

## The Big Wat(hol)

Memorize this backwards and win  
a trip for two to TRaSh-80 Land.

Four dumb divisions,  
silly syntax,  
senseless semantics,  
crazy queues,  
lengthy lines,  
runs on WIDJET  
on an IBM kludge!  
(But is it good for you?)

-watfool

# Special: Bunny Issue

...Myths about bunny-rabbits explored & exploded

Friday, September 19, 1980  
Volume 24, Number 2

## math NEWS

### The Alcohol Song

Words and Music by:  
TTWIAHA

When I was young  
It seemed that life was so wonderful,  
A miracle,  
Oh it was beautiful, magical  
And every morning at three  
I would wake up so easily,  
Oh breezily,  
Moving quite steadily

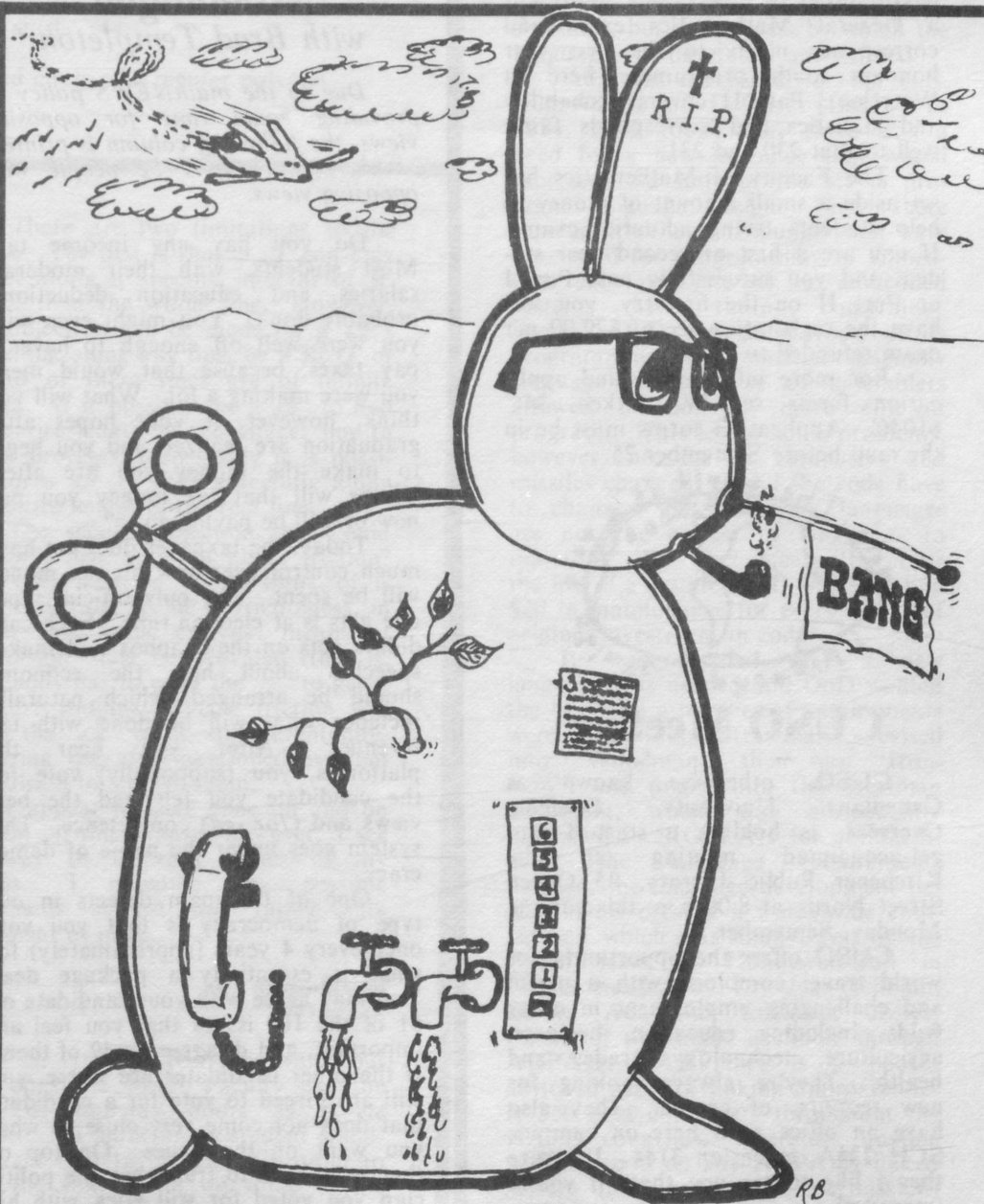
Then they sent me to school,  
To teach me how to drink alcohol,  
Oh, have a ball,  
Oh, stand up tall, drink it all  
Soon my eyes didn't work  
Started seeing so blurrily  
Oh terribly,  
I was thoroughly smashed you see

Chorus:  
There are times  
When all the world spins round  
I fall down to the ground  
I can't see worth a damn  
Won't you please, please give me a kind word  
I know it sounds absurd,  
But please tell me where I am

So now, watch what you drink,  
Or you'll have trouble getting out of bed  
Eyes of red,  
Oh my head, feet like lead!  
You'll have to sign with AA,  
Or you'll become like an engineer,  
Oh gulp the beer,  
Oh, brain cells will disappear...

Oh, take, take it, yeah!

Apologies to Supertramp would be  
completely inadequate.



...HOW MANY MISTAKES CAN YOU COUNT IN THE PICTURE?

## Financial Assistance Offered on Actuarial Exams

Have you ever thought of becoming an actuary?

What is an actuary? An actuary is an executive professionally trained in the science of mathematical probabilities. He uses mathematical skills to define, analyze and solve complex business and social problems. He designs insurance and pension programmes which meet the public's needs and desires, and which are financially sound. He forecasts probabilities and he commits his company or his client to long-range financial obligations for a generation or more.

To become an actuary, you must pass a series of nine exams. Part I is a General Mathematics exam and corresponds nicely to the first year honours math programme here at Waterloo. Part II covers probability and statistics and corresponds fairly well to Stat 230 and 231.

The Faculty of Mathematics has set aside a small amount of money to help students trying actuarial exams. If you are a first or second year student and you successfully pass Part I or Part II on the first try, you will have the registration fee of \$29.00 per exam refunded to you.

For more information and application forms see W. Aitken, MC 6104C. Application forms must be in the mail before September 25.



## CUSO Meeting

CUSO, otherwise known as Canadian University Students Overseas, is holding a start-of-term get-acquainted meeting at the Kitchener Public Library, 85 Queen Street North, at 8:00 p.m. this coming Monday, September 22.

CUSO offers the opportunity for world travel combined with a useful and challenging employment in many fields, including education, business, agriculture, technology, trades and health. They're always looking for new recruits, of course. They also have an office right here on campus, SCH 234A, extension 3144. I'm sure they'd like to see you there if you're interested.



## Monologue with Brad Templeton

*Due to the mathNEWS policy of providing equal time for opposing views, the following column is printed, as there will surely be people with opposing views.*

Do you pay any income tax? Most students, with their moderate salaries and education deductions, probably don't. You might even wish you were well off enough to have to pay taxes, because that would mean you were making a lot. What will you think, however, if your hopes after graduation are realized and you begin to make the money you are after? Where will that tax money you pay now or will be paying go to?

Today, the taxpayer does not have much control over how his tax money will be spent. The only official input one gets is at election time. Each candidate gets on the soapbox and makes speeches about how the economy should be arranged, which naturally includes what will be done with tax revenues. After you hear the platforms, you (supposedly) vote for the candidate you felt had the best views and (/or -ed) competence. This system goes under the name of democracy.

One of the main defects in our type of democracy is that you vote once every 4 years (approximately) for what is essentially a package deal. You may agree with your candidate on 51 of the 100 issues that you feel are important, and disagree on 49 of them. If the other candidates are worse, you still are forced to vote for a candidate that does not come very close to what you want on the issues. On top of that, you have to trust that the politician you voted for will stick with his

## Interaction

Since the last **Interaction** (which appeared last week, but was actually written in late July) was written, a few things have happened.

The fee hike strike was more of a failure than I anticipated as only four people participated. Even the University of Ottawa, whose Federation was much more organized than ours, had to call off their strike also, as only a few hundred students participated there. Neil Freeman is starting to show some sense as shown by his call for a general meeting to ratify his board's actions. This action, coupled with the general success of the new C.C. Pub and the Federation's successful orientation concerts, may actually save Freeman from being ousted from the presidency. Also the low rate of Fed fee refunds (for the first week at least) shows that most students are either contented or apathetic regarding the Federation. While Freeman is not a great president, this inertia, plus the great effort involved in trying to remove a president, should combine with his recent successes to keep him in office until the end of his term.

The Federation charter has now been altered to exclude graduate students from the Federation. This is the first successful effort by the Federation on this matter in four years. While the move may appear to be causing disunity, both the Federation and the grad students themselves apparently agree with the separation. Since the grads have been practically separate from the undergrads for nearly ten years, few will object to this legal separation.

It seems as if Mathsoc has got Marc Garstin (MAB) back as its president. MAB was away for most of the summer term and for a while it looked like he wouldn't return. However in late July he reappeared and after close examination of the Mathsoc constitution it was found out that he could transfer to Integrated Studies and remain as Mathsoc president. I've known MAB Garstin on and off for five years and I hope he will restore some semblance of sanity to Mathsoc after last week's disastrous "Liquor Giveaway".

It had to be one of the most disorganized and confusing Mathsoc events that I've ever attended. Though running out of liquor at 10 p.m. is probably not the Society's fault, the inability to control the crowd and the mess created by the rowdies must at least partially be the fault of the organizers. It does not seem like a wise idea to run such heavily subsidized events as "giveaways" at the beginning of the term. A break-



## Find the Mathematicians

by PF7

In each of these puzzles, you must find a one-word mathematical answer to each question in the list. Having answered all five (or six) questions, take the first and last letters of the words, and they will spell, when rearranged, the name of a mathematician, about whom a clue is given by the "bonus" line for each puzzle.

- This number would not be very whole.
  - It's here thanks to Leibniz and Newton.
  - A four-letter word used in our Faculty.
  - His Geometry is very plane.
  - A line that's nice to get close to.

Bonus: A mathematician who got round.
- From the Arabic, meaning "reunion of broken parts".
  - It could be that it's a branch of Mathematics!
  - This type of triangle should never be left by itself.
  - It makes relationships very clear.
  - These geometric figures might stop you for a second.

Bonus: All his calculations were right.
- It's inclined to show up in Calculus!
  - It could show a geometric or trigonometric viewpoint.
  - Trigonometric function that hits the spot?
  - It gets the natural numbers off to a good start.
  - Six-sided polygon.
  - The apothem, in relation with the inscribed circle of a regular polygon.

Bonus: As number two, he tried harder.

## Bunny Multiplies

Concerning the infamous "Bunny Rabbit Theorem" discussed in a previous issue of mathNEWS by the learned W. Hughes:

The previous attempts at proving or disproving this theorem have all made one basic assumption: namely, that a bunny can in fact hop on any number line whatsoever, be it  $\mathbf{R}$ ,  $\mathbf{Q}$ ,  $\mathbf{Z}$  or what-have-you. The point overlooked here, as is pointed out in another context in Mr. Hughes' article is the following: the real line is an imaginary construct; since it doesn't exist in the real world, it is impossible for a bunny to hop on it. It is impossible to prove or disprove something using the laws of physics, mathematics or biology when the thing to be proven is wholly or partly based on invalid assumptions; in short, the whole Bunny Rabbit Theorem issue can verily be thrust into a dark room and left there to gasp out its last.

But for the sake of argument, let us assume (ludicrous as it may seem) that a bunny can indeed hop on number lines. There is, in fact, a method of ensuring that the bunny hits each and every point of  $\mathbf{R}$ . This method consists of the greasing of said bunny's feet with some form of lubricant and giving it a good push, thereby causing it to slide along the  $\mathbf{R}$ -line, hitting every point along the way. If this sounds ridiculous to you, there does exist a precedent; after all, how do we draw graphs of functions in  $\mathbf{R}$ , anyway?

There are two limitations to the above. The first is that a bunny can only travel along a specific interval of  $\mathbf{R}$ , rather than the whole line. However, this objection can be made for a bunny's travelling along any line, be it  $\mathbf{R}$ ,  $\mathbf{Q}$ , or  $\mathbf{Z}$ : all of these lines are of infinite length. If it possible for a bunny to hop the entire length of the integer line (a tiring process), then surely it is possible for a bunny to slide gracefully along the entire length of the real line.

The second objection that could be made here is: what about friction? The only solution I can think of is this: either the  $\mathbf{R}$ -line is frictionless, in which case some external means of propulsion must be provided (that is, somebody has to push the bunny to get it to start sliding), or else friction will slow the bunny to a stop eventually, requiring the aforementioned external propulsion to start it again.

I appear to have gone on and on and on on this subject; however, I see no way to disprove either of my claims. I welcome any possible arguments against this rather silly statement of mine.

Yours in confusion  
David Till

P.S. It isn't really relevant, but why does the Math Faculty use the back of stairway doors as notice boards? An unfortunate student standing right next to the door (in order to read the small print on some of the notices) could have his fool head knocked off his shoulders!

## CSC Flash!

The Computer Science Club held its first meeting of the term last week (Thursday the 11th), and although our traditional Chief Returning Officer was absent, a new executive was elected.

The elections were chaired by our former vice-president, Geo Swan, and here are the results:

<b>President</b>	Peter Rowley
<b>Vice-President</b>	Kevin Martin
<b>Treasurer</b>	Rohan Jayasekera
<b>Secretary</b>	Guy Middleton

After the elections and traditional passing of the office keys, our speaker, Paul Stachour, gave a talk on "Ada: Its Development and Formal Debut". As the title suggests, the subject was not the technical aspects of the language (although these were discussed at the Dinner-with-the-Speaker), but the process by which the language was developed and defined.

Ada was developed for the U.S. Department of Defence (DoD). In 1974, DoD found that there was a need for a new language that would represent the state of the art in program language design. First, there were no high-level languages that were developed for programming of embedded real-time systems, i.e. embedded systems with timing constraints. Second, DoD was doing most of its programming with machine assembly language because use of assemblers allowed creation of more efficient programs. This led to some problems, however, because as computers and missiles changed, so did the code have to change. But assembly languages are not the easiest of languages to maintain. This fact meant that over the life of a system, DoD was spending \$20 in maintenance for every dollar of original investment in code!

It was decided that a new language was needed and DoD wanted the best. So a number of requirements were written in "Strawman", revised into "Woodman", then into "Ironman", and finally into the Steelman document, which was subsequently published in SIGPLAN for comment. With the language requirements finished, the language development began. DoD created a world-wide competition which was finally won by the Green team of Honeywell-Bull in France headed by Dr. Jean Ichbiah. Before Ada was finalized, a test translator was made available through ARPANet. ARPANet is a packet switched network linking approximately 350 host computers throughout the NATO countries. Therefore anyone with a userid on any ARPANet linked system (and appropriate permission) could use the translators. Over 900

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reports were submitted from fifteen countries. These all contributed to making Ada one of the best languages ever designed for general purpose programming.

Ada was developed with certain following goals in mind. First, it was to have the maintainability of some of the newer research languages, e.g., Euclid, Modula. This maintainability would be accomplished by designing the language so that the experienced professional programmer could write interface and abstract definitions while allowing code implementation and maintenance by inexperienced "cannon fodder". Second, it was to have the efficiency of the first generation high-level languages, e.g., Fortran, Cobol. Third, it was to have the built-in safety of such languages as Pascal. Fourth, it was to consolidate and combine state of the art ideas that had been previously proven as effective in other languages.

To ensure the safety and integrity of the language, Ada is heavily typed, though the types are not as strict as those of Pascal are. Subprograms in Ada are similar to those in Pascal: there are procedures and functions, which are procedures that return values. Unlike in Pascal, one does not have to have previously defined a subprogram in the program that references it. This means that packages can be created. These packages can be used to contain assorted type definitions and subprograms. But unlike in Fortran, a package must be declared if a type or subprogram of that package is referenced. Since Ada is to be implemented to run such things as missiles, it has been designed with exceptions in it. If a program faults, one can define where the program should resume action without the program aborting. One can even define different restart points for different types of faults.

Ada is to be fully implemented by DoD in 1984-85. On September 5th and 6th of this year, Dr. Ichbiah presented the finalized version of Ada in Washington, D.C. New York University and Carnegie-Mellon University have been working on compilers for Ada for the last six months. They are to be finished their work within a year. Both the Army and Air Force have put out contracts for Ada compilers. DoD has designed the Ada Programming Support Environment, which will include editors, controls, databases, etc., to be used for Ada. Even if Ada does not turn out to be as ultimate as it was intended to be, because of the size of DoD, Ada is likely to become one of the most important computing languages.

And now, from left stage, you will see a shimmering example of campus simplicity. A plain green t-shirt with faded blue jeans and tastefully perforated North Stars bedecks our man of the '80's. This marks a stylish return from the day of the safety pin and pierced cheek. His wardrobe reflects the vibrant pragmatism of campus living, a zest for life, and promise for the future...

## The New Fashion on Campus

Ever feel like you're on show when you walk around campus? Seems like everybody's looking at you, right? What runs through your mind on that interview day, when you gad about campus in your best establishmentarian finery, surrounded by a crowd of blue jeans?

If you're like me, you probably feel a bit defensive. At least, more defensive of your appearance than proud. If you have a flower or stick-pin in your lapel, you'd probably cover it with your shoulder-slung sweater.

No stranger is likely to faint at the sight of you, or madly attack, but still there's a feeling of discomfort. And yet you realize the value of what you're saying about yourself: not only can I look good in something other than Scrubbies, but I can be creative and show some variety to my personality.

Most students get the odd spontaneous urge to get dolled up, go out and have fun for a day or a night, but are not accustomed to being forced to make ourselves look as others want them to look. And yet, in most of the positions for which we are being trained, this is routine practice. I would say that the stress involved in creating and maintaining an artificial dress image is a sizable factor contributing to a person's general level of stress and self-ridicule.

Maybe you only realize it when you senselessly go out and buy a high-priced shirt which you then realize you'll rarely wear. We all have visions of what we'd look like in the *perfect* tuxedo, or the *perfect* evening gown, but the truth is that, given the choice, we'd far rather wear something comfortable, something *common*.

So what of our man of the '80's? He's got an interview tomorrow at 9:00 a.m. at Needles Hall, and he's going in his North Stars. Do you think the rest of the world is going to appreciate his honesty?

Ross Brown

After the talk, there were still people who were not convinced that Ada has a future, but we should all remember DOD's previous effort...  
**COBOL!**

japliance & kpmartin

This is supposed to be a longer article than the one for the frosh issue, but with only one meeting held so far this term, that may be difficult. In any case...

When you read this the next WATSFIC meeting will have been yesterday. The next meeting is not scheduled yet, but you (my hypothetical reader) will be able to find out where it will be by looking at the WATSFIC door (MC3036), always assuming of course that while looking at the door you have the inspiration to read the notices on it.

A feature of WATSFIC meetings which is being revised this term is the free coffee and doughnuts (and tea and cookies) which are distributed after each meeting.

Nominations and probably elections for the WATSFIC executive will be over by the time you read this. However, organizational assistance etc. is always welcome, even if it only amounts to putting up posters and/or keeping someone on the executive from having a nervous breakdown.

Welcome news is that WATSFIC will be sponsoring an AD&D (Advanced Dungeons and Dragons) tournament this term. The most probable date is the second weekend in November. Organization will be completed in the next couple of weeks and then registration for the tournaments will open. If you don't know about D&D and would like to find out something about it, there are several alternatives available to you:

(a) Drop by the WATSFIC office sometime and have someone explain it to you (he/she may demand 50¢ for a WATSFIC membership) for his/her efforts).

(b) Drop by a WATSFIC meeting and have 13 people explain to you simultaneously (otherwise known as force feeding).

(c) Read mathNEWS to whom I've promised an article about it sometime soon.

(d) Save your health and sanity and forget about it entirely.

WATSFIC is also planning to hold one (possibly two) movie nights. The first will be called "The Worst SF Movies We Could Think Of" (and get cheap). The second would be called "The Best SF Movies We Could Think Of" (and get cheap). There may or may not be some overlap between the two.

WATSFIC also has a library consisting of a large (but unspecified) number of books which are available on loan to all members.

Well, this lot should satisfy the people at mathNEWS for another week, at least. Hope to see you all at WATSFIC meetings soon!

-mha



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even or profitable event should be held then, since many people will come anyways, as they have little else to do. Giveaways should be held near the middle or end of term when more gimmicks are needed to draw out people to pubs. As well a half-term of heavy schoolwork has been known to calm the rowdiness in many a student (especially frosh). Also I'd like to see a return of such popular and traditional events as Mathsoc Wine and Cheese parties. Hopefully C&D will start making money this term so that the end-of-term buffets that used to be held each term can be reinstated.

Also I have one more piece of advice to the organizers of Mathsoc social events. If it is judged that the event to be held will be a sell-out and attract a rowdy sort of clientele, perhaps a bigger and easier-to-clean place than the Math Faculty Lounge could be chosen for the event. This year's social committee has shown some imagination by reaching out to hold events that are different from the norm of the past. However the extreme exercise of this philosophy, without the moderating influence of some of Mathsoc's traditional events, can lead to disaster as last week's second "giveaway" in eight days showed.

J.J. Long

### Retired UW Profs

EDRUSSELLO  
CIKSRATLN  
TLNSOEMBOA  
RCLSLNTR  
EUEUTUWARP  
FEDAFERMAT  
ITOGNOIRCI  
ECGLEIBNIZ  
SETRACSEDS

Names:

Carroll  
Descartes  
Einstein  
Euclid  
Euler  
Fermat  
Gauss

Godel  
Leibniz  
Newton  
Peano  
Russell  
Seifert  
Tarski

Leftovers:

A branch of math (13 letters).

Rod Currie

## Hyperspace: Catch-22

One untruth that has been unwittingly perpetrated by very many science fiction writers over the years is the theory that there may be something to all this "hyperspace jump" literature. However, the whole thing is utter nonsense, as Lewis Carroll proved with his own style of (convoluted?) logic when he wrote *Through The Looking Glass*. The connection may not seem all that apparent at first glance, but it is definitely there.

Digression: The basic idea behind hyperspace is that there are two universes back to back at the speed of light: our (tardyion) universe, and another (tachyon) universe. Everything is supposed to be reversed between the two universes, most importantly the relationship between the energy spent to get somewhere and the speed at which you get there. Leaving all navigational problems aside, it would merely be needed to switch all the tardyion particles in the ship for tachyon particles in the other universe, and you would speed off as fast as you could ever need.

Back to Alice in front of her looking glass: It is common knowledge that if you raise your right hand in front of a mirror, the looking glass person will raise what would be the left hand of any real person that you could see, but really, since *everything* is reversed, the looking glass person would undoubtedly think that it would be his/her right hand. The fact is, if your point of reference (yourself) has been reversed along with everything else, it is impossible to tell that you have not been.

In the hyperspace situation, the mirror is the speed of light barrier, but nothing else is changed from what Carroll wrote. Since in going to or from hyperspace, everything would have to be reversed completely, and

you are looking at what is to you your right hand, and not the left hand on the other side, the laws of physics will stay the same as they have always been, but the other universe would *always* be the different one. The laws of physics in the other universe only look different because you are looking at them through the mirror of the silvery massless particles.

Since the laws of physics stay the same when you cross over, it would still take forever to get anywhere, but since the mirror is there, the people back on Earth would be expecting you back in no time. In fact, this problem is exactly the reverse of the "widower spaceman" problem that comes about because of relativity (and it should be, since everything else is reversed). Instead of the spaceman marrying his great-granddaughter, his great-granddaughter would end up burying *him*. Time goes normally when you are in hyperspace, but it looks like it goes much faster to the people on the other side. Because of all this, I doubt that many volunteers could be found to take the trip.

However, some use might be found for this hyperspace yet. (Assuming that we are not already switching back and forth constantly unbeknownst, which may very well be.) Think of sending a super-Voyager to the stars in hyperspace. This probe would get back tomorrow, but would have spent several (tens, hundreds, thousands) of years looking around. This would undoubtedly give a big push to space exploration. But hyperspace must be relegated to machines (if it can even be gotten to at all) because death would occur long before the end of any decent trip. Drats!!!! Chalk up one more to relativity.

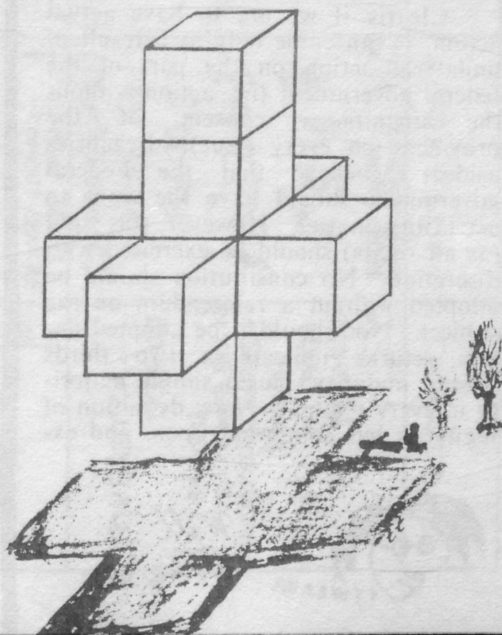
Feedback appriciato.

Sean Richardson

IT UNFOLDED FROM  
WHERE IT CAME  
WITH A SNAP THAT  
SHOOK THE FABRIC  
OF SPACE-TIME  
ITSELF,

"NONSENSE!"

-DOCTOR WHO



## Constitutional Constipation

Again and again over the last few years we have witnessed a failure of the Federal-Provincial talks to produce an agreement on the composition and patriation of the Canadian Constitution. Stumbling blocks have been many; the major ones being partition of Federal-Provincial powers (with emphasis on control of resources) and an agreement on an amending formula. It is now becoming increasingly clear that the ideal of all eleven governments agreeing on a substantial portion of the issues in contention is an impossible dream. Perhaps the time has now come to consider other possible alternatives.

The failure of the latest round of talks should not have come as a surprise to anyone. Regional interests, the Federal-Provincial power struggle and personal animosity were clearly too strong to allow for the substantial compromises necessary to achieve agreement. Indeed, any one of these was strong enough. Nor in the foreseeable future is it likely that these will decrease to any substantial amount. Thus, patriation of the Canadian Constitution by the means tried to date must be considered a remote possibility at best.

It can of course be argued that the patriation of the constitution is not an immediate concern and that there are other more immediate concerns that should be considered. However, though I do believe that economic considerations should be the governments' main concerns at the present time, I believe that it is possible (or at least that it should be possible) for more than one important issue to be considered at one time. Patriation of the constitution is an important enough issue to deserve more than a large dose of useless, boring and extremely expensive talk.

Clearly if we are to have actual action, it can come only as a result of unilateral action on the part of the federal government (i.e. action without the unanimous consent of the provinces on every issue). Legalities aside, I believe that the Federal government should have the right to act in this matter. However, this right (as all rights) should be exercised with discretion. No constitution should be adopted without a referendum on the subject. Nor should it be adopted unless returns indicate a two thirds overall majority, plus a simple majority in every region. (Note: definition of region is left somewhat open, and ex-

act percentages could differ from those stated but some formula of this type should be used.)

If such a method is adopted, I would strongly advocate the inclusion of a bill of rights similar to that proposed by Trudeau. As to an amending formula it seems clear that to require unanimous consent of all provinces would lock us into the same problems we are now experiencing, and to require a plebiscite for every amendment would be ridiculously cumbersome. Again some reasonable

compromise (say the agreement of at least 6 provinces representing at least 70% of the population) could be found. Regional autonomy is important but so is a strong degree of centralization. If Canada continues in the directions taken over the last hundred years effective federal government may well become impossible. The federal government should not relinquish any more powers to the provinces, nor should it give up basic control of the constitution.

*Still more speculation on the Bunny-Rabbit Theorem...*

### The Bunny Rabbit Eats

Last week's **YFE Presents** contained some new speculation on the theory. The crux of the argument was the new interpretation of the word "foot" to mean "centre of mass", thus allowing the  $\mathcal{R}$  to be of finite size, hopefully leaving it in a position to eat. There was included an admission that "certain problems" remained in the theory. I believe there was a conspiracy to silence one "problem" which is really a hole in the theory big enough to swallow the **R**-line whole. This article was written to explode this same conspiracy, and to bring to the world the news that the  $\mathcal{R}$  as described by Hughes *et al.* could not possibly describe the points on a **R**-line without dying of hunger. There is hope for our  $\mathcal{R}$  yet though:

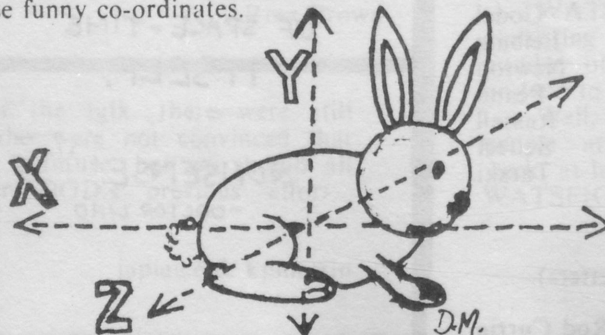
Take the common  $\mathcal{R}$ . It is of finite size, eats, and has a centre of mass that jiggles around constantly due to movement (and the uncertainty principle). Take the common **R**-line. It is of infinite size, is dense, and exists in one dimension only.

With these two statements it is clear to see that unless the  $\mathcal{R}$ 's centre of mass vibrates in one dimension only, transversewise, it will almost never describe a point on the line. Since the  $\mathcal{R}$  exists in three dimensions, its centre of mass has two more aleph-numbers of infinity to swoop around in than it will find on the line, and thus will almost never make contact (one dimensional targets are awfully hard to hit). And since each point is **zero**-dimensional, shrinking the  $\mathcal{R}$  will be of no help in contacting the line (the scale will just be reduced), and of course such shrinking would be detrimental to the  $\mathcal{R}$ 's eating habits.

Is there any way out of this deathly (to the  $\mathcal{R}$ ) situation? I should think so! It would be quite easy to take a healthy, full grown  $\mathcal{R}$ , and project its shadow, instead of on a wall, on an **I**-plane. Now, since both the  $\mathcal{R}$  and the plane are two dimensional, the  $\mathcal{R}$ 's "centre of mass" must always be within the domain, and thus must always describe a distinct number. But a problem remains: a shadow can't eat, and if the real  $\mathcal{R}$  walks away, our poor imaginary- $\mathcal{R}$  will die.

Is there any way out of this one? Yes! We now have the set **R** for an x-axis, the more infinite set **I** for a y-axis; why not divide the whole mess by zero to get a still more infinite z-axis. This would leave us with three dimensions (albeit unreal) for our nice, finite  $\mathcal{R}$  to live in. Furthermore, wherever the  $\mathcal{R}$  goes, its centre of mass will always describe some point in this **Unreal** (**U**)-universe, and it can eat!!!!

However, there are still some problems, the main one of which is this: the position of said  $\mathcal{R}$ 's centre of mass is completely uncertain (due to the you-know-what principle) (maybe we should return to the foot?), and even if it weren't, the actual numerical value of any point save those in the **I**-plane in the **U**-space doesn't exist, which makes counting kind of impossible (and that is our  $\mathcal{R}$ 's purpose in life, is it not?). Oh well. You can't blame me for trying. At least our  $\mathcal{R}$  can now sit down to a decent meal. Whither then? I cannot tell; nobody ever told me how to read these funny co-ordinates.


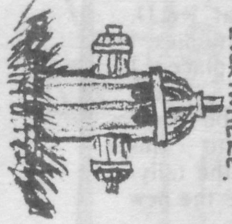



sirichardson  
Institute for Useless Studies  
Under-Frosh Division  
University of Waterloo



Will  
Hughes



FRIDAY	SATURDAY	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
19 Deadline for adding fall and year courses Deadline for honours/general transfers.	20 FED FLICKS THE BACK STALLION.	21 Men's basketball Co-rec Inner tube water-polo. girls needed!!	22 ORGANISATIONAL MEETINGS: • Co-ED Slow Pitch • Men's, Womens tennis singles.	23 MEN'S BAIL HOCKEY mathNEWS production night!!	24 CINEMA GRANTS - CAMPUS CENTRE PARTY! 8:00 PM PAS 3005 (Psych lounge)	25 MOVIES: • Dial "M" For MURDER • SHORT SUBJECTS IN THE HUMANITIES THEATRE. CO-REC VOLLEYBALL
26 Co-ED Slow PITCH LAST DAY FOR SOCIETY REFUNDS	27 FED FLICKS APOCALYPSE NOW TENNIS SINGLES FED FLICKS RUNS 3 DAYS	28 TENNIS SINGLES	29 MEETING: ULTIMATE FRISBEE!! THIS IS THE GAME OF THE CENTURY!!	30 WOMEN'S VOLLEYBALL mathNEWS production night!	1 CINEMA GRANTS - CAMPUS CENTRE N.M.O.D. 3DISIN READER PAPERAYAYAYAY	2
3	4 FED FLIX "CRUISING"	5 TENNIS SINGLES	6  TEST ORBITING OF ENTIRE UNIVERSITY CAMPUS AND ATTEMPTED DOCKING W/ WLD.	7 CHINESE MAGIC CIRCUS - 8:00 PM (HUMANITIES) mathNEWS production night	8 CINEMA GRANTS - CAMPUS CENTRE	9 THE EYES OF SECURITY ARE EVERYWHERE! 
10 OKTOBERFEST STARTS	11 FED FLICKS RUNS 3 DAYS NOTICE THE EYES OF SECURITY?	12 NO, PLEASE DON'T HIT ME AGAIN!! 	13 THANKGIVING HOLIDAY • FORGET SCHOOL • EAT REAL FOOD • BREATHE REAL AIR • ETC.	14 mathNEWS production night	15 CINEMA GRANTS - CAMPUS CENTRE	16 TWO DAZE LEFT OF OKTOBERFEST

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promises, which we all know does not occur all the time (e.g. Pierre). Even if your candidate stands by his word, there is still the problem that he considers he has a mandate from you on those issues that you opposed him on. Due to this, you are stuck with many things you don't want, often for a full four years.

One other reason you don't really have control over where your tax money goes is that minor aspects of government spending will never become election issues. Some groups (our Federation of Students for one) work very hard and spend lots of money on trying to make the issues they are interested in become election issues. If they succeed, then they will also knock some other issue out of the public eye, simply because an election can only concentrate on a small number of adequately covered issues.

So where does this leave us? What kind of alternative can be offered? In California, they attack the problem through public referenda. Many of you would have heard of "Proposition 13", which lowered Californian state income taxes significantly. (And I might add, did not lower the level of government service significantly in the area of California I lived in this summer.) This proposition was part of a general system the Californians have. If enough people sign a petition, they can have an "initiative" put on the ballot, which comes up about every two years. This year, the initiatives included Proposition 10, to cut state income taxes in half, Proposition 11 to change rent control laws, and Proposition 12 which would impose a 10% tax on profits of big oil companies, which they could not charge their customers. (The money was to be spent on improving public transportation.) You might be interested to know that all of these initiatives failed at the polls.

These referenda are one step forward, but they are far from perfect as well. For one, before election time, the airwaves become rampant with misleading advertising on the propositions. One of the most interesting things was that from many of the ads you could not determine what issue was being talked about. The advertisers would mostly appeal to highly emotional aspects of a problem, pleading alternatively the ruin or salvation of the state. As a resident, although unable to vote because I am a Canadian, I searched through newspapers in an attempt to find actual literal statements of the initiatives. I was unable to find them. In my opinion, a small portion of a poorly informed public actually went to the polls to vote. Also, as you might have guessed, there were 8 other

propositions on the ballot, for which I found no information. Again, a small number of issues (mostly tax) were all that could be actually decided by the public.

The problem that faces us is this: How do we get good public representation on government spending issues which will be responded to by interested and informed voters? My answer is similar to that of a referendum, but goes one step further. The solution is simply to have the taxpayers decide how *their* money will be spent *when* they pay their taxes.

How does this work? Essentially, when each taxpayer puts in his or her cheque, he lists in some manner the government services and charities that he wishes to contribute to most strongly. For example, you might wish as much of your taxes as is possible spent on space research. You may specify you wish as little as possible of your money go into the Department of National Defence. You could ask that your money be spent on subsidizing services such as roads, mail or aids for the handicapped. Each taxpayer would be able to block his excess taxes (I'll define that later) into various places by chosen percentages.

If this system were to account for the spending of all tax monies, certain problems would arise in our current society. Chances are that very few people would vote money for NATO support or civil service salaries. Certain things, which would be unpopular among the wealthy, might not get the support they need, despite the desire for them among people who have not yet shown the capability for financial success. Due to this, the major issues in spending would still be decided in the way we do today, as election issues. In this way, medicare could not be abolished simply by lack of contribution, but would need both that lack of contribution and a vote of the elected parliament.

Under this system, when the time came for government budgeting, the government would allocate the needed funds to services that are officially supported in the ruling party's election platform. The remainder would then be allocated according to the votes of the taxpayer. Say, for example, that official platform expenditures account for 60% of received revenues. If I, as a taxpayer paying \$10,000 of tax, voted \$5000 of it into R&D at universities, then 40% of that \$5000, or \$2000 would indeed go to that R&D. Similarly, 40% of the other monies I allocated would go to the places I desired.

Naturally, there would be some implementation problems to this scheme. First of all, there is the tallying of the votes. This is where the new

and now, news from the people who control your lives...

## News from on High

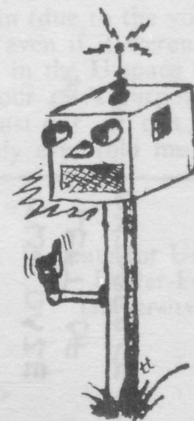
...and the sixth floor is about as high as you can get in this building (presuming you are reading this in the Math and Computer building). I'm not sure how this article will turn out. Right now I have two choices. I could tell it to you like it is, in which case I risk not graduating, *or* I could lie through my teeth.

What I am rambling on about is the Curriculum Committee. This committee decides what the curriculum requirements for math students will be (naturally). These are the people who make sure that we are all well-rounded mathies and are fit to enter the work force upon graduation (assuming we graduate). The committee consists of the Dean of Math, the associate deans, the chairmen of the various departments of the faculty and your friendly MathSoc reps (that's where I come in).

This morning (today being Tuesday, not Friday as you may think it is), there was an exciting and stimulating meeting of the Curriculum Committee. To make sure that we were all ready to work and to catch us at our most productive hour, the meeting was held at 8:30 a.m. sharp (If you haven't guessed, this is the not so true part of the story. However, the time stated is correct.)

**The truth:** I spent 75 minutes of my life in sheer fright sitting in a small conference room unable to utter a single word. As the meeting started, I was surrounded by a menacing species of authority in the form of profs, chairmen and deans who claim to be part of the human race. When it ended, I walked out with individuals who indeed have personalities and interests in the students' affairs. Y'know what? Profs are people, too!!!!

-jlw



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## Gridword Answers

ACROSS

- 1a menial
- 1b eram
- 3a art course
- 4i lie
- 5a sink
- 6a dye
- 6i pep
- 7d zinc
- 8a cob
- 7c evergreen
- 11a read
- 11f donkey

DOWN

- b1 earthy
- 4i inch
- 4i reel
- 4i makeup
- 7a unioner
- 7a doctor
- 7a effete
- 7a beta
- 8b iran

DIAGONAL: math society

## YFeedback

Dear My Fiends & I:

The Age of Aquarius was so called because at the vernal equinox the sun had precessed into the sign Aquarius. The original astrologers "placed" the sun within the bounds of Aries on that date. However, due to the combination of various motions, each year the sun slips a little backward as viewed from the earth, so that it will slowly traverse the zodiac backwards, taking many millenia to do so. Of course, this is in respect to only one day, a sort of time-lapse view.

The Mad Astrologer

## Dead Ringer Report

The Ringers, our very own Mathie floor hockey team, have entered the Engsoc, A-level floor hockey league. The first game is scheduled for next week and players are reminded to check the mathletics board for future practices and games. Veterans of previous Ringer teams agree that this edition of the Ringers is the strongest ever. This was evidenced by a scrimmage with the national champions (The Old Timers), in which the team scored a 7-7 tie. Spectators at games (held at Seagram) are welcome. Presently the team is looking for a timekeeper. If interested, phone Chuck at 886-0457. Engsoc is also looking for referees (\$3.50/hr.) until Friday Sept. 19. No experience is required. More later.

C.C.

## MATT'S X-RATED CAPTIONS

\*\*\*\*\*

1. Damn doors!
2. Heck, no one's wat - GOTCHA!
3. Awright, this one's mine! - Hey, you got the last one, you... PERVERT!



## In the mail.box

19 broughton Tue Sep 16 1980 13:56  
 In the mathNEWS of September 12, wphughes worries about the problems presented in the bunny rabbit problem, by the necessity for a with an infinite lifetime. This can be solved easily in one of two ways:

- 1) Define a bunny's lifetime in terms of a half-life. Thus, as anyone familiar with paradoxes can tell you, the bunny will never die.
- 2) Simply place two bunnies on the number line: at any time that the two bunnies are co-existent on the same number, there is a fair chance for reproduction (you have to be certain, though, that you have a mummy and a daddy bunny). In this way, the bunnies should be able to keep us in numbering systems, and bunnies, for a long, long time.

## A LIMERICK

$$a^2 + b^2 = c^2 + \epsilon$$

My STATs prof has lately concluded,  
 That Pythagoras, slightly deluded,  
 In his theorem missed  
 The statistical twist...  
 That an error term must be included!

bwlutek

# MATT THE MATHIE

DAMN DOORS!

HECK, NO ONE'S WAT—

SO... DO WE GIVE HIM THE HOT OIL TREATMENT?

NAW, LAUREL CREEK OUGHTA DO HIM... FIRST OFFENCE...



GOTCHA!



## FASS

is having a

## PARTY

It's on *Wednesday, September 24 at 8:00 p.m.* in the *Psychology Building Lounge (PAS 3005).*

And... you're *all* invited! Especially if you can find the Lounge! If you can...

sing            dance  
write            act  
draw            type  
play an instrument    do backflips!  
...or none of the above!...

FASS is *Faculty, Administration, Staff and Students.*  
And you!

COME TO OUR PARTY AND FIND OUT!

It's only 3:45 in the morning as mathNEWS control comes to you from command headquarters. Most of the work was done by 10:00 last night, which is phenomenal! Mostly due to lots of help from (no specific order) William Hughes (alcohol, constitititetc) Ashok Patel (various, incl. creative consultant for Matt), Walter Steinemann \*\*\* this is recognition for your help, Walter!! Um, well, he didn't actually DO anything in this issue, did he? Gord Pugh \* (layout, lofty presence), Joanne West (co-ed, news from on high, all-round nice guy), Sean Richardson (foosh writer par excellence, hyperspace, b.r. eats), John Plaice (HW op, csc stuff about Ada, ate food in MathSoc), Brad Templeton (extraordinarily loud bellowing noises, mostly Monty Python), James Puttick (great white hope of layout and paper-holding, etc), Doug Moen (graphix, cool head, advice on MTM), Eric Currie (faculty puzzle, where were you tonight anyway Eric?), J.J. Long (totally unexpected Interaction article), Kevin Martin (CSC agin), Ben Lutek (limerickkkk), PF7 the puzzle master, and special mention to (1) Charlie Bloggs (see page 6, bottom of 1st col.) for modelling; (2) \*\*\*\* an excellent performance in a supporting role by Mr. Tracy Timm (watbol, tesseract, MTM, lotsa interesting

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advances in computer technology can be of great help. For minimal cost, a form listing which services are being supported, and by how much, could be sent in with the return. If desired, taxpayers who are unfamiliar with computer data entry of some kind could have their form filled out for something like a dollar or two at some government office. Similarly, they could write the information on their return (*schedules 11 to 57? -ass.ed*), and for the same charge have the clerk who enters their return into the government computer enter their tax preferences at the same time.

I also feel that government departments should not be able to advertise to taxpayers concerning how to vote their taxes. It might be possible, however, for private interest groups to advertise if they can show no financial connection with the groups they are advertising for. This way we would keep a glut of advertising out of the media at tax time, as well as stop the wastage of tax funds on getting more of them. Also, government services would have to work at top efficiency to keep the public pleased *directly* instead of pleasing them through advertising. Due to problems that might arise, it would also be necessary for certain services to be able to get more than their public appropriation through vote in Parliament.

There are a number of advantages to this scheme, both real and psychological. First off, taxpayers would get a real feeling of doing something with their money. You would be able to say, "I work in this country, and I support it by putting my taxes into R&D." No longer would the taxpayer have to feel that his money was just going into a general mish-mash (with a real portion wasted on bureaucracy), but could actually get a charitable feeling of supporting something.

Another prime advantage is quite real. Often, large groups of us wish to voice to the government our opinions on spending. This can be done by letters to MPs, letters to editors in newspapers, public demonstrations and press releases, to name a few. The problem with these methods is that at no time, except to a limited degree at election time, do our administrators *have* to listen to us. Registering votes with taxes would be a method that the government could not legally ignore.

There are other advantages which you may be thinking of even now. Is this system really viable, or am I just shooting off my mouth (or terminal in this case)? Send your comments to me via mathNEWS. If you agree with me, spread this idea around, perhaps somebody might hear it.

too many people to thank! It's great to have help. co-ed crash.