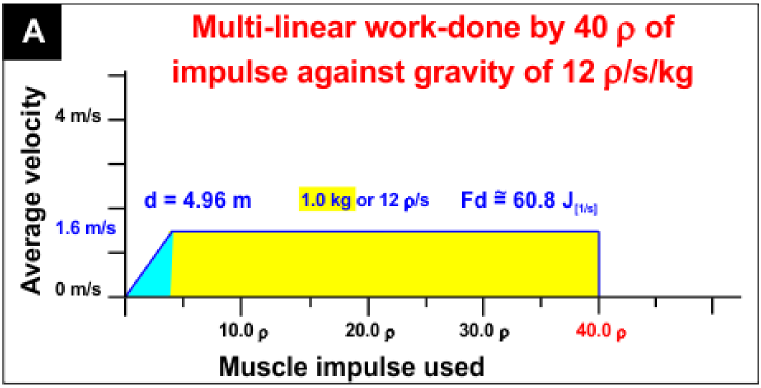
The Space-sci Sherlocks Deduce



Multi-Linear Nature of Work-Joules

Professor Du-Ane Du

www.Wacky1301SCI.com, *"Looking at serious science, sideways!"*

> Three sisters, Pico, Hectii, and Tera, the "Space-sci Sherlocks," are traveling through the Asteroid Belt. They perform lifting experiments and discover the multi-linear nature of work-joules.
> —Excerpted from *Murdered Energy Mysteries*, Part 3, Chapter 1, by Du-Ane Du, (Amazon, Kindle, ebook 2018, paperback 2021).

"The gravity in this gravity-spa elevator is getting stronger," Pico's eyes lit up hopefully, "Chip, is there an experiment we can do with this brick-lifting machine?"

"You're referring to *Secrets of Murdered Energia… Greatest Conundrum*?" Chip said, scanning the program. "There's a question here that asks, how much multi-linear work-done can you accomplish using exactly 40 ρ of muscle impulse."

"I'm not that familiar with work equations," Pico said. "Chip, which work equations can we test using this machine?"

"**Multi-linear work done** occurs when an object is lifted or moved from one stationary position to another," Chip said. "You can use either of the following equations:"

$$W_{[1/S]} \cong (\mathit{force\text{-}rate})(d_{speed})$$
$$W_{[1/S]} \equiv GPE_{[1/S]} \cong (\mathit{mass})(\mathit{gravity})(\mathit{height})$$

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"I'll let you two do the math stuff," Tera decided, as she turned toward the treadmill she'd been running on earlier.

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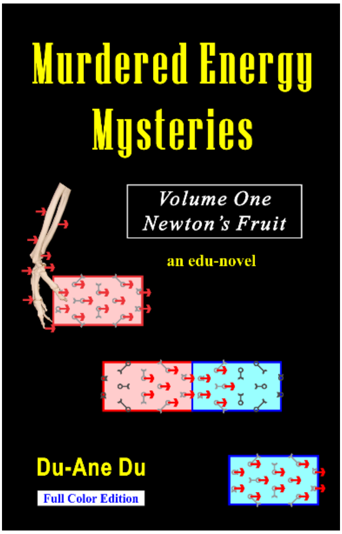

[*Examine or purchase at Amazon.com*]

"Let's reason this out first," Hectii suggested. "Chip is using the probably-equal sign (≅) that indicates the presence of some type of multi-linear numbers. But why?"

"I say that work is additive," Pico said thoughtfully. "In other words, the more muscle impulse you use, the more multi-linear work-done you can accomplish. Can we express that as a math equation—we'll call this Pico's Law!"

"In math terms," Hectii said, as she keyed symbols into her phone. "This Pico's law tells us, the amount of multi-linear work done is proportional to the impulse used. The basic equation would be:"

$$\textit{work-done} \propto im\Delta\rho$$

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"I like it," Pico said approvingly. "Now how do we change the alpha-like symbol into an equal sign?

"We add a constant of proportionality [*k*]," Hectii said as she keyed. "Like this:"

$$\textit{work-done}_{[1/S]} \cong \boldsymbol{k}(im\Delta\rho)$$

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"Fabulous, now we need to do some experiments to find the constant of proportionality," Pico said, reaching for the rope. "Chip, we need you to program this *How High Can You Lift* machine. Does it have a way to record the force-rate that I'll be using?"

"Yes," Chip said. "It can track the force-rate, the time, and the height that you lift the bricks. Force-rate multiplied by time is impulse used, and force-rate multiplied by distance traveled is called multi-linear work-done. Because you'll be lifting an object against gravity, this work-done is numerically identical to something called gravitational potential energy…"

"The question asked about 40 ρ of muscle impulse," Hectii said. "Can you set the machine to stop when we use up 40 ρ?

"Consider it done," Chip said. "I've set the machine so you can pull any speed you wish, and the machine will automatically stop when you've used 40 ρ of muscle impulse."

"The gravity is high right now, about 12 ρs/kg" Pico observed, as she pushed a button on the weight-machine. "I think I'll start by lifting 1.0 kg of bricks."

Pico pulled the rope down, hand-over-hand-over-hand… On the display screen, the avatar at the bottom of the cliff pulled its rope, and the 1.0 kg box of bricks smoothly moved upward. When the height display read 5.46 m, a bell rang, and Pico's rope stopped moving.

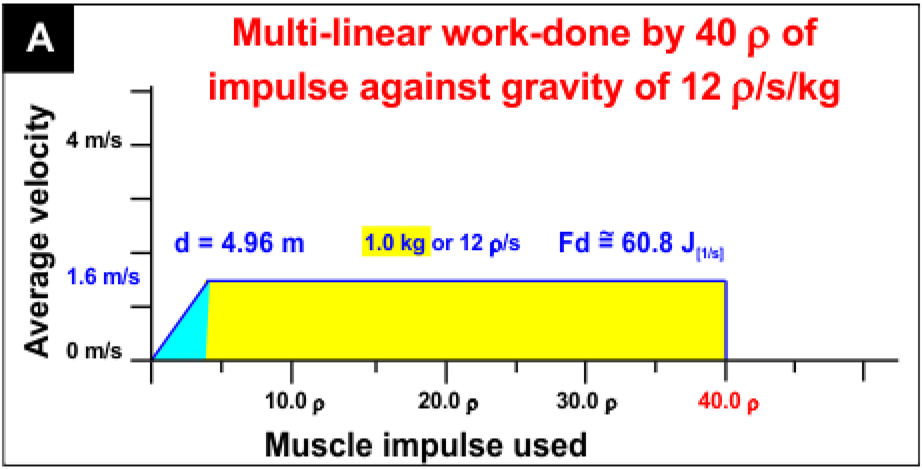
"I can't pull any more," Pico said.

"That's because you used 40 ρ of muscle impulse," Hectii said, grinning to herself. "Chip had the program stop, because that's what we wanted to experiment with. Now we need to analyze the data that Chip recorded."

"Let's start with a graph," Pico said. "I want to see how fast I lifted the bricks."

“But we also want to track the impulse we are using,” Hectii said.

“That would be an impulse-produces-velocity graph,” Chip said. “Here’s a graph of the 1.0 kg lift you just completed:”



“It looks like your lift took place in two phases,” Hectii determined. “The little blue triangle under the data-line involves the acceleration phase, and the yellow box below the data-line involves the constant-speed phase.”

“Chip, give us the data for the acceleration phase,” Pico requested.

“I’ll print the most important data in red, that’s the data that relates to your question,” Chip said as he displayed the following on their phones:

mass = 1.0 kg

ρ-whole-receiving rate [*weight-force*] = *–12 ρ/s*

ρ-force-rate = 20 ρ/s

net accelerating force = 8.0 ρ/s

time of acceleration = 0.2 s

distance of acceleration = 0.16 m

speed after acceleration = 1.6 m/s

"Now, to find the amount of muscle-impulse used in the first phase, we multiply the force-rate by the time," Pico said, as she adroitly tapped data into her phone:

imΔρ used accelerating = $\underline{F}t$

imΔρ used accelerating = (*20 ρ/s*)(*0.2 s*)

imΔρ used accelerating = 4.0 ρ

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"Interesting, I used 4.0 *ρ* to start the bricks moving upward," Pico said. "That means after I started the bricks moving, I still had 36 *ρ* of muscle impulse remaining to lift with.

"Let me calculate how much work you did with the first 4.0 *ρ* of muscle impulse," Hectii volunteered, as she executed the following calculations:

work-energy accelerating ≅ $\underline{F}d_{acc}$

work-energy accelerating ≅ (*20 ρ/s*)(*0.16 m*)

work-energy accelerating = ~3.2 ρm/s

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"Allow me to auto-adjust," Chip said. "Historically this would be written in multi-linear work-joules[IC]. A more traditional notation would be:"

$$\textit{work-energy accelerating} = 3.2\ J_{\left[\frac{1\,\rho}{0.8\,J}\right]}$$

"Thanks, Chip," Hectii said gratefully. "Is it ok if we use both methods?"

"ρm/s isn't a traditional notation," Chip said. "But it might be a good learning tool."

"What about phase two?" Pico said. "That was when I pulled the rope at a constant speed. You know, it didn't seem as hard to pull at a constant speed as it did to pull during the acceleration phase—I gave a good jerk during the acceleration."

"Maybe there's a reason for that," Hectii said. "Currently the 1.0 kg bricks have a grav- ρ-wreceiving rate of –12 ρ/s. If you pull harder than 12 ρ/s, then the bricks will accelerate upward."

"And if I had pulled less than 12 ρ/s, then the bricks would've slowed down," Pico noted. "But during the second phase, the speed was constant—that means I must've been pulling with a constant force-rate of exactly 12 ρ/s."

"Let's see if you're correct," Hectii said. "Chip, show us the data for the constant-speed phase."

"Here, and once again you can focus on the red data, because it relates to your primary question," Chip said, as he placed the following on their phones:

mass = 1.0 kg
ρ-whole-receiving rate [*weight-force*] = *–12 ρ/s*
ρ-force-rate = +12 ρ/s
time of constant lift = 3.0 s
distance of constant lift = 4.8 m
imΔρ used during constant lift = 36 ρ

"Good, I can use the information on the force-rate and distance to calculate how much multi-linear work you accomplished," Hectii said, as she keyed the following:

work-done constant speed ≅ $\underline{F}d_{speed}$
work-done constant speed ≅ (*12 ρ/s*)(*4.8 m*)
work-done $_{[1/S]}$ ***= ~57.6 ρm/s, or*** $\mathbf{57.6\ J_{\left[\frac{1\,\rho}{1.6\,J}\right]}}$

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"Great," Pico exclaimed, as she added figures of her own. "That means I did a total of:"

total work-done $_{[1/S]}$ ≅ $\underline{F}d_{acc} + \underline{F}d_{speed}$
total work-done $_{[1/S]}$ $= 3.2\ J_{\left[\frac{1\,\rho}{0.8\,J}\right]} + 57.6\ J_{\left[\frac{1\,\rho}{1.6\,J}\right]}$
total work-done $_{[1/S]}$ $\mathbf{= 60.8\ J_{\left[\frac{1\,\rho}{1.55\,J}\right]}}$

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"Ok, it's my turn to do the experiment," Hectii announced, as her long athletic fingers grasped the rope. "I want to try moving a heavier load of bricks, very slowly."

Hectii set the meter for 2.0 kg of bricks, and slowly pulled the rope. The avatar pulled the bricks a short distance upward. At the last moment, Hectii released the rope and the bricks slowed to a stop just as the bell rang.

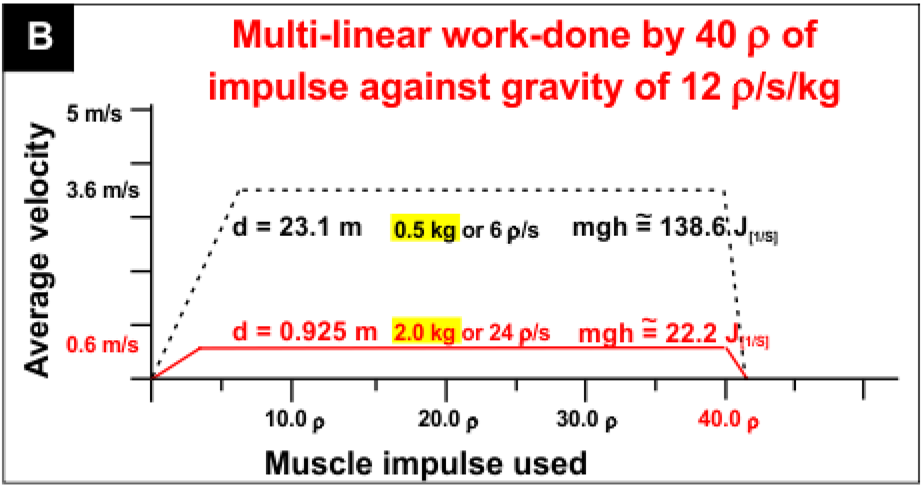
"Record that data, Chip," Pico said. "Now, I want to try lifting a lighter brick…and I'll do it as fast as I can!"

Pico selected 0.5 kg of bricks, grasped the rope, pulled hard and pulled fast. The avatar on the screen quickly pulled the smaller bricks much farther up the cliff. At the last moment, Pico stopped pulling, and the bricks glided to a stop.

"Interesting how much higher that one went," Hectii said with respect. "And just in time, the fluctuating-gravity elevator is starting to move again."

"Chip, show us a combined graph this time," Pico said. Use a red line for Hectii's lift and use a black dotted line for the weight I lifted."

"Here is a velocity-time graph of your last two experiments:"



"Chip," Pico said, "what was the force-rate during each of the acceleration periods?"

"Better yet," Hectii interrupted. "Show us a quick list of the force-rates."

"Here's the data:"

Hectii lifted = 2.0 kg

ρ-whole-receiving rate* [*weight-force*] *= –24 ρ/s

acceleration force-rate = 30 ρ/s

constant-speed force-rate = 24 ρ/s

deceleration force-rate = 0 ρ/s

Pico lifted = 0.5 kg

ρ-whole-receiving rate* [*weight-force*] *= –6.0 ρ/s

acceleration force-rate = 15 ρ/s

constant-speed force-rate = 6.0 ρ/s

deceleration force-rate = 0 ρ/s

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"Now we total up the partial force-rates and the distances," Pico said, releasing a disappointed sigh. "But there are three phases this time! This time we must calculate an acceleration phase, a constant-speed phase, and a deceleration phase—that's a lot of calculations."

"What about the other equation?" Hectii advanced. "Chip? Didn't you say there was another equation that relates to work?"

"When lifting an object to a new height," Chip said, "the shortcut equation for the total multi-linear work-done during the lift is the gravitational potential energy equation:"

$$work_{[1/speed]} \equiv GPE_{[1/S]} \cong mgh$$

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"If the weight being lifted glides to a stop, then the GPE equation will produce the same answer as the total of the three situations," Chip continued. "Remember, multi-linear work done involves moving an object from one stationary position to another. That said, when the starting and ending speeds are zero, this shortcut becomes:"

$$mgh \equiv \underline{F}d_{acc} + \underline{F}d_{speed} + \underline{F}d_{decel}$$

"Isn't the *mg* part the same as the grav- wreceiving rate [whole-receiving rate, weight]?" Pico wondered.

"Yes," Hectii said as she began keying. "The shortcut equation for my lift is:"

$$Hectii\text{'s work-done}_{[1/S]} \equiv GPE_{[1/S]} \cong mgh$$
$$Hectii\text{'s work-done}_{[1/S]} \equiv GPE_{[1/S]} \cong (24\ \rho/s)(0.925\ m)$$
$$\mathbf{Hectii\text{'s work-done}_{[1/S]} \cong 22.2\ J_{[\frac{1\,\rho}{0.55\,J}]},\ or\ {\sim}22.2\ \rho m/s}$$

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"I see how it works," Pico said. "That means the work done during my lift is:"

$$Pico\text{'s work-done}_{[1/S]} \equiv GPE_{[1/S]} \cong mgh$$
$$Pico\text{'s work-done}_{[1/S]} \equiv GPE_{[1/S]} \cong (6\ \rho/s)(23.1\ m)$$
$$\mathbf{Pico\text{'s work-done}_{[1/S]} \equiv GPE_{[1/S]} \cong 138.6\ J_{[\frac{1\,\rho}{3.46\,J}]}}$$

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"This looks bad," Pico deduced. "We both used 40 ρ of muscle impulse, but your slow lift accomplished $22.2\ J_{[\frac{1\,\rho}{0.55\,J}]}$ of work, while my fast lift accomplished $138.6\ J_{[\frac{1\,\rho}{3.46\,J}]}$. It looks like you'll never accomplish the same amount of work with 40 ρ of muscle-impulse. I guess Pico's law was wrong."

"We didn't actually test Pico's law," Hectii said hopefully. "Remember, Pico's law says, the amount of work done is directly related to the amount of impulse used. The equation looked like this:"

$$work_{[1/S]} \cong \boldsymbol{k}(im\Delta\rho)$$

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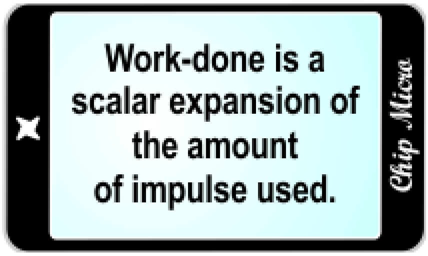
"But the amount of work done kept changing," Pico said. "Is it possible that multi-linear work-done involves some type of imaginary numbers? Maybe that's why Chip keeps referring to it as multi-linear work-done."

"In that case, I'll need to change the equation for Pico's law, maybe the constant of proportionality involves a scalar expansion that varies in some way," Hectii postulated, as she keyed the following into her phone. "How's this look? The variable of scalar expansion is the letter *S*."

$$Work_{[1/S]} \cong \boldsymbol{S}(im\Delta\rho)$$

"The use of S for scalar expansion looks great, but we also need to re-word Pico's law," Pico said enthusiastically. "It should say, the multi-linear work done when moving an object from one stationary position to another is a scalar expansion of the amount of muscle-impulse used."



"You know, it feels like the gravity in this room has changed a lot over the last few minutes," Hectii said.

"I still think it's amazing that we don't get dizzy," Pico remarked as she looked out the window at the slowly rotating stars.

"Daddy says the Gravity Spa is so large, it's able to spin slow enough for us not to feel it," Hectii said. "If the Gravity Spa's rings were smaller, they would have to spin faster to make the artificial gravity—and the faster spinning would make us feel ill."

"I bet the asteroids on the ends of the elevator shafts help too," Pico said.

"Definitely," Hectii agreed. "The asteroids also mean the Gravity Spa can spin slower, and the natural gravity provided by the asteroids also provides some stability—that prevents us from developing motion sickness."

"I think we should do some experiments with lower gravity," Pico asserted as she turned back to the exercise machine they were experimenting with. "Maybe we can find the variable of scalar expansion for our new equation."

"Do you think it has something to do with the mass of the bricks?" Hectii said.

"Clearly," Pico said. "The lower mass meant there was a much higher acceleration…"

"—and a higher acceleration meant the speed was much greater," Hectii completed. "But mass isn't a part of the equation."

"But speed could be," Pico countered. "Think about this, the unit for impulse is ρ, and the unit for work done is ρm/s. The only difference between the two units is m/s…*and m/s is speed!* Maybe it's all about how fast you do the work?

"Interesting observation," Hectii said. "I wonder if we should use the maximum speed or the average speed?"

"If acceleration and deceleration are involved," Pico said, "then we'd have to use the average speed. But we didn't record the average speed."

"True, but Chip did record the overall time and the overall distance," Hectii quickly replied. "And total distance divided by total time is the definition of average speed."

"Chip," Pico said. "What's the gravity level now?"

"The fluctuating-gravity elevator is about to pause at 8.0 ρ/s/kg for several minutes," Chip said.

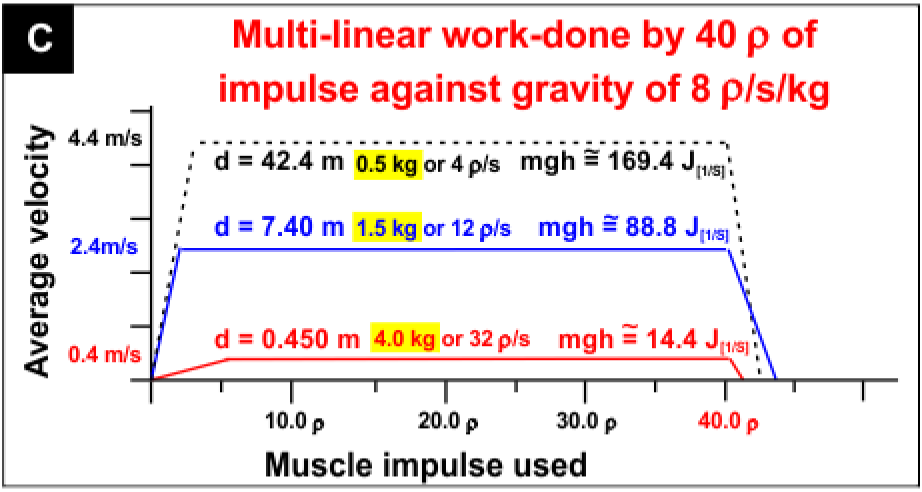
Pico and Hectii performed three experiments while the gravity was constant. Pico began by applying a force-rate of

15 ρ/s for 0.2 s to a mass of 0.5 kg. Then she lifted it at a constant speed of 4.4 m/s until her 40 ρ of impulse were used up. At that point she relaxed and allowed the bricks to coast to a stop.

Hectii used an initial force-rate of 12 ρ/s for 0.2 s to a mass of 1.5 kg. She then lifted her bricks at a constant speed of 2.4 m/s. As the impulse-used meter reached 40 ρ of muscle-impulse, she stopped lifting and allowed the bricks to glide to a stop.

For their third experiment, the girls worked together to apply a starting force of 32 ρ/s for 0.2 s to a mass of 4.0 kg. They continued to lift it at a constant speed of 0.4 m/s. When the 40 ρ of muscle-impulse was used, the girls relaxed, and the bricks coasted to a stop.

“Let’s see the data, Chip,” Pico said, as the fluctuating-gravity elevator began to move again.



"We know that each lift took 40 ρ of muscle-impulse," Pico said. "The black dotted line is my lift of the 0.5 kg brick. If I multiply the distance of 42.4 m by the weight of 4.0 ρ/s, I produce a multi-linear work-done value of $169.4\,J_{[\frac{1\,\rho}{4.24\,J}]}$. Chip, did you round these numbers off?"

"Round what numbers off?" Tera said, as she walked up beside Pico. Tera brushed aside a long curl of blonde hair. She liked the fact that the presence of gravity meant she could let her curls fall freely around her neck and shoulders. The thicker and curlier the better, she felt.

"Yes," Chip said. "Some of the measurements involved numerous decimal places, so I rounded them for the graph.

"How are your experiments coming?" Tera asked.

"We're about to find out," Hectii said. "This time, when we lifted the bricks against a gravity of 8.0 ρ/s/kg, it was a lot easier to lift than in our earlier experiments. And, we generated $169.4\,J_{[\frac{1\,\rho}{4.24\,J}]}$, $88.8\,J_{[\frac{1\,\rho}{2.22\,J}]}$, and $14.4\,J_{[\frac{1\,\rho}{0.36\,J}]}$ of work-done."

"We also achieved faster speeds than when the gravity was higher," Pico elaborated. "And Pico's law tells us the higher the speed, the more work you can create with the same amount of impulse."

"Seriously?" Tera said. "Pico's law?"

"We're about to test Pico's law—to see if it's true!" Hectii said, as she showed her phone-screen to Tera. "The current equation for Pico's law is:"

$$work_{[1/S]} \cong (speed)(im\Delta\rho)$$
$$work_{[1/S]} \cong \frac{distance}{time}(im\Delta\rho)$$

appeared on the display.

"In this situation, I think we should flip the equation around to see if these work-done values are actually scalar expansions of impulse," Pico said, keying as she spoke. "Let's use this equation:"

$$work_{[1/S]} \div speed = (im\Delta\rho)$$
$$\boldsymbol{work_{[1/S]}\left(\frac{time}{distance}\right) = im\Delta\rho}$$

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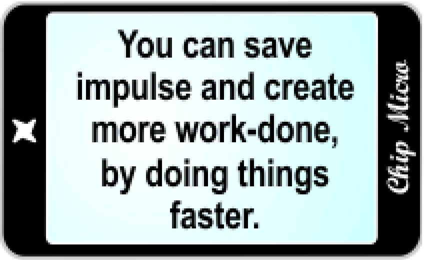
"If you did several experiments," Tera said. "Then you should put the information in a table."

"I'll create a table," Pico said, as she began drawing on her phone:

D	Is multi-linear work-done actually a scalar expansion of impulse?			
	Mass	**Work J[1/S]**	$Work(\frac{time}{distance}) \cong$	**40 ρ used.**
1	**1.0 kg**	$60.8\,J_{[\frac{1\,\rho}{1.55\,J}]}$	____ $\rho m/s(\frac{s}{m})$	
2	**0.5 kg**	$138.6\,J_{[\frac{1\,\rho}{3.46\,J}]}$	____ $\rho m/s(\frac{s}{m})$	
3	**2.0 kg**	$22.2\,J_{[\frac{1\,\rho}{0.555\,J}]}$	____ $\rho m/s(\frac{s}{m})$	
4	**0.5 kg**	$169.4\,J_{[\frac{1\,\rho}{4.235\,J}]}$	____ $\rho m/s(\frac{s}{m})$	
5	**1.5 kg**	$88.8\,J_{[\frac{1\,\rho}{2.22\,J}]}$	____ $\rho m/s(\frac{s}{m})$	
6	**4.0 kg**	$14.4\,J_{[\frac{1\,\rho}{0.36\,J}]}$	____ $\rho m/s(\frac{s}{m})$	
* Remember, $[\frac{1\,\rho}{1\,J}] = [\frac{1\,s}{1\,m}] = [\frac{1}{speed}] = [IC] = [\frac{1}{productivity}]$				

"How's this look?" Pico queried, as she showed her table to the other girls.

"Very clear," Hectii said approvingly. "We know that the lighter masses accelerated more, and that the lighter masses had higher speeds."



"But is the average speed the correct multiplier?" Tera said. "Go ahead and fill in the equations, I can't wait to see if Pico's law is true."

After keying data for a few moments, Pico said, "Here it is:"

E	**Is multi-linear work-done actually a scalar expansion of impulse?**			
	Mass	**Work J[1/S]**	$Work(\frac{time}{distance}) \cong$	**40 ρ used.**
1	1.0 kg	$60.8\,J_{[\frac{1\,\rho}{1.55\,J}]}$	$60.8\ \rho m/s(\frac{3.2\ s}{4.96\ m})$	_____ ρ
2	0.5 kg	$138.6\,J_{[\frac{1\,\rho}{3.46\,J}]}$	$138.6\ \rho m/s(\frac{6.667\ s}{23.1\ m})$	_____ ρ
3	2.0 kg	$22.2\,J_{[\frac{1\,\rho}{0.555\,J}]}$	$22.2\ \rho m/s(\frac{1.667\ s}{0.925\ m})$	_____ ρ
4	0.5 kg	$169.4\,J_{[\frac{1\,\rho}{4.235\,J}]}$	$169.4\ \rho m/s(\frac{10.0\ s}{42.35\ m})$	_____ ρ
5	1.5 kg	$88.8\,J_{[\frac{1\,\rho}{2.22\,J}]}$	$88.8\ \rho m/s(\frac{3.33\ s}{7.4\ m})$	_____ ρ
6	4.0 kg	$14.4\,J_{[\frac{1\,\rho}{0.36\,J}]}$	$14.4\ \rho m/s(\frac{1.25\ s}{0.45\ m})$	_____ ρ
* Remember, $[\frac{1\,\rho}{1\,J}] = [\frac{1\,s}{1\,m}] = [\frac{1}{speed}] = [IC] = [\frac{1}{productivity}]$				

"Does the answer have to be exactly 40 ρ?" Tera said.

"I doubt if it will be," Pico confessed. "There were accelerations involved, most of the time we allowed the weights to slow to a stop, but the first time the machine stopped us as if the weight was coasting upward forever."

A touch of suspense entered Hectii's voice, "But if the numbers are consistently true, then we've found the variable of scalar expansion for Pico's law!"

"Fill in the answers, Pico," Tera said.

Pico completed the following table:

F	**Is multi-linear work-done actually a scalar expansion of impulse?**			
	Mass	**Work J[1/S]**	$\boldsymbol{Work(\frac{time}{distance}) \cong}$	**40 ρ used.**
1	1.0 kg	$60.8\,J_{[\frac{1\,\rho}{1.55\,J}]}$	$60.8\,\rho m/s(\frac{3.2\,s}{4.96\,m})$	**~ 39.23 ρ**
2	0.5 kg	$138.6\,J_{[\frac{1\,\rho}{3.46\,J}]}$	$138.6\,\rho m/s(\frac{6.667\,s}{23.1\,m})$	**= 40.0 ρ**
3	2.0 kg	$22.2\,J_{[\frac{1\,\rho}{0.555\,J}]}$	$22.2\,\rho m/s(\frac{1.667\,s}{0.925\,m})$	**= 40.0 ρ**
4	0.5 kg	$169.4\,J_{[\frac{1\,\rho}{4.235\,J}]}$	$169.4\,\rho m/s(\frac{10.0\,s}{42.35\,m})$	**= 40.0 ρ**
5	1.5 kg	$88.8\,J_{[\frac{1\,\rho}{2.22\,J}]}$	$88.8\,\rho m/s(\frac{3.33\,s}{7.4\,m})$	**= 40.0 ρ**
6	4.0 kg	$14.4\,J_{[\frac{1\,\rho}{0.36\,J}]}$	$14.4\,\rho m/s(\frac{1.25\,s}{0.45\,m})$	**= 40.0 ρ**
* Remember, $[\frac{1\,\rho}{1\,J}] = [\frac{1\,s}{1\,m}] = [\frac{1}{speed}] = [IC] = [\frac{1}{productivity}]$				

"That looks decisive to me," Hectii declared. "The only value that's off is the one where we had an acceleration only, and no deceleration."

"Chip told us, multi-linear work-done always involves beginning *and* ending speeds of zero," Pico said. "That means the first experiment wasn't really a measure of multi-linear work-done, because there was no deceleration."

"I'm convinced," Tera said decisively. "We've already learned that multi-parabolic kinetic-joules$_{[IC]}$ act strangely during accelerations. These numbers look fabulous. These experiments make it clear that the faster you go, the more work-done you accomplish, with the same amount of impulse!"

Excitement brightened Pico's face, as she sang,

I -I -I -I -I
Work'd my impulse, Made it speedy,
Created speedy impul -l -l -l -l -l -lse,
'Cause that's what work-done is—!

"And that means Pico's law is actually a fact!" Hectii said. "**Pico's fact #1 of work-impulse expansion** tells us, calculations for multi-linear work-done are actually a scalar expansion of the muscle-impulse used, and the variable of scalar expansion is the speed!"

"Lighter objects achieve higher speeds," Tera said.

"Which means, if you want to create more work-done," Hectii said. "Move smaller amounts of mass faster."

We -e -e -e -e
Work'd our impulse, Did it speedy,
Making speedy impul -l -l -l -l -l -lse,
'Cause that's what work-done is—!

CONCLUSION: More research needs to be done into the relationship between mechanical energy and other theoretical forms of energy. Many common beliefs may actually be philosophical myths.

Murdered Energy Mysteries seeks to increase understanding of the various forms of momentum and momentum transfer, as well as the various forms of energy and energy transfer. The lack of understanding on the part of the scientific community is substantial, and more research needs to be done.

—Du-Ane Du, author of the edu-novel *Murdered Energy Mysteries* (Amazon, Kindle, e-book 2018, paperback 2021.)

More information, see:
Murdered Energy Mysteries,
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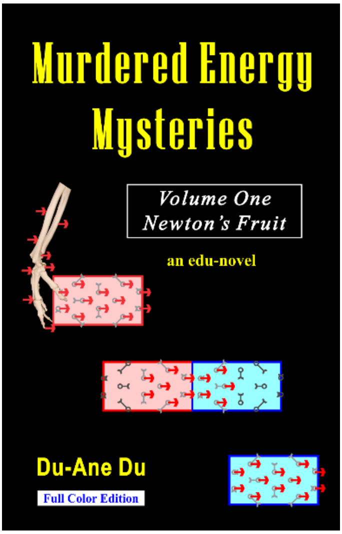

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