

If Shakespeare Had Written the Theory of Relativity

A 1.1 act, one set play fantasizing the development of the special theory of relativity in the characters, the style, and sometimes the very words, of the Bard

Tom Jaquish,

with lines from William Shakespeare

5 players

One man

Two women

Two who could be either men or women

copyright 2007 Tom Jaquish

The Setting

Altstadt Chateau, Switzerland, residence-in-exile of the German prince.

Dramatis Personae

(in order of appearance):

Hilga, the scrubwoman, a reader of popular articles on science. Opinionated, but willing to admit she's not an authority.

Lette, the chambermaid, a romantic. She believes the circle of life to contain more reality than the strictures and mathematics of science.

Albert, Prince of Germany, driven to inquiry and the search for higher truth. Lives seriously the life of the mind.

Arshay, a skeptic, to put it charitably. To be meaner, an empty-headed old gas-bag who fancies himself or herself the voice of moderation.

Zhugaid, Albert's rival and promoter of ether theories. A mandarin of establishment Science who sees all new theory as a threat. As energetic and passionate as he or she is wrong-headed.

The Scenes

Trouble in Chateau Altstadt

Newton or Maxwell?

Confronting the Ether

On the Horns of the Debate (eight weeks later)

Twenty years later

Scene 1 - Trouble in Chateau Altstadt

Hilga is on her knees, scrubbing and singing to herself...

Hilga: Beggar gets a copper,
Silver rules the Rue,
The Crown gets its pound of gold,
The devil gets his due.

Once thy love for me burned bright,
Then thou strayest afar,
Heaven smiles upon the babe,
With light from Age's star.

She sits back to admire her work. Lette enters, struggling under a load of bedclothes.

Lette: And a good morning to thee, my queen.

Hilga: Good morning. Was thy sleep restful, highness?

Lette drops the bedclothes.

Lette: Faith, it was the slumber of the innocent.
Flight without wings, tripping on a spring breeze.
A silent passage to yon and back.
Never was a draught so refreshful
As that drawn upon the well of the nocturne.

'Twas a journey the poor prince made not.
Another sunrise, no ruffle nor even a dent,
Bedclothes without blemish, fresh as their making.

By day I wash phantom soil and air out the ghosts,
And build again the web of nightly invite
To lure he who will not be trapped
And bind him in the bosom of peace and renewal.

Hilga gets to her knees and then stands during the course of reciting her next lines.

Hilga: Aye, renewal comes not to one so vexed,
And hobbled with demons of past and present.
Curs't be our pitiable household,
And souls that under its roof do cower,
Struck rigid with mortal terror,
Of the undoing of the gods' crystalline universe.

She looks around and out the doors as she speaks.

Fie on the upstart Maxwell!
Stirring trouble into a harmless curiosity
Of twitching frog legs and shocking Leyden jars,
And brewing the foul stew yclept "Electrodynamics."

She crosses to the bar and pours them each a drink as the conversation continues.

By divination and the black arts of alchemy
He conjures two constants of free space,
Waves his crook't and evil wand and shouts
"Shazzam!"

The mother of first principles toils and cries,
And expels out upon that blood-soak't bed
The speed of light, in all its unholy putrescence
And proclaims it pure as the tenderest babe.

So now, such lightspeed is woven into the very fabric
Upon which the heavens and the Earth do play
Unmoving, unchanging, ethereal tapestry of the gods.

Our orb of life gambols about fiery Apollo,
Who dashes through the Milky Way upon his journey of the aeons,
As said whey no doubt carouses across his own father's turf.

In the midst of this jumble and merriment
The speed of light stays true to its own fabric,
So by the gods of Galileo and Newton

Our moving platform must be visited by like deviance
In any measurement of the speed of light.

She takes a breath or a drink to let this sink in.

But alas, every measurement, in every direction

On every day, by every art and artist
Shows one constant, unwavering speed of light

As if the gods themselves commanded the heavens and Earth

To stand still at the very instant the foolish mortal took his measurement!

On Michelson, on Morley, on Trouton, on Noble,

On Fizeau, on Kennedy, on Thorndike, De Sitter,

Upon their concurrence, lacking of any dissent,

The constancy of the speed of light

Has laid low our physics and our prince.

Lette: Nay, Hilga, thou knowest what thou cannot know.

That experiments drawn by worn and careless minds,

Exacted on worn and careless metal,

Should inflame themselves with the pretense

Of the finding or the not finding

Of the threads of the gods' hidden fabric.

O what holy arrogance that distempers the gentle soul

And drives the ravenous human in search of a quenching!

All the world's a laboratory,

And all the men and women merely scientists;

They have their hypotheses and their experiments;

And one scientist in life plays many parts,

Those acts being seven ages. At first the sprout,

Raising ungainly head in wide-eyed wonder;

When the whining grade-schooler, with backpack

And lunch money, creeping like snail into classrooms

Filled with endless drills. And then the teen,
Ripped with passions, and yet bending furrowed brow

'Round concepts born of the Greek. Then the undergrad,

Broke free of childish restraint, and sipping the sweet nectar

Of thought and theory of those only recently dead,

Risking all on the chance

Of a path well-chosen. And then the grad student,

Bumping shoulders with thinkers still living,
Drinking of air, with face gaunt and manner unkempt,

Competing with other skeletons for the unsullied trail,

And so they play their parts. The sixth age shifts

Into the mannered persona

Of the establishment scientist and principal investigator,

Youthful dreams drowned out in the roar of budgets

Or the shrill siren call of a narrow specialty;

And a once supple brain congeals into an instrument of practice,

As dogma conquers disorder. Last scene of all,

That ends this strange eventful history

Is elder scientist, exemplar of Clarke's Law;

Sans bite, sans light, sans math, sans ... everything.

Hilga: *laughs* Faith, dear Lette, mayhaps I tread a wee bit too hard on the Scot.

As she speaks, she takes the empty glasses, wipes them with her cloth or her dress, and puts them back on the bar.

For one patch of theory that unites all measurements

Might well skewer the encrusted mechanics

Of the sainted Newton

When particle speeds encroach upon that of light itself.

'Tis a puzzle to be joined by stout minds

And worried with the insane purpose of the
driven soul,
Until the answer stands in the morning light.
Yet I can't but wonder, will it be Maxwell or
Newton?
Maxwell or Newton? Maxwell or Newton?...

*They exit during this last sentence. Albert
enters, followed by Arshay.*

Scene 2 - Newton or Maxwell?

Albert: ...Newton or Maxwell? Newton or
Maxwell?
By our lights, Arshay, both can't be right,
Else the universe is twisted as an eel on a line.

But *one* cut the gears upon which the heavens
roll,
Smooth and silent as a well-worn dance.
The *other* made a science of magic
And pronounced marriage of light and radio,
Sired by electricity and magnetism.

Friend Newton claims that all motions are
brothers,
Every apparent velocity just a summation
Of all relative velocities, and thus it ever shall
be
To the ends of infinite space.
Whilst Maxwell shows with equal clarity,
The speed of light to be a constant of space
itself,
An absolute reference from which all plat-
forms can compare.

One denies the other, yet both are beautiful
in form,
And thereby hangs this unhappy tale.

Arshay: Must it e'er be so, my prince,
That two ideas oppose and make war upon
each other?
Shall we bid them meet and make peace upon
each other
In the manner of the ancient dialectic?

Albert: The dialectic? A belch would taste
as sweet
As that ground mush of fish and fowl;
Pleasing no palate, filling only bellies and
never hearts.

What terrors must grip man and woman:
To drive them headlong into the safety of the
committee,
To force them to bow before the bench of
authority,
To herd them with iron chains of doublethink.

Nay, Arshay, the gods did not file brief with
committee
When for the universe they laid down keel.
One of the gentlemen is fully in the right, and
one is less so;
The divination of which lies beyond sterile
reasoning,
And tasks the imagination.

Though I bow at the feet of two giants,
When the die completes its roll, and the num-
bers show,
The arrows will loose and one giant fall; 'tis a
rotten business.
Rotten, rotten business that lowers its stench
upon all who engage it.
Time and space are out of joint, o cursed
spite,
That ever I was born to set things right.

Arshay: Sire, my esteem of thy intellect
knows not bounds,
And if thou commands the stars to move or
light to bend
It is not to me to deny that they will.

But what of this universe of wonders,
Revealed to travelers near the speed of light?
I know not engine of this world, or of worlds
yet to come
That could fling blood and bone to velocities
At which these marvels become sensible!

Albert: Yo ho, Arshay. Thy travels are incomplete,
For they have not visited the world of my dreams,
Where I bend backbone and run beside a light wave,
Observing its form, hanging beside me as a frozen thing
As lovers on swings might gaze into each others eyes,
Blind to the tumble of creation all about them.

Then my fleet-foot dream state avatar
Raises mirror in front of his own handsome face,
And wonders, can I see myself?
Or do I ask the impossible of my corpuscles of light,
To be at once frozen and emanating?
Or if the shine of my face do emanate,
By what legerdemain doth it pass the wave I am pacing?

Arshay: This train of thought sore vexes me!
I would as soon entertain the emissaries from Bizarro World,
Or wrestle a Minotaur, or salt my stew with a shard of Lot's wife.
Let yon Mercury give race to the light wave,
And Medusa admire herself in the mirror that dare not reflect,
Our plight lies in this world of bedrock.
Kingdom, not physics! Providence ... not fancy.

Tomorrow, and tomorrow, and tomorrow,
Creeps in this petty pace from day to day,
To the last syllable of recorded time;
And all our yesterdays have lighted fools
The way to dusty death. Out, out, brief candle!
Pure science is but a walking shadow; a poor player,
That struts and frets his hour upon the stage,
And then is heard no more; it is a tale
Told by an idiot, full of sound and fury,
Signifying nothing.

Nothing is the name of this tempest in a tea-cup.
I beseech thee, Albert, give up thy misbegotten quest,
That can only bear a legacy of madness.

Albert: Aye, but the quest *is* the legacy,
For what could science be if not a never-ending quest?
One question answered, the next arises,
And so on, until the end of time;
For when the last quest has found its answer,
The universe is complete, and time has met its end.
But soft! The music of clumping boots in the hall
Carols that our colleague has found out our hiding place
And seeks to enlighten us with the facts of the matter.

Zhugaid enters.

Scene 3 - Confronting the Ether

Zhugaid: How now, learned comrades.
What fortune that I have encountered thee,
At the very instant my bubbling mind has o'er-brimmed
With waters to bring sure wetting to the fires of our discontent,
So that we might set about the repair of our wounded Science.

The ether's the thing, that finds itself imperiled,
And we chosen with the proud duty to supply its rescue,
And restore the natural order. Our noble cause heartens me;
Stout comrades meet to the trials ahead.
And he which hath no stomach to this fight,
Let him depart; his passport shall be made,
And crowns for convoy put into his purse;
That fears his fellowship to strive with us.
This day is call'd the dance of the first of May;
He that outlives this day, and comes safe home,

Will stand a tip-toe when this day is nam'd,
 And rouse him at the name of Mayday.
 He that shall live this day, and see old age,
 Will yearly on the vigil dance with his neighbors,
 And say, Tomorrow is Mayday;
 Then he will strip his sleeve and show his scars,
 And say, These wounds I had on Mayday.
 Old men forget; yet all shall be forgot,
 But he'll remember with advantages
 What feats he did that day; then shall our names,
 Familiar in their mouths as household words,--
 Newton the king, Galileo and Kepler,
 Voigt and Lorentz, Fitzgerald and Poincare, --
 Be in their flowing cups freshly remembr'd.
 This story shall the good man teach his son;
 And Mayday, Mayday shall ne'er go by,
 From this day to the ending of the world,
 But we in it shall be remembered,--
 We few, we happy few, we band of brothers;
 For he today that yokes his mind with me
 Shall be my brother; be he ne'er so vile,
 This day shall gentle his condition;
 And gentlemen in Germany now a-bed
 Shall think themselves accurs'd they were not here,
 And hold their manhoods cheap while any
 speaks
 That toiled with us upon this Mayday.

Arshay: Well spoken, and a powerful incitement,
 Lead on, Zhugaid, lead on and we shall follow!

Zhugaid: Very well; the course that lies before us
 Requires the chusing among two alternatives,
 The best of which will fly the banner of the ether theory
 Until theory becomes law,
 And fresh mewlings speak it as well as matrons.

First, let us comprehend the ether as a fluid,
 A thin gruel, that nevertheless afflicts
 Bodies that pass through with a force of friction.

As said bodies approach the speed of light,
 This force grows without bound,
 Foreshortening the length of the moving objects.

I have the calculations to show

That a moving traveler will measure a constant speed of light,

Because his own rulers have been foreshortened

In a manner like that of his platform's passage through the ether.

It is an elegant theory that matches measured values

To all the digits of my slide rule.

Albert: I have caressed those equations with mine own eyes;

They do indeed proclaim a foreshortening

Of a moving object as viewed from a stationary platform,

But they also contain a symmetry

That evinces a foreshortening of a stationary platform,

As seen from a moving object.

Pray, tell how a stationary object

Could find itself compressed by friction

With the fluid it rests in?

Zhugaid: By our stars, is not a foolish symmetry

The hobgoblin of little minds?

But, no matter, let us proceed to the second proposal.

As a ponderous body, the Earth has attractions that number many,

Being ourselves, the water we bathe in, the very air we breathe;

In like manner, the local ether cannot resist her pull,

And becomes entrained with this royal procession

In its promenade about the sun.

Such captive ether moves not one jot

In respect to the surface of the Earth,
So measurements exacted upon our planet
Will find the same speed of light in any direc-
tion.
'Tis but an illusion of our happenstance of
making home
On a large planet; were we to be waifs of
outer space
The veil would lift, and measurement would
readily show
Our true position against the static ether.

Albert: By thy reckon, light's path through
the depths of space
Proceeds at the pleasure of the static ether.
When said light transits to the Earth's en-
trained ether
It may well suffer discontinuity, but then re-
cover
And fly once more straight and level against
the local ether,
Ne'er to betray the smallest hint of motions
that do occur
Outside the neighborhood of our revolving
orb.

How then that astronomers who nightly study
the heavens
Have comprehended for near two centuries
now
The stellar aberration that bids each star
To walk a yearly circle through the firma-
ment,
The measure of that circle being 41 arc sec-
onds,
A diameter that exactly matches the effect
that can be calculated
By assuming the Earth is plowing through a
stationary ether,
And a telescope needs be tilted into the
crosswind
So that a light wave might fly straight down
its pipe.
So let us cry merry now at such heavenly
comedy,
One measurement makes static ether impossi-
ble,
And a second gives credence to such ether
and denies its adversaries.

Zhugaid: How thy animus reveals itself!
To revel in the straits of an embattled theory,
And take childlike delight in contradictions,
All in the guise of a quest for truth;
A weary world knows well thy kind,
Always an anarchist, never a steward,
Bidding the devil make off with the estab-
lished order.
Why does the ether so spark your choler?

Albert: Because it's an abomination, in-
vented at a desperate hour,
By a frightened half-wit, to appease his petu-
lant master.
Lacking any support in mathematics or meas-
urement,
Its partisans grow shrill as its downfall ap-
proaches.

Zhugaid: Thou hast insulted me and many
learned colleagues,
And will come to look upon this day with re-
gret.

Zhugaid stalks out.

Arshay: *shaking head* Albert, thy insolence
hath made a powerful enemy
Who will plot vengeance, and employ ful-
some tools
To thy undoing.

Albert: It tasks me, Arshay, it tasks me.
Newton stood on the broad shoulders of Gali-
leo
And saw that motions are all relative,
While Maxwell found the speed of light
To be constant; and all observers have limned
it constant.
Do the gods tweak our noses and chisel two
sets of rules?

Nay, nay, 'tis abomination to open a new set of books

When e'er some unfamiliar rock tumbles down the hillside;

There needs be one theory to bind them, one theory to rule them all!

Arshay: And upon that quest, many a ship has dashed against the rocks,

Many a hero has gone over hill, never again to be seen.

Were it all as simple as saying, then beggars would ride carriages,

And Zhugaid and the Polytechnic, thus unburdened,

Could find their own time to beg.

I pray thee to leave Science to the scientists,
Seek not to question thy path, but to follow it, my prince.

Arshay exits, Albert stares after him.

Albert: To be or not to be, -- that is the question:--

Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or to take arms against a sea of troubles,
And by opposing end them?-- To die,-- to sleep,--

No more; and by a sleep to say we end
The heart-ache and a thousand natural shocks
That flesh is heir to,-- 'tis a consummation
Devoutly to be wish'd. To die,-- to sleep;--
To sleep! perchance to dream:-- ay, there's the rub;

For in that sleep of death what dreams may come,

When we have shuffled off this mortal coil,
Must give us pause: there's the respect
That makes calamity of so long life;

For who would bear the whips and scorns of time,

The oppressor's wrong, the proud man's contumely,

The pangs of despis'd love, the law's delay,
The insolence of office, and the spurns

That patient merit of the unworthy takes,
When he himself might his quietus make

With a bare bodkin? who would fardels bear,
To grunt and sweat under a weary life,

But that the dread of something after death,--
The undiscover'd country, from whose bourn

No traveller returns,-- puzzles the will,
And makes us rather bear those ills we have

Than fly to others that we know not of?

Thus conscience does make cowards of us all;
And thus the native hue of resolution

Is sicklied o'er with the pale cast of thought;
And enterprises of great pith and moment,

With this regard, their currents turn awry,
And lose the name of action.-- Soft you now!...

What light in fevered mind breaks, when
quiet gives rise to thought,

Free from prattle, unhung with the mischief
of cloistered bureaucrats,

At last it comes to me that *time* is suspect!

For *my* time cannot be *thy* time, when we are
parted from each other,

For time *itself* need be carried from frame to
frame

At the speed of light. Time *itself* is relative!

Ha Ha! Now I can join with Newton

And extend his Principle of Relativity to say
that

The laws of physics are the same in all inertial systems.

I also bow to Maxwell and proclaim

The Principle of the Constancy of the Speed
of Light, to wit:

The speed of light in free space has the same value c

In all inertial systems.

Simpler, nothing could be more so!

One spark heals the rift and explains every
measurement.

O, glorious, glorious! My legs bid me fly

And strip my clothing and shout Eureka! at
the heart of the city!

Albert exits.

Stagehand pulls out a wall that separates the stage into a two thirds/one thirds partition of the stage. The wall does not extend all the way to the front of the stage - it is cut back so the audience can see the action in both sections of the stage. The wall has a door in it.

Scene 4 - On the Horns of the Debate (eight weeks later)

Zhugaid enters the two thirds section, secretly, looking side to side, and Arshay follows him. If Arshay is a woman, she is wearing a sweater or jacket over her dress.

Zhugaid: Do thy best, Arshay, to draw out the prince,
Prick his vanity with flowery worship,
Let his tongue wag as he laps it,
His face glowing with the public joy of the infant;
Then set thy hook and reel him back to shore
With all the power of thy reason and lever of thy favor with him,
'Til he recants and repents of his foul theory
And no more blasphemers in the name of Relativity.

Be ware, should thy wiles fail to move Albert,
Stronger means must be brought to end this madness.

But now, he approaches, and I secret away,
To view his manner and judge the temper it conceals.

Zhugaid goes through the door into the one third section, and listens at the door.

Albert enters.

Arshay: *bows* Thy humble servant, Prince Albert.
I bow more for thy exploits than the station thou commandeth,
Thou bringest me honor merely by thy audience.
What would thee of me?

Albert: Of thee, thy friendship and steadfast loyalty.

to the audience Such rubric is peculiar this day.

More fawn than fowl. I shall list' to her(his) cluck

And divine the true heart inside.

Arshay: *bows again* Thou hast it without the asking.

pause, while Arshay ponders how to proceed

Tell me Prince Albert, where did'st thou get thy novel idea?

Albert: It came to me when I was in the can.

to the audience I have the nibble.

Now I play it to see what lurks there.

to Arshay There is disquiet on thy brow.
Pray tell the origin of thy distress.

Goes to bar and pours them both drinks.

Arshay: Confession escapes my lips,
Though I am loath to soil thee with it.
Some small share of Relativity gives me pain,
And thou art the merchant with the salve.

Albert: *to audience* A bite!

to Arshay Out with it! Spill thy confession!

Arshay: *animated* So thou sayest and so shall I do!

Commanding the speed of light be the same
For the slow and the quick affronts the mind.

If speed cannot add to speed, then one and one make one

And reality is composed of fantasy!

Zhugaid: *to audience* Ahhhh! The fool has been hoist on her(his) own petard!
The angler becomes the angled!

Albert: Wretched mortal! The constant speed of light is not my conclusion;
It is my hypothesis, my child, fruit of my blood and brain.
By the rules of the contest, thou can't refute my hypothesis.
With me alone lies the burden to support or abandon this child,
But mark me -- hypotheses are never disproved,
They may only fail to find support.

to audience Something is rotten in the state of Switzerland.
I smell a rat, and its name is Zhugaid.
Methinks that dude has a jones for authority.
But, for every measure, there be a counter.

Zhugaid: *leaves door and addresses audience* We are down to the last defender!

Albert: *to audience, pours drink on the front of his coat* Endgame.

Zhugaid: *to audience* Only I stand between the world we know
And chaos.
This duty chose me, not I it,
But I bear it proud.

Albert: *to Arshay* O, Neptune! I've spilt my drink,
Trade with me, Arshay, and I'll fetch a clean coat.

Arshay: As thou wisheth.
Upon thy return shall we settle this matter,
For once and all?

Albert: It shall be settled.

Albert exits side, and Arshay bows to him.

Zhugaid: *to audience, pulling out knife*
If the prince will listen not to reason,
He will hear instead the susurrations of my dagger.
I will stab him in the Annus Mirabilis
And restore order to the land!

Zhugaid rushes through the door, toward Arshay who is just straightening up from bowing to Albert, and stabs her(him) in the back.

Zhugaid: Now dost thou get my point?

Arshay: Ohhhhhh! I am slain! *dies*

Zhugaid: What kind of trickery is this?
O perfidy! O most foul snare!
Heroic act made murder!
And none to profit but the devil himself!

Albert enters with knife.

Albert: What ho! The villain caught
With his(her) prey still pulsating!
If there be justice, thou shalt join the soul
thou hast released.

They fight, and Albert stabs Zhugaid in the belly.

Zhugaid: O, my guts are rent by mortal blow,
Never to be joint again!
The uncaring world turns, children squeal at play,
A cook chops, then dumps food into a bubbling pot;
Lovers young and old walk in hands in the evening air;
Rough men build the walls of a towering cathedral;
The cause that fired me dwindles to one puff among a worldful;
I die and my truth dies with me.

dies and falls near, or on top of, Arshay

Albert: *to Zhugaid* Parting is such sweet sorrow.
to Arshay And Arshay, in life but a foolish prating knave,
Becomes in death a useful instrument.

And now, my public draws not its own breath
As it pines in yearning for my next paper.

Exits.

Curtains close or lights go off, bodies get off stage and Hilga plants herself on the spot where the bodies had lain, scrubbing.

Scene 5 - Twenty years later

Hilga: ...Heaven smiles upon the babe,
With light from Age's star.

Out, out, darn spot.

Lette enters with a load of bedclothes.

Lette: And a good morning to thee, my queen.

Hilga: Good morning, highness.
Thou art looking sunny.
And how art his nibs today?

Lette: Ohh, lost as usual in the inner workings of the universe.
Can't see the celestial kingdom for the stars,
Enjoying life in blissful ignorance
That there are more things in heaven and earth
Than are dreamt of in his science.

Hilga: Aye, what a piece of work is man;;
How noble in reason;
How infinite in faculties;
In form and moving, how express and admirable;
In action, how like an angel;
In apprehension, how like a god;

The beauty of the world! The paragon of animals!

Albert: *offstage* No!

Albert enters, crosses the stage, and exits, with a cell phone against his ear.

Albert: *onstage* No, no, no, no, no! God does not throw dice!

Lette and Hilga look at each other.

Lette and Hilga: Here we goeth again!

Curtain.