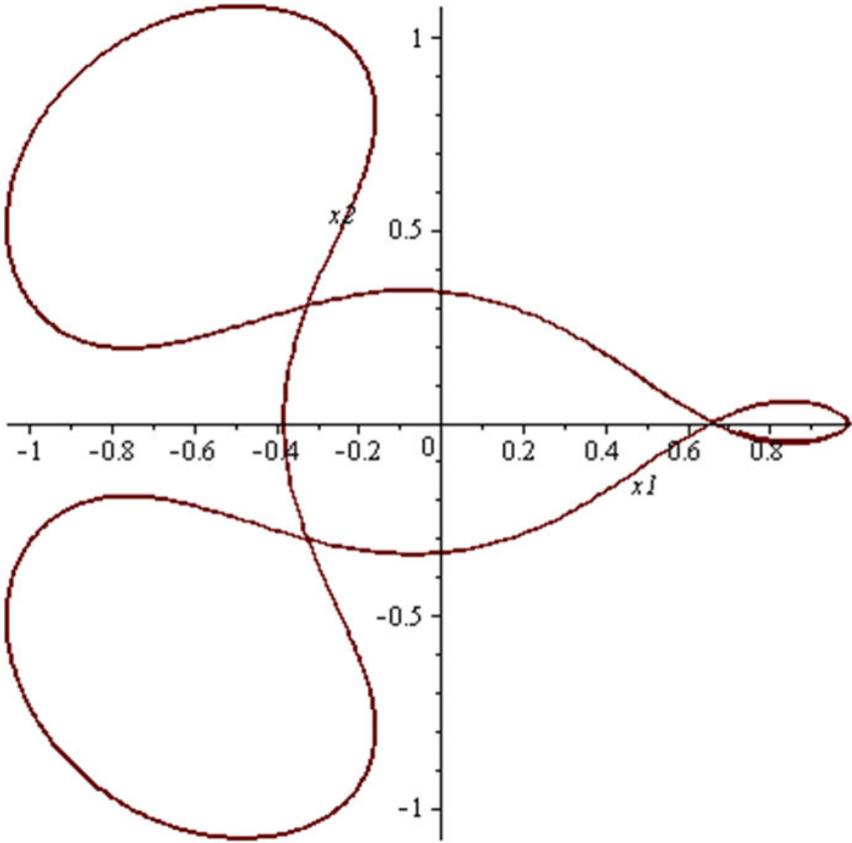
The Maple script is intuitive and simple

```

#mu:=0.012277471;
mu :=  $\frac{1000}{82314}$ ;
M := 1 - mu;
r1 :=  $\sqrt{(x1(t) + \text{mu})^2 + x2(t)^2}$ ;
r2 :=  $\sqrt{(x1(t) - M)^2 + x2(t)^2}$ ;
Zoom := dsolve( $\left\{ \frac{d^2}{dt^2} x1(t) = x1(t) + 2 \cdot \frac{d}{dt} x2(t) - \frac{M \cdot (x1(t) + \text{mu})}{r1^3} - \frac{\text{mu} \cdot (x1(t) - M)}{r2^3}, \frac{d^2}{dt^2} x2(t) = x2(t) - 2 \cdot \frac{d}{dt} x1(t) - \frac{M \cdot x2(t)}{r1^3} - \frac{\text{mu} \cdot x2(t)}{r2^3}, y1(t) = \cos(t) \cdot x1(t) - \sin(t) \cdot x2(t), y2(t) = \sin(t) \cdot x1(t) + \cos(t) \cdot x2(t), x1(0) = x1\_0, x2(0) = 0, D(x1)(0) = 0, D(x2)(0) = Dx20 \right\}$ , numeric, range = 0 ..120, parameters = [x1_0, Dx20], output = listprocedure);
Zoom(parameters = [ $\frac{994}{1000}, -\frac{21245}{10000}$ ]);
with(plots):
odeplot(Zoom, [x1(t), x2(t)], 0 ..5.5, numpoints = 1000);
odeplot(Zoom, [y1(t), y2(t)], 0 ..5.5, numpoints = 1000);

```

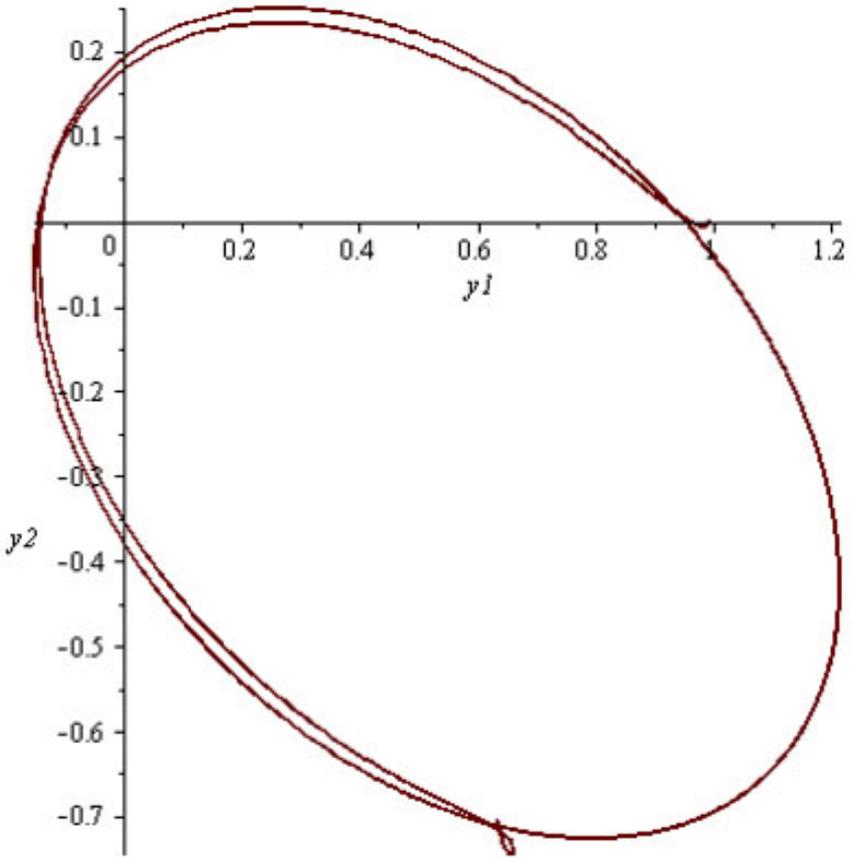
Some results corresponding to different initial conditions are shown below: Graph 2R- Orbit 2.



Rotating Coordinate system (view from the Earth)

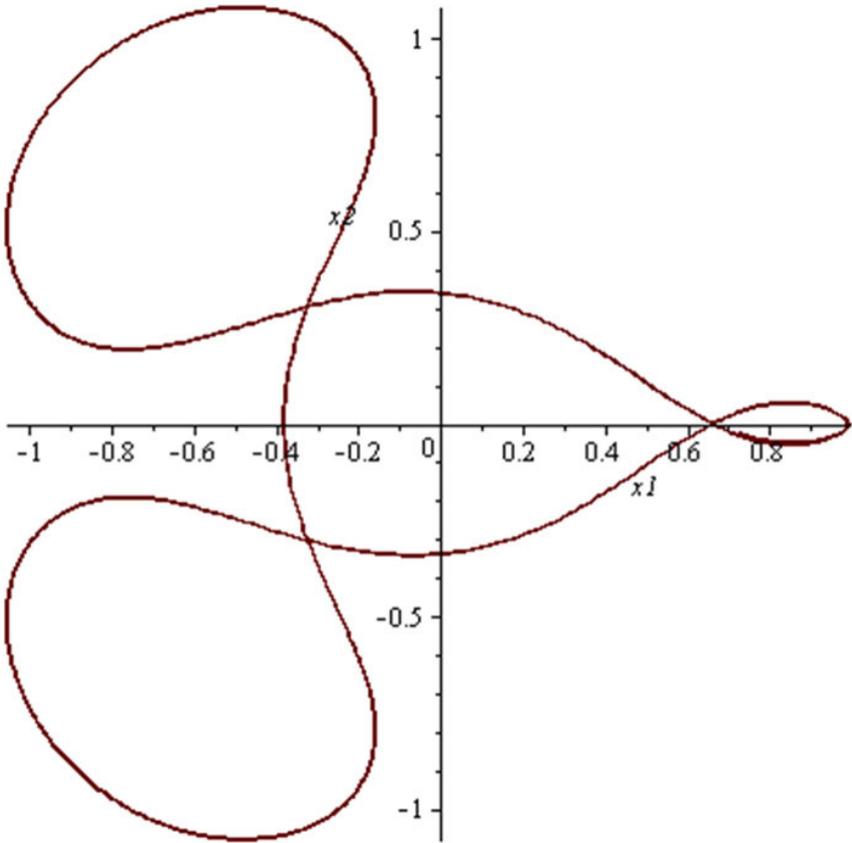
Initial height above the Moon – 673km; Velocity – 2174 m/s; Period – 23.9 days.

Graph 2F- Orbit 2.



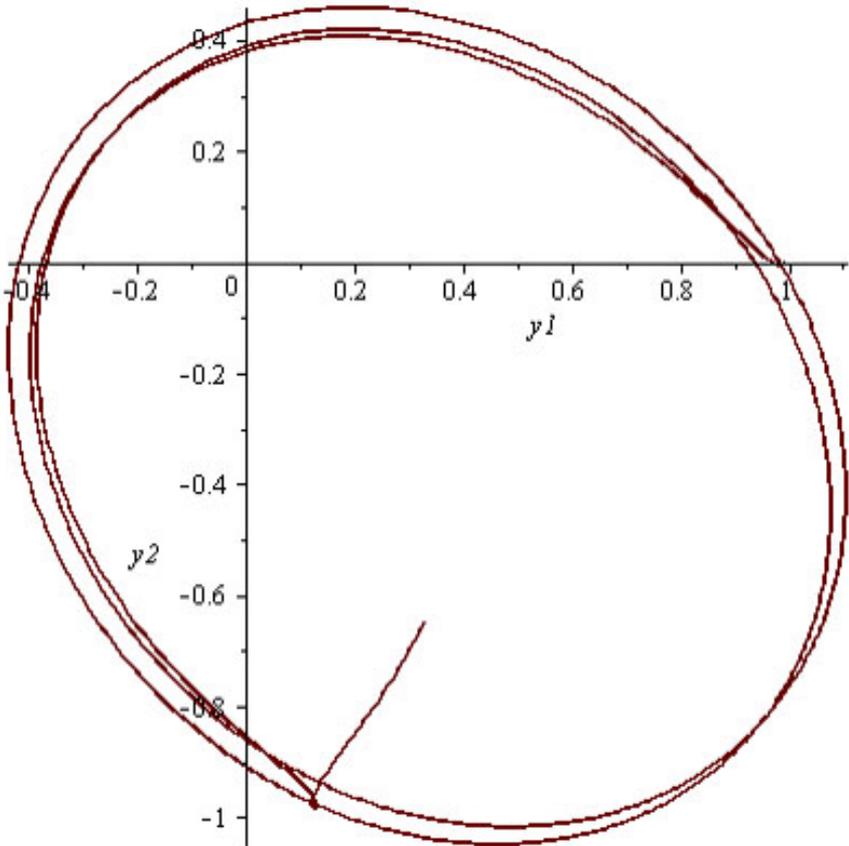
Fixed coordinate system (view from Cosmos) Height above the Moon – 673km;  
Velocity – 2174 m/s; Period – 23.9 days.

Graph 3R- Orbit 3.



Rotating Coordinate system (view from the Earth). Height above the Moon - 673km;  
Velocity - 2072 m/s; Period - 50 days.

Graph 3F- Orbit 3.



Fixed coordinate system (view from Cosmos). Height above the Moon - 673km; Velocity - 2072 m/s; Period - 50 days.

### What can we conclude?

1. When viewed from cosmos, the trajectory has an elliptic shape. The shape is relatively stable in regard to the initial conditions—velocity and height.
2. When viewed from the Earth, the trajectory has the “bus-stop” shape. The shape—the number and the magnitude of the loops—is strongly dependent from the initial conditions. The trajectory is unstable.
3. Mathematically, this leads to the necessity of using the lazy computing principle

that is postponing computing to the last moment and operating with numbers as symbols.

4. Physically, this underlies the difficulties of targeting and the necessity of using the artificial intelligent systems for the adaptive correction of the flight.

### **Possible next steps**

1. To investigate a satellite that is starting from the Earth and heading towards another planet.
2. Find a critical velocity that makes a satellite a cosmic body, rather than an Earth-Moon satellite.
3. Think about the Earth as a cosmic vessel carrying the humans to some distant target.
4. Develop an imagination of the speed that we humans are experiencing in the process of the Earth rotation around its axis and around the Sun.
5. Think about extraterrestrial urbanization in a broad sense.

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# Searching For Phantom Limb, Finding Herself

*Alida V. Camacho*

I found my mother weeping. Although I had seen her in distress many times before, this time was different. In many ways, it was reflection of new things to come.

For twenty minutes in frustration, she sobbed for a right hand that had vanished. Is it possible that her hand had simply swam downstream? Downstream where the river is shallow and the scorching sun reaches the bottom of the stream? Yes, a magical place. It was 'un lago' in Patillas, Puerto Rico where my mother's 91 year old sister Maria and she once swam? She glanced to her right, left, and to the foundation of her hospital bed. Her right hand was nowhere to be found. Could it also mean that her right hand absconded, longing to unearth moments of a precious early day where she played in the park with her three children, Nuno, Tita, and Lila?



My mother still searched in vain for that appendage she had perhaps taken for granted. She peered throughout her room. Searching for clues. Searching for the fill of now disconcerting void. Still, her right hand was nowhere to be found.

My mother is battling brain cancer, whose mélange of symptoms include the loss

of movement in the right arm and right leg. Like most brain cancer, my mother's disease effected critical neurological pathways, which resulted in an invasion and compression to brain tissue. The result-right-sided hemiplegia, a devastating secondary complication of this cancerous scourge. Downheartedly, her next path was an inability to distinguish that her right hand is attached to her wrist since the tumor that had begun to press against her skull, caused a break in the natural connection between the hemispheres of the brain and as a result, mom is unable to comprehend the difference.

In a tone of exasperation, my mother claimed that her 'lost' right hand was detached from her wrist and was running far from her, far from her inner tranquility and contentment she had begun to feel.

My mother would ask: "Why have you disappeared from sight? You understand I have been working hard to find you?" At that moment, in an almost state of revelation, my mother stumbled upon that most mischievous right hand. Soon, much as our own despair began to fall, a smile of triumph surfaced on my mother's face as she hastily snatched the missing rascal with the other hand as if it were a winning lottery ticket.

In an effort to give my mother an empowering buffer to such episodes (which we knew would become less common with treatment), I placed a scintillating bracelet around her wrist to make it "stress-free" during the next time mom's right hand intends to cause mischief. Mom looked at me with eyes of gratitude. Still, she held fast to her glare of her right hand. She knew this stare would render it immobile to its dastardly ways.

Soon, my mother found gratification knowing that her new glittering bracelet will serve as a messenger from her belabored left hemisphere brain that her right hand was still close by. Finally capturing her lost treasure, she embraced it both sternly and a resignation that her body was a wondrous machine of folly, surprise, and gratitude.

# How do we Teach the Pathway Topic of “Human Rights” through Case Studies and Student Activities?

*Ana M. Lopez*

**M**any a course in college has to follow a pathway requirement that makes it easier for students to transfer credits from one campus to the other. General categories were created to have curriculum follow these general categories to create a universal standard for all learning in college. College students through the years in college should have acquired general knowledge about human rights. The topic of human rights is seriously undertaken in the Latin American and Caribbean Studies Unit of the Humanities department at Hostos Community College. So, how do we teach the topic of “human rights”? The following is an excerpt of a suggested method to teach “human rights” utilizing a case study that implements student activities, readings assignments, reflection writings, and class discussions that have an impact on the consciousness, and thus students acquire a deeper understanding of human rights and retain the knowledge.

There is a five-part methodology utilized and recommended in my teaching of human rights:

1. Selection of a case study that is relevant in space and time;
2. Methodology—lessons in the classroom and inclusions in curriculum (assignment of selective readings);
3. Development of student activities and student engagement through attendance of college community events;
4. Required written reflections;
5. Shared experience and discussion.

The selection of the case study needs to be relevant in space and time for students to

appreciate its importance. The case study is the “The Humanitarian case of Puerto Rican Political Prisoner Oscar López Rivera.” Who is Oscar López Rivera? Now going on to age 74, Oscar López Rivera is the longest-held political prisoner in Puerto Rican history. He was charged with “seditious conspiracy”—the same charge for which Nelson Mandela was imprisoned—for his participation in Puerto Rico’s independence movement. He was sentenced to 70 years in prison. He has been in prison more than 35 years (longer than Mandela) and, within that time, spent 12 years in solitary confinement. Oscar was never accused of hurting anyone or participating in any violent crime—only for fighting to see Puerto Rico free from US colonial rule. Several heads of state, attending the annual Organization of American States General Assembly, proclaimed Oscar to be “the Nelson Mandela of Latin America”.

In the present time, there is a growing national and international campaign for Oscar’s release. International human rights leaders such as Nobel Laureates Archbishop Desmond Tutu of South Africa, Adolfo Perez Esquivel of Argentina, José Ramos Horta of East Timor, Mairead Corrigan Maguire of Ireland and others. Puerto Ricans across the political and religious spectrum, including Puerto Rico’s Governor and Resident Commissioner, the Archbishop of San Juan, and tens of thousands people have signed letters for his release. On November 11, 2016 a petition to the White House was launched and achieved 100,000 signatures within 30 days. Currently, the petition has surpassed with 108, 431 signatures. The urgency for Oscar’s release now comes as President Obama has only one month remaining in office and the unlikelihood of the next president granting a presidential clemency.

The selected readings were the books *Between Torture and Resistance* and *Cartas a Karina/Letters a Karina* both by Oscar López Rivera written from prison. In *Cartas a Karina*, President José Ramos Horta of East Timor, United Nations Special Representative and 1996 Nobel Peace Laureate, wrote his commentary after reading the book:

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*“We learned during East Timor’s freedom struggle the importance of honoring political prisoners. Now Puerto Rican prisoner Oscar López Rivera honors us by sharing these heartfelt letters, penned to his grand-daughter over the course of her life—all of which he has served behind bars. Today, across the Puerto Rican political spectrum and across the world, people call out for Oscar López Rivera’s immediate, humanitarian release. Join me in standing with Oscar’s goal of hugging his Karina outside the prison walls.”*

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Under the third methodology, as faculty adviser to the Puerto Rican Student Organization, I advised students to organize a book celebration of *Cartas a Karina* by Oscar López Rivera—as a humanitarian experience.

From November 10-13, 2016, Clarisa López, Oscar López Rivera’s only daughter, embarked on an East Coast tour of *Cartas a Karina*. The letters touched the hearts and minds of all present. Here are some high lights of this tour: At Hostos Community College on November 10, 2016, there were two sessions, one at 12:30 pm for day students that was well attended as the conference room was filled with college students and faculty. The theatre students dramatized the letters so well that they themselves could not contain their tears.

In the letter “Hands on a Prison Glass,” Oscar writes of his inability to touch his only granddaughter while an infant:

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*“...we invented a peculiar game: you would put your small infant hand on the glass, and I would also put mine on it, so that the four would coincide and we could “touch”. The hands would jump, and chase each other, and behave like spiders wrapped in the invisible threads of love. We could not touch- the glass prevented us- but a special language emerged between you and me-between the tender hands, Karina, and my old ones, pale from confinement, wanting to be able to fly, but contended and humbled when you caressed them.” (Cartas a Karina p. 36)*

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Hostos-Prof. Natasha Yannacañedo of VPA unit, with Sergio Mauritz Ang and Nadja Gonzalez, Hostos theatre students dramatize the letters published of Political Prisoner Oscar Lopez Riera *Cartas a Karina*.

That emotional feeling was transmitted to the audience as well. A glance at the audience depicted the faculty and student alike crying as they heard Oscar's words. The letter "The hands on the prison glass/Las manos en el cristal" was one that touched everyone's hearts and minds.



Clarisa López reads letters to day students from Oscar Lopez Rivera's (her dad's) book *Cartas a Karina*.

The evening event was held in an open space (the Atrium on the bridge), surrounded by huge glass windows; almost intended for our collective human feelings to be transported to Oscar in Terra Haute federal prison in Indiana. Oscar's letters to his granddaughter Karina has an impact to our deepest sentiments. A Hostos theatre student of Philippine descent read the letter "The Silent Shadow" where Oscar relates his experience in Vietnam after he was drafted as a young man. He conveyed the sentiment of solidarity Oscar felt with the Vietnamese people in a particular village. Oscar states that although he was decorated with a Bronze Star by the US army, the Vietnam experience had an overwhelming impact on his life to his conscience. When he returned home to his community in Chicago, he became a leader in community struggles against police brutality, education equality, fair housing practice, and founded many of the community organizations that are still intact in the Humboldt Park community.

The letters touch such universal themes of love for family, homeland, solidarity, hope, compassion, resilience, struggle, strength, and the human spirit that they transcend the coldness of the prison bars and cell that Oscar has been living for 35 years. Yet none of the letters contain a shred of anger, bitterness, or negativity that the jailers intended to instill in Oscar. His humanity and spiritual strength shielded him from everything that is dehumanizing in prison.



Clarisa López, Keynote speaker at evening book celebration at Hostos Community College- Atrium.

Clarisa López was the keynote speaker of the event. She added a special voice to the event that furthered our human sentiments. She read letters that her father, “Mi Viejo,” had written to her. One cannot imagine how difficult it has been for Clarisa and Karina not to have Oscar home physically all those 35 years, not present at her daughter’s graduations, Christmas celebrations, Three King days, birthdays, and etc. Yet the letters reveal a family unity and closeness. Love transcends all barriers.

In one of the classes at Hostos, Clarisa did a presentation to high school students (ages ranged from 16-18 years old) who are taking college classes (College Now program) students helped Clarisa read the Cartas a Karina. She was asked what the most difficult moment was for her. Clarisa related that every time she visits with her father at the federal prison, she is overcome with sadness when she must leave her father behind. Then, she explains how a “gulag” sounds: she hears the sounds of heavy iron gates slam behind her three times. She could not contain her tears before the students, and the students returned it with empathy and embraces.

The cultural component was performed by a local group “Herencia de mi Tambor” with bomba and plena rhythms that filled the room.

Another student, Sebastian, approached Clarisa in tears to share his feelings of how much of what she said about Oscar reminded him of his own father. He said “I know how you feel not having your father home. I lost my father at age 10.” Sebastian had made a human connection with Clarisa, both embraced each other in solidarity.

On November 10th various students wrote reflections on the Hostos book celebration *Cartas a Karina*. Cynthia Paniagua, a Hostos student taking LAC 101 from Prof. Lopez’s class, wrote:

“On Thursday, November 10th, I witness how loved and admired Oscar López Rivera is by his family, friends and community. Lopez’s daughter, Clarisa talked about his greatness and it made me sad to see how so much his family misses him. I also witness that through his letter to his granddaughter Karina, he never loses contact with her. The sadness of this touched my heart deeply because it is so hard having to live without a love one who is in prison for so many years. Oscar López Rivera letters revealed how he has built a beautiful relationship with his daughter and granddaughter throughout all their lives.”

These letters by a Puerto Rican political prisoner, one of the longest held in Puerto Rican history, has impacted all generations, especially those born during his 35 years in prison. Stephany Henriquez, in her reflection, wrote: “*Cartas a Karina* is a very inspiring book...knowing how much someone can love without being able to be held makes it a sad situation.” Stephany is making a reference to the letter “The hands on the prison glass” when under the 12 years of solitary confinement, Oscar was prohibited by prison official to have contact visits with his family. Stephany expresses her empathy and places herself in Clarisa’s shoes:

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*“Watching his daughter Clarisa express herself made me tear. I can’t imagine myself being away from my dad for so long. I don’t think I would know what to do. You could see the pain in Clarisa eyes and how she spoke about him. All Oscar wanted freedom and peace for his people.”*

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Another student from LAC 101, Daniela Santana writes in her reflection that “at the tribute for Oscar López Rivera, we heard his thoughts and imagery of what he experienced in prison.... I admire this man because he fought for what is righteous as his daughter, Clarisa explained.”

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*“Even though prison created a physical barrier between daughter and granddaughter, they did not let that interfere with their love and relationship. Thursday night at the book celebration “Cartas a Karina”, I was able to see how strong Clarisa is and how hard she fights for her father’s freedom. It is heartwarming to see so many people from different countries come together and unite for Oscar López Rivera, who is a son, father, grandfather, and brother waiting for his return home after so many injustices. I do hope President Obama listens to the people’s request for Oscar’s immediate release.”*

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Another student, Yendry de la Rosa, goes further how these letters impacted her to a call for action:

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*“These letters narrate a very touching story and by reading it, it makes me feel angry and sad at the same time. Seeing all this suffering, makes me want to go out and help Oscar to be free from prison.”*

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Many stood in line to take turns taking pictures with Clarisa and have her autograph the book written from prison by her father, Oscar. Each presentation was unique, warm, and a pledge to join every effort to free Oscar, now!

**UPDATE:** On January 17, 2017, President Obama commuted Puerto Rican political prisoner Oscar Lopez Rivera's (case study) 70 year sentence and granted clemency . He is free living in Puerto Rico after 36 years of imprisonment.

# Rubric Development for English 101, 102, 110, 111, and Elective Courses

*Clarence Henry Robertson and Jason Matthew Buchanan*

**O**ur goal was to develop rubrics that could be used in multiple classes taught in the English Department. There were two major issues that the rubrics needed to address: one, the rubrics needed to be able to effectively assess the skills being taught in the classroom; two, the rubrics needed to be easily incorporated by professors into their teaching style and schedule.

## **Brief Description of the Sequence of English Courses**

Throughout the sequence of English classes, there is at least one common assignment shared by multiple classes. In English 101—111, all classes must take a shared Final Exam. Although the English 111 Final Exam is different from the exam for 101—110, all sections of 111 must take the same common Final. In Elective courses, all classes must complete a research paper. The rubrics were designed around these assignments for two key reasons: their position as a common assignment across classes and their previous existence as an assignment that professors were already in the habit of teaching. These two benefits allow for professors to, basically, retain the same structure of their classes. Completing and submitting the rubric is the only new step in the pedagogical process.

## **Developing the Rubrics for the Common Assignments**

In creating the rubrics, the goal was to balance the General Education Core Competencies with the courses' Student Learning Outcomes (SLO), which were developed by the English Department. To begin, the Gen. Ed. Competencies were examined to find one element from each category—Skills, Subject Area Knowledge, Synthesis and Application, and Global Citizenship—that was present in the courses.

After finding the most compatible Competencies, the SLOs for each course were examined to find any SLOs that had a connection to the Gen. Ed Competencies. For instance, the Skills category A1 matched up with SLO 1 for English 101-111 classes. These SLOs became the central language for our rubrics since they not only thematically matched the Gen. Ed. Core Competencies but also were skills that should be evident in the common assignments shared by the courses.

### **Designing the Rubrics**

The language of the Gen. Ed Competencies was used as the criteria for the rubric. It included one Core Competency from each category. The language for the task descriptions came directly from the SLOs of the courses. The language for the scale—the portion of the rubric that describes how the assignment was completed—was taken directly from the sample rubrics created by the Gen. Ed. Rubrics Subcommittee.

### **Current State of the Rubrics**

Currently, the rubrics are waiting to be presented to the English department where they will be evaluated by the Committees responsible for each course (e.g. Eng 110 Committee, Eng 111 Committee, etc.). Once cleared by these committees, the rubrics will be voted on by the English Department Curriculum Committee to become official parts of the English Curriculum.

# Menstruation: A Pure and Rich Sacrifice

*Dr. Damaris-Lois Yamoah Lang*

**H**umans are bags of chemicals with a myriad of continuous chemical reactions, taking place within this molecular framework—the cell. The three main cell parts are the Nucleus (containing-DNA, the genetic material), the Cytoplasm (containing organelles), and the Cell Membrane (which encloses the cell). Cells come together to form tissues, tissues form organs, organs then form organ systems, and, ultimately, organ systems form the whole “Human Organism.”

The onset of the formation of “Human Life” starts with a single cell from a woman. This single cell is called an egg [Figs. A and B]. The only contributing factor from the male’s cell (the sperm) [Fig. C] is its nuclear part, containing the genetic material—DNA. The journey of the formation of a “Human Life” more or less originates from the cell of the female. In other words, the formation of a human life starts with a cell comprising of the female’s cytoplasm, the female’s cell membrane, and the nucleus-containing DNA, which is the genetic material of both the male and female. Thus the metabolic processes that will convert this one cell into many cells—and then to tissues, organs, systems and the human organism—heavily rely on the egg-cell of a woman.

Having said that, forming a human life is no walk in the park! The egg will require an ideal and best environment, devoid of any contaminants that could potentially hurt the formation of this future being! [Figs. G, H, I, J, K and L]. As such, the higher intelligence of creation has it that, while a female baby is safely in her mother’s womb, she produces all of her eggs. Moreover, each individual egg is further protected and

nourished by numerous follicular cells. After fertilization, the woman’s body houses the egg [Figs. D and E] in this sacred and pure space, called “the Uterus” [Fig. F], which is enriched with the nourishment of life. The uterus is where the rules of nature are birthed and the seeds of the human race are created.

I can picture in my mind’s eye the exit of each royal seed, the egg, being greeted by hundreds and thousands of knights, the sperms; although millions of sperms started the race to meet this royal princess, the egg, only one knight—a sperm [Fig. C] will win the heart of the royal maiden and fertilize it.

Oh, but alas, the royal princess—the egg, if on her arrival into her glorious mansion, the uterus, is not greeted by the knights, the sperms [Fig. M], she will dash out of her mansion with fury, tearing down the walls of the uterus, this sacred mansion of beauty and space filled with life’s riches and sustenance [Fig. N]. The royal princess, the egg, will majestically stroll out of the woman’s body, as the (uterine) walls tumble down after her with the riches of life, the menstrual flow gushing out, as an ultimate sacrifice for the termination of a human life that will never be part of the human race [Fig. O]. The reign of this royal seed—the egg will end, and the others that follow for every menstrual cycle will never experience our future, present, and history. The pains and pangs of this sacrificial loss are literally felt by the whole being of a woman in every cycle of this event called the “Menstrual Cycle” [Fig. P].

Let us cherish each physiological moment of Womanhood’s Menstruation: A Pure and Rich Sacrifice owed to each and every royal seed—the egg in a woman’s body.



A. (2)

B. (3)

C. (3)

D. (3)

E. (2)



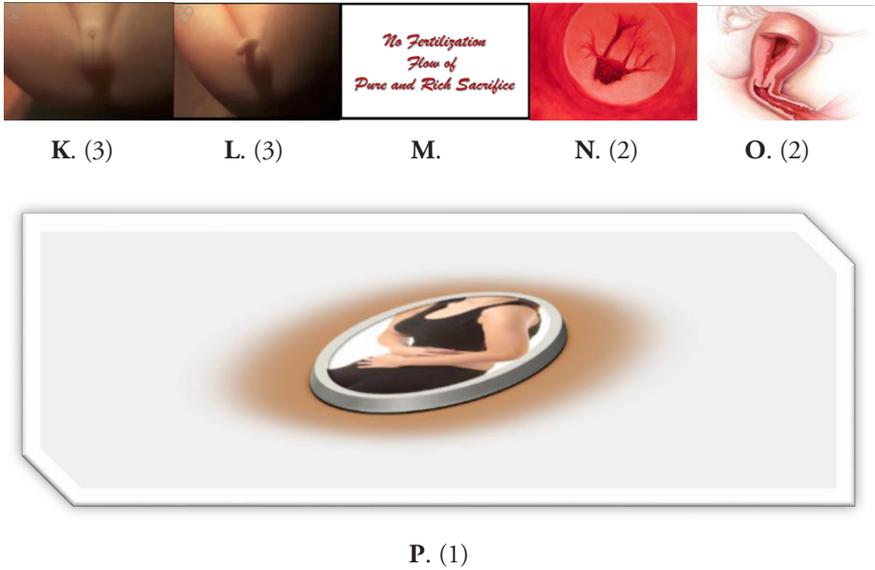
F. (2)

G. (3)

H. (3)

I. (3)

J. (3)



**Figures:** A. ovulated egg, B. egg, C. sperm fertilizes egg, D. fertilized egg uncoating, E. fertilized egg embedding in wall on uterus, F. uterus, G. embryo, H.—J. developing fetus, K. developing female genitalia, L. developing male genitalia, M. scenario in which unfertilized egg does not develop into a baby, N. exited unfertilized egg is followed by un-tampered, enriched wall of the uterus, O. the menstrual flow, a pure and very rich substance, P. painful sacrificial pangs of the menstrual process.

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# **Media and Information Literacy: Strategies to Combat the Decline of Trust, Authority, and Truth**

*Linda Miles, Miriam Laskin, Catherine Lyons,  
Jennifer Tang, and Lisa Tappeiner*

## **Technology and the Erosion of Expertise**

It seems like a lifetime ago that former Vice President Al Gore championed “the information super highway” back in the 1990s. Since then, many of the promises of the Web have come to pass. It is an affordable and fast route to vast quantities of useful information. People have become their own travel agents, lawyers, real estate agents, and doctors. They now have the power to create their own travel itineraries, draw up templates for legal documents, and, with the help of YouTube, even change the washer on their kitchen faucet. Anyone who can write a tweet or a blog can be a journalist. For better or worse, the Internet has redefined the very notions of expertise and professional competence. As educators of students in their early years of college, one of our roles is to draw students into the academic conversation. Librarians seek to teach students the skills and mindsets needed to discover, integrate, and critique new information and be ready to use the best of it in their professional practice and personal lives. This task has become an increasingly difficult one in an online information environment where the difference between reality and fiction is blurry or indistinguishable. In this discussion, we examine some of the factors that have made the task of educating students to become savvy users of information so difficult in a context of ubiquitous social media, and we propose ways the college community can come together to better educate our students and prepare them to face an uncertain future.

## **Anti-Intellectualism and Social Media**

America has a long history of anti-intellectualism, a distrust of intellectuals and professionals. Anti-intellectualist thought was a driving force behind some of the

most troubling chapters of our history, from the anti-communist hearings of the McCarthy era, resistance to civil rights reforms in the South in the 1960s, to the vilification of college students and academics who protested against the Vietnam War (Merritt). In a 2008 article in the Washington Post, Susan Jacoby describes the general shift from print to digital consumption:

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*The third and final factor behind the new American dumbness: not lack of knowledge per se but arrogance about that lack of knowledge. The problem is not just the things we do not know. . . it's the alarming number of Americans who have smugly concluded that they do not need to know such things in the first place. Call this anti-rationalism—a syndrome that is particularly dangerous to our public institutions and discourse.*

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Until recently, intellectuals and professionals—the visible targets of anti-intellectualism—largely controlled the modes of information dissemination—newspapers, television, publishing—and information flowed from “experts” to everyone else. Librarians and others have long sought to democratize access to information and to ensure that a multiplicity of points of view are available to all. The first proposition of the *Freedom to Read Statement* of the American Library Association, published in 1953, asserts: “It is in the public interest for publishers and librarians to make available the widest diversity of views and expressions, including those that are unorthodox, unpopular, or considered dangerous by the majority.” Throughout its history, broad access has been among the primary hallmarks of our profession.

While librarians continue to be committed to providing access to a diversity of views, today all of us face the daunting challenge of navigating competing interpretations of reality and claims that question historical and scientific facts long held to be true. Social media (including Facebook, Twitter and Weblog platforms) have given rise to online platforms that empower anyone to anonymously question the authority and veracity of all kinds of information and recycle and disseminate these views to a wide audience in a matter of seconds. Anti-intellectuals, appealing to emotional, political or religious beliefs, exploit social media to discredit the work of scientists, journalists, or other professionals when it contradicts their views and agendas. Moreover, the online proliferation of false reports and doctored images or videos makes it difficult to distinguish between reality and fabrication. And, sometimes, mixed in with all of the falsehoods and exaggerations, are reality-based reexaminations of long held assumptions that will deepen and expand human knowledge.

Acknowledging political and social consequences of this new reality, the Oxford Dictionaries named post-truth the Word of the Year for 2016: “*post-truth*—an adjective defined as ‘relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.’” Although a well-informed public is essential to a functional democracy, consumers of online information are less likely to be confronted with challenging new facts than lulled by reassuring echoes of what they already believe to be true.

In its early days, the Internet offered the promise of bringing people together virtually to exchange views and enhance mutual respect and understanding. Today, it is more likely to partition us into separate realities where we surround ourselves with online “friends” who think like us and consume the same information diet. In a recent interview, left-leaning activist and web journalist Eli Pariser describes how social media is engineered to know our preferences and expose us to the information we want to hear: “algorithms, like the kind used by Facebook. . .often steer us toward articles that reflect our own ideological preferences, and search results usually echo what we already know and like. . . . As a result, we aren’t exposed to other ideas and viewpoints” (qtd. NPR Staff).

Paradoxically, while exposing us to a limited range of ideas and facts, the web’s echo chamber also makes us vulnerable to believing we have access to knowledge and understanding that eludes others. A 2016 study by researchers at Chapman University found that 75% of respondents believed in at least one major conspiracy theory, from the cover-up of Barack Obama’s true birthplace to the government’s involvement in 9/11, and a third of respondents believed that the government was hiding information about an event, “the North Dakota crash,” which was fabricated as a control for the survey (Wilkinson College). Moreover, a 2016 study of more than 7000 students by Stanford University concluded that “young people’s ability to reason about the information on the Internet can be summed up in one word: bleak” (Wineberg and McGrew 4). Presented with an online image of a mutated daisy (photoshopped) and the claim that its defects were a result of the Fukushima Daiichi nuclear disaster, 80% of students failed to question the source of the photograph or seek out other sources verifying the claims made in its caption (Wineberg and McGrew 17). In a related article, Sam Wineburg contends that students are unable to distinguish between real news on an issue and commercially sponsored content made up to appear like a news story—even when labeled as “Sponsored Content” (qtd. Herold). Clearly, educators have a more essential role than ever in educating students to become critical consumers of information.

## Professional Responses

In the late 1980s, as it became clear that the burgeoning “information age” would heavily impact the American way of life and our nation’s ability to compete internationally, the Association of College and Research Libraries (ACRL) called upon institutions of higher education to take on a leadership role in equipping an “information literate” society (*Presidential Committee*). As the world of academic information expanded and diversified, the ACRL’s *Information Literacy Competency Standards for Higher Education* were rolled out and approved in 2000, providing guidance for developing and assessing instruction as well as a “framework” to help students gain “control over how they interact with information in their environment” and equip them to think meta-cognitively about their own learning. Librarians began explicitly connecting their source evaluation curriculum design and facilitation to Standard Three, “The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.”

The *Standards* were superseded in 2016 by the ACRL’s *Framework for Information Literacy for Higher Education*, which signaled a turn toward deeper consideration of “foundational ideas” regarding “the dynamic and often uncertain information ecosystem in which all of us work and live.” As the association observes, roles have evolved for students, classroom faculty, and librarians. Students have new responsibilities when it comes to using information ethically and creating and disseminating new knowledge. In many cases classroom faculty are asking students to think critically about how information is generated, analyzed, and shared within their disciplines. And academic librarians are collaborating with colleagues across the institution in new ways to help activate students’ critical perspectives on the information they consume. Beginning with early formulations of the *Framework*, librarians have been refocusing source evaluation discussions and activities using the *Frame*, “Authority is Constructed and Contextual.” More specifically, Candice Benjes-Small describes a range of recent responses by librarians to the perceived current media literacy crisis (“Information Literacy”).

Clearly, there is still a gap in students’ understanding and abilities. Traditional approaches to library instruction—even those built on the *Standards* and the *Framework*, which are foundational for librarians’ work in the classroom—have not proven wholly effective in helping students successfully navigate this new digital media saturated environment. Can a student be information literate as described by

ACRL's Framework and still believe in conspiracy theories? Can they still fall prey to fake news? The answer is: "You bet!"

Overheard:

Student A: Angelina Jolie is one of the Illuminati. That's the deal she made to get so famous.

Student B: Yeah, I read that too. And did you know that Beyonce had to sell her whole family—and her soul—to the Devil?

Student C: Where did you guys hear these things?

Students A&B: Facebook, of course!!!

The above conversation paraphrases any number of such exchanges educators hear during the course of a semester. When asked how they have learned of these things, students tell us Facebook. Or Twitter. Or Instagram. Or Reddit. It's too easy, it seems, to assume that something that arrives via a social media platform—or on a website or an email "must be true." That is the big challenge for librarians and other educators today, and indeed for each individual. It is not a good idea to take at face value "news" or an article on the newest study of how to lose weight, or even a report on any academic subject.

### **Media Literacy: A Foundational Skill for Every Class and a Call to Action**

With years of experience as researchers and educators, most faculty members can easily evaluate publications in their own fields of expertise. They know which publications and authors are the trusted authorities within their disciplines; also, they understand the tools and practices specific to their fields. However, we know that in approaching academic research, students are no different from any non-expert. Researchers find again and again that, for undergraduates, most academic research starts with Google. "Undergraduates rely on Google to do research. . . for many of them it may be the only research tool they use [and students] often assume that search results are recommendations of credibility and rely on search engine brands as endorsement of quality" (Leeder and Shah). To complicate matters, on social media platforms such as Facebook, Twitter, or Instagram, content is disseminated widely and almost instantaneously via a network of single clicks. It can be challenging to identify the original source of information in order to evaluate its reliability or authenticity. In the face of these fundamental problems, students not only need faculty members to guide them to use the trusted research tools of a specific discipline, but also would benefit from assignments that sharpen their media and information literacy skills,

teach them to distinguish between ads and journalistic content, detect bias and fraud, and investigate and identify the purpose behind web content—to make money, to mislead, to disseminate facts and information, etc.

Librarians often collaborate closely with classroom faculty members in various disciplines, supporting design of research assignments, teaching workshops to introduce skills, tools and resources, and working one-on-one to support students seeking help with assignments at the reference desk. This partnership could be extended to co-developing exercises for foundational media literacy, which would not only help students with their academic research, but also build lifelong skills for critical thinking and writing. For example, many media literacy tasks can be introduced as low-stakes assignments, including informal writing tasks and analysis of real world artifacts that reinforce disciplinary content. Such assignments might accomplish multiple learning goals simultaneously, for example:

- Distinguishing between news items and advertisements on a website using stories related to course content;
- Helping students recognize the hallmarks of great journalism, again by focusing on discipline-related stories (e.g., see Benjes-Small *Evaluating*);
- Identifying strengths and weakness of an online video both in terms of production quality and content;
- Investigating the truth value of claims made on a political website;
- Comparing content and rhetorical strategies used to address the same issue on websites that represent differing or opposed points-of-view.

It is essential that faculty and librarians move beyond traditional research assignments and incorporate alternative learning experiences that help students navigate an increasingly complex and confusing information environment.

There is one more essential ingredient to consider before faculty members can make real headway in helping students successfully navigate the twenty-first-century's complex information environment: reading comprehension. Some neuroscientists and scholars of reading comprehension believe that the time twenty-first-century humans spend gathering, processing, and skipping through information on the Internet is beginning to rewire the human brain; essentially, some of these scholars anecdotally observe increasing difficulty in their own experiences of reading novels or other serious works (Rosenwald). According to Maryanne Wolf of Tufts University,

“It was torture getting through the first page. I couldn’t force myself to slow down so that I wasn’t skimming, picking out key words, organizing my eye movements to generate the most information at the highest speed. I was so disgusted with myself” (qtd. Rosenwald). As a cognitive neuroscientist, Wolf continues to study the differences between reading on the page and on the screen, with an eye toward encouraging the development of bi-literate brains.

Academic librarians work with students on doing research and we often steer them to licensed subscription databases and help them formulate search strategies and use search tools to pull up lists of articles on their topics. Often students simply scan the titles of the articles in the results list and declare that “none of the articles are good for my topic,” followed by a quick decision to abandon that topic and scrounge for another. We ask whether they have actually opened the link to the article to read it, or even looked at the abstract to decide whether the article is appropriate and the answer is, “no.” They seem to feel that a title will tell them all that they need to know about whether an article suits their needs. Of course, many titles don’t necessarily reflect the content of the article. Beyond academia, large percentages of media consumers tend not to read past headlines anymore. In a June 2016 *Washington Post* opinion essay, Caitlin Dewey notes, “59 percent of links shared on social media have never actually been clicked: In other words, most people appear to retweet news without ever reading it.” In 2014, a study on how consumers read news found that “roughly six in 10 people acknowledge that they have done nothing more than read news headlines in the past week” (Cillizza).

Developing reading comprehension skills is a prerequisite to building media and information literacy competencies. It is arguable that part of the reason many students do not use quotations correctly in their writing is that they don’t completely understand their sources. Unable to engage with complex academic texts, they quote long passages but do not explain what they mean or why they are important. Similarly, in order to evaluate the quality of a news article or to identify satire, for example, readers need skills in recognizing genre, determining an author’s point of view, and comprehending content.

The first year of college is a time to introduce students to complex texts that they will encounter in their majors and to build skills in understanding and analysis. However, students entering college today are less likely to be in the habit of sustained reading than their predecessors. Although increasing numbers of readers are scanning words on the Internet, few are reading book-length texts. According to a Pew Research

Center study, more than a quarter of American adults did not read a single book, in any format, during 2013. Of those who did read, “half of adults read more than five books and half read fewer” (Zickuhr and Rainie). Other investigations into the reading habits of young people were similarly dispiriting: “[A] roundup of studies, put together by the nonprofit Common Sense Media, shows a clear decline over time. Nearly half of 17-year-olds say they read for pleasure no more than one or two times a year—if that. That’s way down from a decade ago” (Ludden).

The community of educators at Hostos is not alone in recommitting to the centrality of reading as part a college education. The 2016-17 academic year saw the rebirth of a campus-wide common book program, Hostos Reads! There were book talks, lectures, and a contest that encouraged students to interact and engage with Bryan Stevenson’s *Just Mercy*, a moving book about our broken criminal justice system. Chief Librarian Madeline Ford and Education Professor Jacqueline DiSanto, were awarded a grant to make it possible for students to finish an Associate’s degree in Early Childhood Education using only open source textbooks, at no cost to students, addressing the fact that financial considerations preclude many students from purchasing textbooks, and that a lot of students never complete the reading assigned for classes. It is up to each of us to create assignments to build reading skills and encourage a campus-wide culture of reading.

### **Education Trumps Technology**

One possible future direction is that social media platforms will take on a stronger role in evaluating the accuracy or reliability of information posted on their platforms and their users’ posts. A 2016 report by the Pew Research Center confirms what many of us already know: “a majority of U.S. adults—62%—get news on social media, and 18% do so often” (Gottfried and Shearer). Facebook is the most popular social media platform for users looking at news stories, and we know that during the recent election campaign season many readers were unable to distinguish between “real” and “fake” news. Facebook began to look at ways it could help to identify news that is grossly inaccurate, misleading, or just plain made-up.

In November 2016, Sarah Frier described how CEO Mark Zuckerberg considered addressing the proliferation of inaccurate information: “Facebook is exploring labeling stories that have been reported as false by third parties or the community so people are warned before they read or share them. The company also is working to make it easier for people to report fake news, and improve technical systems to

better detect such articles. Facebook is also turning outside its own organization for help. It will meet with journalists to understand how they verify information, and is exploring partnerships with third-party fact-checking organizations.”

Although social media companies have a role to play in implementing technological fixes, the ability to discern fact from fiction and determine trustworthiness resides with the individual reader. Working together, the college community has a role in developing assignments, programs, and educational opportunities that challenge students to read closely and critically examine information. The more students have direct experience with and appreciation for the painstaking and complicated process of constructing knowledge, the more easily they will recognize a fraud and the safer our future will be.

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# **An Exploration of the Concept of Kinesthetics and the Development of Rubrics for Their Application in Game-Centric Learning**

*Rees Shad, Jeans Abreu Mieses, Jose Palacios, and Jose Vidal*

**T**he impetus for this research project came about in 2012 in the midst of an initiative to develop game-framed STEM curricula to improve success rates in related introductory and review classes. The initiative involved a group of game designers working with a cross-disciplinary panel of professors from the Humanities, Natural Sciences, Mathematics, Design, and Education departments at Hostos Community College. Professor Jaqueline DiSanto, who represented the Early Education program, spoke to the group early on in the project about the role that physical activity can play in student engagement with, and retention of, information. A memorable example she introduced was that of an athlete whose academic performance recalling information in the classroom might be low, but the same individual on the football field could recall dozens of plays thanks to having learned them in association with physical movement. This was fascinating to us all, but especially to the game designers in the group. We resolved to include physical activity as a heuristic target whenever possible while designing our learning games.

The following year, as my collaborators and I presented the resulting work to colleagues at conferences and the like, an audience member brought up the term “kinesthetic” when we talked about our games involving physical learning. I was unfamiliar with the term in this context. I resolved to research and explore the concept more deeply, and in 2014 a Title V grant at our institution offered the opportunity I was looking for. The grant focused on undergraduate research, and so provided the funds for me to work with three research assistants in the exploration of kinesthetics. Jeans Abreu Mieses, Jose Palacios, and Jose Vidal are all currently enrolled at Hostos as Game Design majors. I selected these three because they are

not only strong students academically, but also had expressed interest in developing games that educate. I began by engaging the group in a discussion of how physical activities might lend themselves to aiding in the retention of information. I asked that each one of the students begin researching the meaning of the word kinesthetic, its historical relevance, and the primary researchers in the field.

The results of this initial foray into the topic were incredibly exciting for me as an educator. Our follow-up meetings involved engaging discussions as each student reported their findings to the group. My background is in media production and English literature; so much of this information was quite new to me. I found the roles of teacher and student reversed here, as I took notes and learned from my pupils.

Initially, the team investigated the meaning, history and current usage of the word 'kinesthetic.' Jose Vidal, having never even heard the word before, jumped online to discover its origins from the word kinesthesia, defined as "The sensation of movement or strain in muscles, tendons, and joints; muscle sense"(Dictionary.com). Hence, anything involving these sensations is deemed "kinesthetic." From there he found that a nineteenth-century-British neuroscientist by the name of Henry Charlton Bastian had coined the term "kinaesthetic" in an 1880 paper titled *The Brain As An Organ of Mind*. Here Bastian described a relationship between brain and body in a broad assortment of creatures, but clearly outlined the human brain's reception of information from muscles (muscle sense) as "necessary for the brain to coordinate movement" (Pearce 75). This view appears to differ from the concepts of the day, which saw the brain giving instructions to the muscles in a one-sided monologue.

As Jose Vidal was exploring this, Jose Palacios' efforts focused on the history of Kinesthetic learning starting with Bastian and moving forward through a family tree of analysts and educational researchers. He found that the concept of a body-brain learning connection had been referred to with different terminology over the last century. Mr. Palacios uncovered an original manuscript of Bastian's work online wherein the scientist spoke about learning through visual, auditory, and kinesthetic means. Bastian related the latter to the relationship between muscle and brain in learning penmanship (Bastian 648). Soon after, Jean-Martin Charcot, a neurologist, introduced one of the first alternative learning systems with an innovative method of teaching that involved illustrating patients' facial and body expressions when suffering from various mental disorders. His images focused on depicting characteristic symptoms in order to help his medical students learn to identify particular maladies

(Thorburn 78).

Eventually, Charcot would become a mentor to Alfred Binet, who along with Theodore Simon developed the Binet-Simon Scale in 1905. The scale was developed to compare children's mental abilities relative to those of their "normal" peers (Siegler 180). This would provide a base to which they could determine mental age for educational placement. Recognizing the limitations of his scale, he expressed the need for additional studies using more qualitative, not quantitative, measurement (Siegler 189).

Jose Palacios' explorations, while seemingly drifting away from kinesthetics, enthralled the group as his fellow students joined him in their research in order to trace the paths of influence. As a media professor focusing primarily on studio with my students, historical research was quite refreshing, and so I encouraged these students to follow their interests. From Binet and Simon they uncovered Jean Piaget, a Swiss developmental psychologist and philosopher. Piaget revised and updated the Binet-Simon Scale to become the Stanford-Binet Intelligence Scale, which he used as an aid in the classification of developmentally disabled children. Binet did this as part of his first experimental studies of the growing mind at the *Ecole de la rue de la Grange-aux-Belles*, a boys' institution created by Binet and then directed by Simon (Chapman). The team found that, around the same time period, Carl Jung was in the process of coining the term "collective unconscious," which refers to the structures of the unconscious mind that are shared between beings of the same species (Corbett). This research inspired Isabel Meyers and Katherine Briggs in developing the Meyers-Briggs indicator test, which was initially a personality test used to find suitable jobs for women during the Second World War before being used for assigning appropriate vocations to the general population. They were a bit surprised to find that this type of indicator test continues to be updated and is widely used today (Myers and Briggs). In a feeble attempt to reign in the research, I asked where these discoveries were leading us, and my students-turned-educators promptly pointed out that both the Stanford-Binet and Meyers-Briggs tests rely on recognizing the learning styles of their subjects. Systems of identifying learning styles, they said in near chorus, would be essential to developing games that teach.

It is important to note that as budding game designers working toward their associate degrees, none of my research assistants had ever heard of, nor would they be expected to have familiarity with, any of these individuals and their work. It was exciting to

engage in discussions with my students about subjects running the gamut from the effectiveness of intelligence tests to what sorts of learning styles exist, and the merits of various learning systems we had personally experienced. Eventually, we began wondering how the brain actually learns.

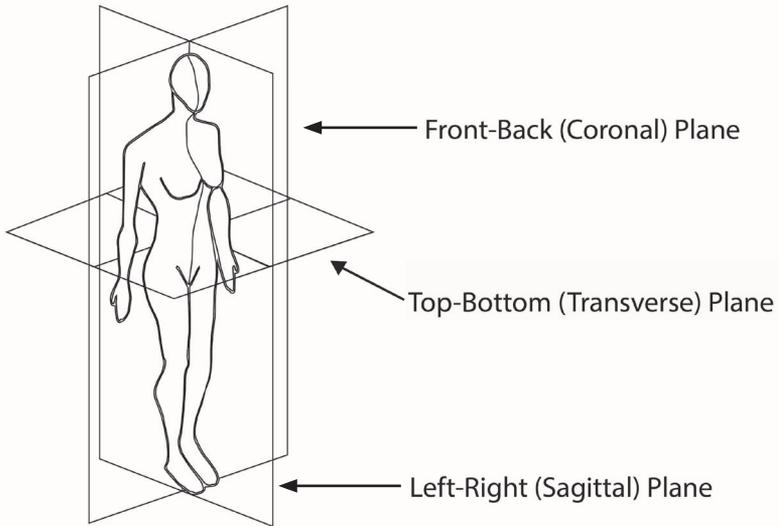
This sort of organic exploration of a topic was immensely satisfying, and we began engaging with the research quite democratically. This work began resembling courses I had taught in graduate thesis development at other schools, where a single question can veer a student into entirely unexpected territory, and the outcomes are almost secondary to the thrill of exploration. The four of us would touch base at a weekly meeting in my office to discuss their latest findings. They would present their week's findings, examine potential connections, discuss appropriate directives, and establish, with my help, goals for the following week.

We all recognized that we needed a bit more understanding of how the brain actually worked in order to identify effective learning systems, and in what contexts they can best be applied. We saw the importance of getting an idea of how the brain processes information during kinesthetic learning. To this end, Jeans and I began a side project researching the brain, embarking on a self-taught introductory course in neurology.

One of the very first areas of exploration was into brain development and learning, which brought me to a book by Gill Connell and Cheryl McCarthy, entitled *A Moving Child is a Learning Child*. This taught us about an element of early brain development where the child learns to control his/her body across something called “midlines”.

Here, we must imagine the human body bisected by three planes. One separating front from back (the coronal plane), a second dividing top and bottom (the transverse plane), and the third left from right (the sagittal plane). In early development the child is unable to consciously isolate one side from the other—one hand is lifted and its counterpart also rises, an infant lying on their stomach lifts their legs and their back arches as the shoulders and head mirror the movement. Over time, the child is able to master individuation of these midlines, manipulating just one foot or finger. Their brain is “feverishly building neural pathways [or ‘superhighways’ as the authors describe them] to keep up, and in particular, create and strengthen the pathways that cross the midline of the brain (the corpus callosum)” (Gill and McCarthy 108). The extent of this “integration” is incredibly important to the brain's performance, as

each part of the brain is a subsystem of the larger central nervous system (CNS), and streamlining the intercommunication of the various subsystems is integral to human intelligence and motor activities.

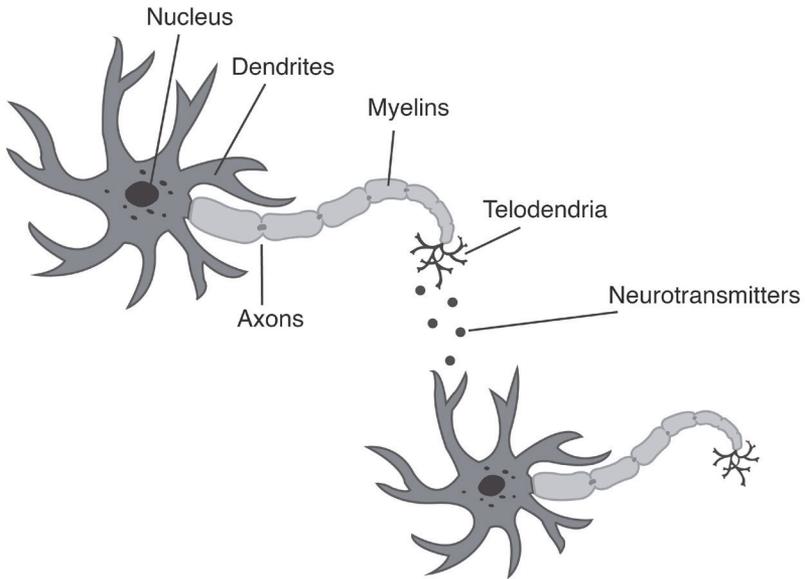


As children grow these superhighways form throughout, as well as between, the various parts of the brain. “Automaticity,” wherein repetitive or very common functions in the brain are automated, is incredibly important to its performance. This is especially true as the brain becomes more sophisticated. Automaticity frees up what many neurologists refer to as the brain’s “processing power.” As Connell and McCarthy explain, repetition aligns the brain and the body, creating muscle memory and automating movement. They explain that this is not simply repeating a drill, but actually just the opposite. “When a child does something over and over, that means that her brain is working through the steps of memorizing the activity. Myelination is happening, too. Her brain rewards her with positive feelings (a sense of fun), so she wants to continue” (Gill and McCarthy 25).

This prompted the team to take a closer look at the brain’s cells. There are two kinds of brain cells, glial cells, also known as neuroglia or simply “glia,” and neurons. Glial cells “provide support and nutrition, maintain homeostasis, form myelin, and facilitate signal transmission in the nervous system.” Neurons, on the other hand, are specifically designed to transmit electrical messages through the body via the Central

Nervous System (CNS). As Jeans described them, they are the messengers racing around in supersonic racecars while the glial cells act as their pit crew. Interestingly, while I had never heard of a glial cell, the American Association of Neurological Surgeons informed us that they outnumber neurons (which I had heard of) by roughly 50 to one.

Each neuron has a “nucleus” as the central core of a wide reaching branch-like set of tendrils or receptors called “dendrites.” These gather impulses in the form of neurotransmitters and pass them down a linked chain of myelin coated nodes called the ‘axon’ that ends in a smaller web of transmitters called “telodendria.”



There are three different kinds of neurons—sensory, intermediate, and motor neurons. Sensory neurons communicate the status of the rest of the body to the brain. They communicate the sensory input from the skin, eyes, ears, taste buds, nose, and proprioceptors. Proprioceptors, we discovered, are constantly reporting into the brain from throughout the nervous system the current amount of flex, tension, or stretch in the body’s various muscles, joints, ligaments, and tendons (Gill and McCarthy 91). Undoubtedly, these would be important in any kinesthetic experience. Intermediate neurons facilitate networking, relaying information to a greater network of similar neurons throughout the CNS. Carla Hannaford refers to the intermediate

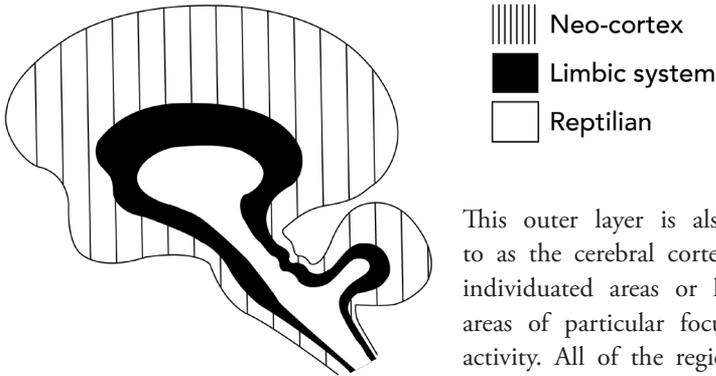
neural network as “command central, having instantaneous access to the brain’s complete information system” (Hannaford 24). These intermediate neurons account for 99.98% of the total neurons in the system (24). They consolidate the information, process it, and then make the body, muscles, and glands respond accordingly through the motor neurons.” The motor neurons carry the messages from the CNS to the muscles or glands in order for them to carry out their functions.

So each time a person has a new experience, their brain’s cells react in concert to build connectivity and establish precedence for both the body and mind to reference in the event that the experience should repeat itself. This is how we learn. The brain factors in all stimuli, and in the case that the stimuli should occur in a similar way at another time, the data is correlated with established data, assessed, and acted upon. The comparison to a computer here is common, but in fact a computer only has a limited amount of processors while the human CNS has billions of them communicating literally at lightening speed to correlate, compare, update, assess, and act on data input.

Each time this sort of repetition occurs, glial cells provide myelin to the neurons’ axons through a process called “myelination.” This creates an insulating sheath protecting the axon from damage or disruption from all the other neural activity going on in nearby neurons. Just like the insulation on a wire within an electronic circuit this myelination strengthens and focuses the neuron’s signal. As Margot Sunderland explains in her book *The Science of Parenting*, this “both speeds up processing power and helps cement experience into permanent conscious or unconscious memories. In short, myelination makes the brain faster and ‘stickier” (Sunderland 22). So, automaticity seemed to us to be promoted by myelination, allowing the various subsystems in the brain to build foundational thinking on which further learning can rely. The research team asked one another if myelination could be encouraged by kinesthetic learning.

Just as there are midlines in the body, there are also midlines of a sort in the brain. There are the two hemispheres—left and right—but there are also layers in the brain that have evolved over the last 300 million years. According to the neuroscientist Paul MacLean’s Triune Brain Theory, these layers expand from an inner central “reptilian” core that deals with instinctual behaviors and bodily functions. This is encapsulated within another “paleo-mammalian” or “mammalian” brain (the limbic system) concerning itself with social behaviors that in turn has been enveloped within a “neo-

mammalian” or “rational” brain (the neo-cortex) responsible for reasoning.



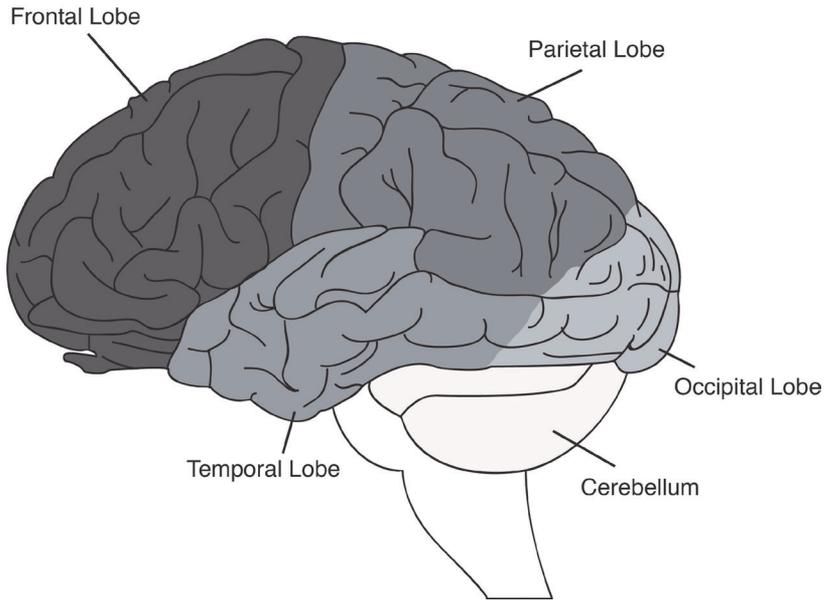
This outer layer is also referred to as the cerebral cortex and has individuated areas or lobes with areas of particular focused brain activity. All of the regions of the brain are interconnected by a

massive network of billions of brain cells that over the course of one’s life are pruned, honed, and strengthened by life experience for optimal inter-communication.

I was concerned to learn that more than half of our brain cells are lost over the course of a lifetime (this outside of extracurricular high school and college psychotropic explorations). A child is born with around 200 BILLION brain cells and within a year this number is reduced by 80 billion. Neurologists call this process “synaptic pruning” and it continues (but at a far less dramatic rate) for the rest of one’s life. By the teenage years, the human brain has lost close to 90 billion cells, and 100 billion by the age of 35. If I live to be seventy, it is likely that I will only retain 90 billion of my original 200 billion allotment (Sunderland 22).

Being at the age when retirement accounts and the education of grandchildren have suddenly become quite pertinent to me, I was concerned that this loss of my brain trust might be devastating. Fortunately we found that, in fact, the brain’s remaining cells actually get stronger when kept active, and the brain quite literally renovates or regenerates itself—developing new pathways of connectivity with new experiences, and even bypassing or re-allotting functions of damaged or incapacitated neurons as in the case of stroke victims. In addition, there is a whole group of regenerative stem cells available to the brain. “From these stem cells, as many as 6,000 new nerve cells per day have been formed, mainly in two areas of the brain; the hippocampus, a structure crucial for learning and memory, and the olfactory bulbs, which receive

input from odor sensing cells in the nose, and are also associated with memory” (Hannafor 22). It goes without saying that upon hearing of this regenerative process I relaxed considerably.



Meanwhile, Jean continued his research into the various roles of the active areas of the cerebral cortex, which taught him that there are four major lobes on each hemisphere. The frontal lobe primarily involves itself with actions based around organizing and planning. These include learning tasks initiating and stopping actions, regulating one’s behavior, as well as being a foci for more abstract thoughts, logic, and language translation. Apparently a lot of our personality is found here (Soc. Care Inst. for Excellence).

Behind the frontal lobe lies the parietal lobe, which is the center of body sense—that part of the brain’s duties that take in current input from the body’s proprioceptors. We found it interesting that this is also a focal point for sentence construction, mathematical calculation, interpretation of all the visual information processed from the eyes through the occipital lobe, and significant to the locating of visual objects.

The occipital lobe is at the rear of the brain, above the cerebellum. This processes information from the eyes interpreting things like color, shape, and movement. As previously stated, this does not actually interpret the information in terms of meaning (that happens in the parietal lobe), but instead focuses on differentiating visual input. Beneath these three is the fourth of the major lobes making up the cerebral cortex. The temporal lobe is involved in the learning and retention of new information. It is the part of the brain most involved with storage of verbal and visual memories. It is also the part of the brain most associated with attention (Soc. Care Inst. for Excellence).

As previously mentioned, these lobes are mirrored on the left and right hemisphere, which in turn have different foci from one side to the other. Left hemisphere lobes are associated with logic and analysis, detail, and sequence. The right hemisphere is more focused on the macro of things, with attention paid to similarities, estimation, and “the big picture.” As Connell and McCarthy explain, “Broadly speaking, the right side [of the cortex] gathers and experiments with new sensations, ideas, and information, focusing on the here and now. The left side analyzes and organizes information into reasoned thinking and future planning” (Gill and McCarthy 110).

Jeans’ research into how all this relates to brain functions during educational and physical activity brought him to the discovery that the memory retention of individuals is enhanced to retain a larger amount of information when involved in physical activity. Fred Gage Salk at the Institute for Biological Studies in La Jolla, California did a study with rats involving play where the juveniles were given an enriched play environment to live in that contained multiple running wheels, play tubes, and social interaction. At the end of a two month period these rats had an average of 50,000 more brain cells than their control group had (Salk 31).

On hearing this, Jose Palacios’ recognized a correlation with his research into “student centered learning.” This, he explained is the instructional approach where students influence the content and pace of learning. The instructor will provide opportunities for the student to learn independently, collaboratively, and critically and creatively think. I was only slightly miffed that I was the only one in the room who recognized how truly familiar with this concept the four of us already were.

Mr. Palacios pulled out his notes from Carla Hannaford’s book *Smart Moves: Why Learning Is Not All in Your Head* where she describes studies with monkeys where

researchers discovered that simple repetition of a behavior does not influence whether the subject will learn the behavior. “Neural connections can be altered and grown only if there is full attention, and focused interest on what we do” (Hannaford 22). She goes on to explain that if fully engaged and focused, human beings can within a period of three weeks get ten times more proficient at anything at all. “Self initiated movement, exploration, interaction and physical experience for the joy and challenge of it, facilitates *neurogenesis* (nerve growth) throughout one’s lifetime” (22).

Jose Vidal quickly pointed out that what Hannaford is describing here is “active learning.” The process of keeping students physically active while engaged in learning through activities that involve them gathering, processing, and using that information to problem solve. “This style of learning occurs once the teacher creates a curriculum or environment in which engaging activity is more likely to occur” (Joel 146). By implementing these types of approaches, the opportunity for engagement and retention greatly increases (146).

One study in particular sought to isolate the various conditions of the enhanced learning environment described in Salk’s rat experiments. The researchers concluded that physical activity was particularly important to the retention of brain cells as well as neurogenesis (Praag, et. al 268). Jeans had found that this is especially true of information needing to be recalled when the subject is under pressure, such as a test situation or similar time constraint.

According to Emmanuel Gerardin, a researcher at the Institute of Cognitive Science (Institut des Sciences Cognitives) in Lyon France, the frontal cortex, the cerebellum and the motor cortex (the area of conjunction between the Frontal and Parietal lobes) are all most active during information processing. They are also largely related to unconscious movement, reflexive visual processing, and anticipation of movement soon to occur. Interestingly, Jose Vidal’s research into Bastian’s work found that he referred to this area of the brain as the “Kinaesthetic” cortex (Bastian).

This has been identified by an increase in (and strengthening of) myelination relating to memory retention during physical activity. Gerardin proved that the amount of physical enhancement involved in educational settings can improve the retention rate of subjects when properly balanced—too much activity, however, can overload a student and have adverse effects upon such retention (Dimitriadis).

At this point in the research, we all had separate projects underway involving the design of learning games, and each new piece of information began almost sidetracking our work as we analyzed how it might be applied to our other projects. While we were finally coming to understand the relationship of learning, physicality, and brain development, we had yet to conceive of a workable outcome. The end of the semester was looming large when our little research group sat down to look at the big picture in terms of what information we had gathered, where this was likely to lead us, and, most importantly, what we wanted to be our take away from this endeavor.

The two Jose's were involved in a game design project that involved a tabletop card game used to teach Japanese, and Jeans was exploring a learning game concept of his own. Meanwhile a colleague of mine and I were engaged in developing a new system of play for assessing reading retention and encouraging group discussion in the classroom. We all wanted this research to bring us closer to a means of gauging the effectiveness of learning games, and we hoped it would fortify our work on these other projects, but we hadn't quite connected the dots yet.

The neural lens we had picked up was showing us the importance of practice for developing strong and permanent connections in the brain via myelination. We were also beginning to see that different aspects of learning were happening in different places in the brain. It seemed reasonable to suggest that getting the various parts of the brain to engage with a game's topic simultaneously would lead to stronger subject retention in student players, and that physical activity (such as moving across a room or even sorting cards) would encourage a wider spectrum of engagement with the brain. This too would increase myelination as well as involve a wider assortment of neural activities. I was elated to see that our little band of game designers was becoming a group of rookie neurologists!

So we began sorting through the data for primary takeaways to apply to our work. The right side of the brain's propensity to be focused on new sensations seemed as good a place to start as any. Professor DiSanto had told the Game-Framed curriculum designers about how tactile stimulation was often underappreciated in learning environments. The texture of a game asset, therefore, could offer a subtle but powerful trigger in a learning game. The team also focused on the right cortex's assessment of information in terms of sorting as an important point in what I was beginning to refer to as the "game brain relationship." The left cortex's emphasis on organization and analysis in terms of future thinking made it integral to game strategy. So these

two sides would obviously need to be triggered in tandem as often as possible. The team began organizing a group of important attributes for a learning game. We began considering the occipital lobe's focus on interpreting shape and color to engage with the parietal lobe's actual interpretation of these in terms of meaning. The group recognized the importance of aesthetically interesting, colorful, and varied asset design in a learning game. We decided that, in terms of a tabletop game, a powerful interaction for a memorable experience would involve sorting through colorful assets with a variety of shapes or aesthetic qualities paired with a strong individuation of tactile characteristics.

The temporal lobe's focus on verbal and visual memories gave rise to the opinion that auditory confirmation of an asset's importance was also essential to subject retention. Having a player read off the information from an asset should be encouraged when possible.

Finally, if these attributes could be paired with physical activity they would be all the more effective. This is not to say that students in a learning game should be made to run around the classroom or jump and dance. The physicality suggested by the studies that our group found could be as simple as picking up and rearranging assets on a board or standing to read information on a card before conducting a trade with a nearby opponent or teammate.

The importance of being consistent in developing interactions where the player was having these areas of the brain triggered *simultaneously* and in consort was a particularly important point in these discussions. The team saw that the more varied the stimulation, the greater the number of brain centers triggered, and the resulting connections made between these points in the brain when triggered through repetitive but dissimilar actions would strengthen the overall learning network in a student's brain.

Perhaps if we could organize these attributes into a rubric of best practices we could use them to analyze learning games and have a significant and powerful tool to use in our work as game designers. I wondered aloud if this sort of tool was already available, and Jose Palacios came back with research into a man named Neil Fleming, who created the VARK questionnaire. This is a questionnaire that helps researchers determine how a subject processes and retains information through Visual, Aural, Reading/Writing, and Kinesthetic means (hence the name VARK).

It was in discussing the work of Fleming that the team really found a meaningful directive in our project. While the VARK model gives strong examples to work with, the group discussed the relative subjectivity of research asking subjects questions in order to determine their *preferences* for various learning styles. We discussed whether or not the evidence was really being proven here or, instead, being gathered through a version of antidotal research. Furthermore, the students did not find any work looking at measuring the level of Visual, Auditory, Reading/Writing, and Kinesthetic experience in a learning environment. Fleming was simply analyzing the preferred learning styles of his subjects. We began looking, but did not find a functional rating system to help an educator create a more balanced kinesthetic learning experience. It was to address this need that we sat down and outlined a set of rubrics to use as a lens for examining appropriate educational experiences for more effective communication, and as we are all educational game designers we focused on rubrics for measuring game-centric learning.

The process began with the team setting up a simple score card listing out the four teaching modes outlined by Fleming (Visual, Auditory, Reading/Writing, and Kinesthetic), and involving a three-step scale of low, medium, and high. I had them test this by applying the rubrics to a variety of imagined learning situations; consequently, it became obvious that the generality of the term “kinesthetic” made for problematic assessments. We were not actually considering the variety of conditions that might be possible.

Another round of discussions helped us to break apart kinesthetic experiences in terms of tactile sensation, degree of motion, and actual physical discovery. The

Title: <u>Bond Raiders</u>		Learning Outcome(L.O.): <u>MASTERING INTER-PLAY OF The Elements of Functional Group!</u>				
Grading: 1 - Low 2 - Medium 3 - High	Visual	Auditorial	Literacy	Tactile	Motion	Physical Discovery
Degree of	<del>3</del> 3	1	2	1+	1+	1+
Consistency/ Frequency	3	1	3	1	1+	1
Reinforcement of L.O.	3	1	<del>3</del> 3	1	3	1
Exposure to new content L.O.	2	1	2	1	1	1
Totals	11/12 High	4/12 Low	10/12 High	4/12 Low	6/12 Med	4/12 Low

latter involved physical action with the uncovering of a learning element—for example, turning a box over to discover the answer to a riddle beneath it. These three rubrics, while all involving physicality and brain response to motion, would be scored individually and then averaged for an overall kinesthetic variable. We then focused on using our rubric charts for measuring the overall learning experiences of several tabletop games that had been developed by the Game-Framed Math & Science Initiative at Hostos. Our team play-tested each of the fifteen games, filled out individual rubric charts, and averaged their numbers together for a prototype reporting system to benefit the games’ designers.

It wasn’t long before the team recognized that a three-tiered rating system featuring low, medium, and high scoring was insufficient for representing the varied spectrum of experiences here. The team upped the ante by having a five tier scoring system from zero to four, and subsequent test runs with the rubric established what was felt to be a more effective gauge.

Title:		Learning Outcome(L.O.):					
		Visual	Auditorial	Literacy	Kinesthetics		
Grading: None 0 Low 1 Medium 2 High 3 Very High 4	Tactile				Motion	Physical Discovery	
Consistency/Frequency							
Reinforcement of L.O.							
Exposure to new content L.O.							
Totals							
Average							

By semester’s end, the three students that I had enlisted for the project had explored an area of consideration that none of them were familiar with prior to engaging in this research, and which (if truth be told) their instructor was equally clueless about. We engaged in a collaborative research methodology that was exciting and instructive to us all, while allowing ourselves the flexibility to wander where the research led us. At the outset, we had the pleasure of existing with no thesis to prove or specific goal to attain. We were free to go where the topic took us, and we allowed our interests to converge and engage us in discussion and debate. My students evolved into my collaborators, and we permitted ourselves to simply discover without grades

or assessment of performance. In the end we circled back and applied our discoveries to the work that most interests us, and now have an early iteration of a professional assessment tool that we will begin to implement in our individual work.

I have no doubt that this was as informative and engaging an experience for these students, as I know it was for me. The opportunity for undergraduates to work side by side with their professors in exploring and developing work is extremely beneficial to all involved. I encourage my colleagues to take advantage of any such opportunities they may be afforded and create their own opportunities (through grants and the like) if such opportunities are not available in their institutions. In the coming year, the three students involved in this project will be graduating from our AAS program in Game Design and moving on to Baccalaureate programs at four-year colleges across the country. They have promising careers ahead and an admiring professor in their wake.

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## Strength in Numbers

*Sherese Mitchell, Ph.D.*

**O**ne year ago, I was unanimously voted in as Department Chair of the Education department at Hostos Community College in the South Bronx, New York City. I had been in leadership roles before, chaired committees and a unit, but this role was very important to me. It was a unanimous vote, which meant everyone was behind me. I had to make a difference in one semester in a department where I had been employed for eight years of my life. In that time, I came to know my colleagues and some of the dynamics of the department. Additionally, I was on the verge of the last trimester of my first pregnancy.

This article focuses on how and why I decided to take certain actions for the betterment of the department in such a short time. This piece can assist individuals who are in leadership roles trying to make a difference using the strengths of their team.

The question I asked initially was—Am I prepared for this? I sought help from other leaders that I knew personally, admired, and had observed during my time at the college. Before my term began, I made appointments and had discussions with colleagues in leadership roles at Hostos and outside of Hostos (provosts, chairs, unit coordinators, and people in management). Being proactive was key. Because my time was limited, I had to make things happen and not wait for them to happen. I had to ask for help. This was not the time to pretend or fake it. There were too many people depending on me.

After receiving tips, I felt more confident about being the chair. I held the first department meeting and began just as I would a college course. I introduced myself,

leadership style, and expectations. It was important for my colleagues to know what they could expect from me, so there would be no surprises.

Sometimes, when leaders advance from other roles, their disposition changes. I ensured my colleagues that they would be getting a leader very similar to the colleague they saw in the department on a regular basis. I agree with Giessner, “Leaders not only lead teams; they are often members of the teams they lead.” (Giessner, Knippenberg & Ginkel, 2013, p. 659).

The only difference was that I would be a promoter of teamwork as opposed to a micromanager. Actually, I emphasized that we were a team as opposed to a department. We would now have team not department meetings. I was there to support their interaction, strengths, and work. Together we would accomplish our goals. In order to reach this objective, I solicited their input about their own, colleagues’, and chair’s strengths.

### **Strengths and Accountability**

Strengths-based development is being applied increasingly in the workplace. This form of positive psychology became popular around the beginning of the century (Kaiser & Overfield, 2011). This is the emphasis of strength building to foster increased engagement, productivity, and happiness among employees. Further, it is used to assist managers improve their leadership skills. As a result, strength-based development has expanded (Morris & Garrett, 2010). Traditional approaches to leadership are based on deficiency models and fixing deficits. This can be demoralizing because the formula requires individuals to be something they are not (Kaiser & Overfield, 2011). Additionally, the deficiency model prompts people to “improve from poor to average but will never make them outstanding because the only way to achieve greatness is to maximize one’s innate gifts. People don’t change that much. Don’t waste time trying to put in what was left out. Try to draw out what was left in.” (Kaiser and Overfield, 2011, p. 90).

Something that I have always been a firm believer in is the “glass is half full” or positive thinking. Part of this belief stemmed from my father, who instilled determination and persistence in me as a child. The other part was from being an early childhood educator in public and private sectors during the last 14 years. Observing students accomplish goals—from tying their shoelaces and buttoning their coats to perfecting essays and solving difficult math problems—helped me realize individuals can

accomplish what they set their minds to with support.

I took this belief into the department as a leader. At our first team meeting, I asked them to identify at least three strengths of every colleague in our department on a worksheet that listed everyone's name. This was an anonymous worksheet. In this way, individuals could feel comfortable to write openly. I created a chart using the team's responses (Table 1.1). I had it printed in color with everyone's picture and presented it immediately at our second team meeting.

However, it needed to be used. This is similar to the syllabus that I hand out on the first day of class. It is a resource. In order for it to be considered a reference, it needs to be referred to. Therefore, I asked my colleagues to complete a few related tasks using the chart. As a follow up, I asked the faculty to identify at least two colleagues with similar strengths and post that to the team's Blackboard online discussion board thread. I developed our team's Blackboard site to ensure there was a place where we could gather resources, share information, and dialogue, despite our busy schedules. Additionally, I asked them to identify personal strengths that they would like to improve and have a face-to-face dialogue with at least one colleague with those strengths. We scheduled a share-out about their dialogues and findings at the next team meeting. All of these actions supported the team to follow through and be accountable.

After we discovered the faculty strengths, we were able to see who would work best together based on similar strengths. This was setting them up to work with people. Additionally, faculty members were able to see people with whom they could confer in areas that they desired to improve. Their strengths were developed informally through tasks related to their complementary strength pair-ups and discussions in pairs and as a group (Woerkom & Meyers, 2016). I gave shout outs for the successful projects that people were able to complete as a result of working together. Some research on individual recognition in teams suggests the potential for tensions between individual-focused rewards and effective team functions (Li, Zheng, Harris, Liu, & Kirkman, 2016). Support for the group for their collective efforts proved to be successful to avoid tension. Recognizing individuals might have prompted jealousy or undermining of important interdependent processes of the team tasks (Li et al., 2016).

Overall, I noticed that the majority of the team members who participated in the

strengths application were happy. According to the Woerkom and Meyers' (2015) article, "employees who are happy perform better than their less happy colleagues."

## **Conclusion**

The reliance of teams to accomplish things in today's organizations has increased (Sauer, 2011). Studies show "the more individuals use their unique strengths, the higher their performance will be in the workplace, and their levels of happiness, fulfillment, authenticity, goal accomplishment and optimal functioning will increase." (Welch, Grossaint, Reid, & Walker, 2014, p.21).

According to the McGovern and Miller's (2008) article, happiness and well being are derived from the implementation of strengths into work and relationships in the work setting. Contrarily, "when professionals do not invest their signature strengths in such daily tasks, burnout or lowered job satisfaction and motivation result." (p. 280).

The team was appreciated because of their strengths both similar and unique being put to work. There were feelings of competence, respect and self-worth which important factors which enabled positive moods (Woerkom & Meyers, 2016).

Creating a chart of team strengths that could be used as a resource was well worth the end results. "It does not take much effort to praise employee strengths during the workday, or to include discussion about an employee's strong points in performance appraisals, especially when they can have a visible effect on climate perceptions and therefore on positive affect and performance." (Woerkom & Meyers, p. 96).

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# Trying to Teach Eugenio María de Hostos to Students at Hostos Community College—South Bronx, NY

*Reverend Professor James Sheehan*

“Hey, Señor Hostos, become alive!”

That is easier said than done.

I will try to concentrate on three areas: The concern regarding self-esteem issues of community college students; the density of Hostos himself, in his thoughts, style and vocabulary; and signs of access—and yes, esperanza (hope).

## **Self-esteem of Students at Hostos**

My interest in “Who’s Hostos?” was sparked when I met a muchacha 16 years ago at another community college. She briskly asked: “Why do you work in a stinky college? Who’s that guy anyway, a dead politician?”

Far from berating her—which would not be my style—I began to realize that real issues of pecking order continue to affect our students coming from the barrio. They have heard more than the professors have about the poor reputation that Hostos Community College has with its bilingual approach. To be sure, this is fading as the monolingual mania of having to learn the King’s English has won the day. To be transparent, to hear this monolingual emphasis in a world of scholarship scares me; particularly so as I did my Graduate Theological work in Italian in bella Roma. Perhaps, even more importantly, this is March. Yes, that means St. Patrick’s Day and the stirring up of memories. Why was my grandfather’s Irish language taken from him by the colonizing British government? I never heard this intelligent powerhouse engineer and chauffeur speak Irish—his first language. He could read it, but he would do so only privately and secretly—even in Yonkers, NY.

Moving back to Hostos, is it really a surprise that students do not know whom Hostos is? What college applicant really cares about the history of their school of choice—or the one to which the computer has decided to send them?

So I became academic and went to my mind.

I asked myself: “Why not respond to this wound—and lack of knowledge—by study?”

I have done that often in my own life.

This surge to the mind has brought me into educational ministry again and again, believing that the mind is what sets us apart as humans. Beside, I know of no other way to help the poor but education; I hope that there are other routes out of poverty, but I have found none like education to produce free human persons with their dignity intact. I accept my ignorance in knowing more efficient ways. I also teach literature to incarcerated women in Taconic State Prison. I suppose that is another bitterly, sad route for the poor.

I assigned a research paper on Hostos to all students in two sections in Humanities 100. I do not do that anymore; instead, I make it optional in the list for oral class presentations. Imagine reading all those papers on what passes as a term paper these days on the same character! Dante’s *Inferno* had nothing on that!

No matter how meaningful the revolutionary philosopher is, it is a drag to read mostly the same material time and time again.

The students were to answer two questions for a page apiece.

**A-** Who was Hostos?

**B-** What does he say to an urban student like you in the twenty-first century?

What I found fascinating was that there were very few references to his upper-middle economic class at birth—or even his apparently stable marriage. The students seem to think that his ideas came from the air; they were weak in understanding the impact of cultures and colonialism from Europe and the United States that were affecting Latin

America and Spain at that time—and ours?

Who is able to critique colonialism and its after-effects, which are so often internalized?

Influenced by the North American myth of progress and that we all are one big, happy multi-cultural society, it is difficult to critique the United States (eg. “It was good that Hostos established colleges which taught women to be engineers. However, that was “ back in the day... All has changed now”).

Hostos naturally had his adorers. I would surmise that they were often the newer immigrant students—the wide-eyed ones who wanted to learn all they could in our very friendly, beautiful, clean college—better than any in their old country. They could sense Hostos’ real passion for education.

## **The Density of Hostos in Thought, Style, and Vocabulary**

Hostos is not easy. As some student put it in his pithy Bronx wisdom: “I couldn’t figure out whether he was a psychologist, a philosopher, or some kind of lousy politician!”

The fact that many of our students do not see politics as a worthy enterprise has always scared me—and frightens me for the future.

His style is not user-friendly. A professor and Hostos aficionado graciously gave me the manuscript on Hostos’ Essay on Hamlet, a masterful essay filled with new insights.

Hostos is brilliant, and his amazing 47 page reflections on Hamlet refreshed my love of Shakespeare and literature, my first degree. However, I looked with enthusiasm for anything that would touch the mind in the student cafeteria. After two hours of trying to figure out what the genius really meant, Hamlet remains a mystery—not a fault of either Hostos or Shakespeare.

## **Windows of Access and Esperanza (Hope)**

The Library staff was really gracious, friendly, and helpful. Sad to say, this seemed like the first trip of some of our students to the library. Some students, though, actually went further in research than the minimal two articles outside of Winkipedia!

I found Vimeo/Hostos. Some of the students and I saw a fine black-and-white eleven minute video on Hostos. I did run into the surprising comment from some students that “It’s in Spanish!” (but This is Hostos),

From my media background at the New School for Social Research, I do believe that “One picture is worth more than 1,000 words.” There is a great picture of a sculpture of Hostos in a plaza in San Juan, Puerto Rico. As we know, this native son chose to be buried in the Dominican Republic. He is waiting—still—for the freedom of Puerto Rico from the United States. It will be a long wait. (Treat yourself—or cf!-Www. Hostos sculpture/San Juan).

In the interest of true disclosure, the original picture that I saw was taken by a retired, Spanish-speaking NY diocesan priest. He was taking a vacation with the Redemptorist Fathers, who have served in Puerto Rico for years.

There it is . . . a most unusual sculpture. Hostos seems to be wide-eyed and playing with either children (or birds) on his arms pointing to the air. This lively statue is not the typical, dusty weather-beaten sculpture; instead, it is open, confusing, enthralling, and, yes, reflecting the possibilities in la vida-life itself.

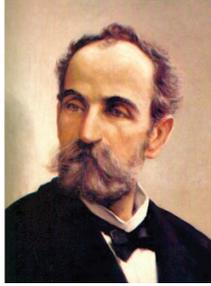
### **Last Observation: The Piano is Great!**

Somehow, students in this Spring term often did not “Look up!” They did not see our semi-famous painting or mosaic?! Yes—the one that says “Enseñar El Pueblo Para Pensar . . . Teach the People to Think!” However, they do see and write well about the words of Hostos, posted by the well-used piano, on the importance of music. Perhaps, Greek philosophers wake up as they hear the music, and smile knowingly to their intellectually probing cousin, Eugenio María de Hostos.

What was it that Aristotle said—more or less? “If I learn your music, I will rock your city.”

As we so often state, the education of immigrants and first-generation students in college involves much more than the bottom line.

Entonces, let the music and wisdom of Eugenio María de Hostos play on!



# TOUCHSTONE

## **2018 CALL FOR PAPERS**

*La piedra de toque de la enseñanza es el interés que produce...*

In linking the power of teaching to a broadening of our vision, Eugenio Maria De Hostos affirmed the power of education. In honor of our namesake's belief, Touchstone, a journal devoted to the scholarship produced by the community of Hostos, was created. The journal is published yearly by the Magda Vasillov Center for Teaching and Learning.

The goals of Touchstone are to increase awareness of the scholarly and creative work of the faculty at Hostos and provide an outlet for work that is on its way to outside publication. In accordance to these goals, Touchstone publishes a diverse range of scholarship from the Hostos Community. This diversity of imaginative and creative work represents the many talents of the faculty here at Hostos.

Touchstone accepts works in English or Spanish from any of the following:

- Original scholarship on teaching and learning
- Scholarly articles from any discipline
- Best practices
- Conference Presentations or Reports
- Classroom-based research
- Teaching challenges
- Personal Essays or Editorials
- WAC and Beyond
- Book reviews
- Creative works

Send your articles using discipline appropriate citation to Dr. Jason Matthew Buchanan (jbuchanan@hostos.cuny.edu) by December 31, 2017

To download the digital version of this and past editions of touchstone go to: [www.hostos.cuny.edu/touchstone](http://www.hostos.cuny.edu/touchstone)

# Hostos Community College



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