Prank topples after staff blunder

**by Tech staff**

Dabney House members mourned the loss of one of their palm trees last Friday, when miscommunication led B&G to topple the tree which had been re-located to the Court of Man as prank. The palm tree broke at the base and fell in Dabney Courtyard Thursday night. A large group of Darbs then moved the tree to the south side of the Court of Man and erected scaffolding to hold the tree upright. The base of the tree was set in a drainage hole for further support and stability. Caltech security observed the industrious Darbs raising the tree and attempted to establish who was in charge. Dabney House president Geoffrey Matters stepped forward to discuss matters with the officers at hand. The security officers present came under the false impression that "permission" had been granted by a Caltech Administrator. In actually, Geoffrey had acted in his presidential power, sanctoning the prank under the name of Dabney House. At roughly 1:30 a.m., Security called Director of Residence Life Kim West about the palm tree. Security was told by Kim West that "If it doesn't look dangerous, leave it up. If it looks dangerous, either get the students to take it down or call the Deans to get their permission to take it down." According to the security report obtained by the California Tech, no further action was taken that night by Security.

Around 5:30 a.m., Dale Misevic, a Darb, talked with a Caltech security officer who appeared to be "guarding" the tree no longer he was told that it wasn't authorized and had to be removed. Later in an interview with the Tech, Gregg Henderson, Chief of Security Operations, stated that authorization is not necessary for pranks. Robert Fort, Director of Physical Plant, and William Irwin, Deputy Director of Physical Plant, confirmed this later. Dean of Undergraduates Jean Paul Revel noticed the tree and asked to work at around 6:45 a.m. When asked to comment on the tree, Revel said that it was "cute." By the time Dean's Assistant, Suzette Cummings, arrived at 8 a.m. the tree had been removed, presumably by Caltech Buildings and Grounds (B&G).

Cy Carlborg, the head of B&G is currently on vacation and was not available for comments. Both Vice President of Student Affairs Gary Lorden and Caltech President Thomas Everhart were very disappointed that the prank had been removed before most people got to see it, including themselves.

Also interviewed Wednesday by a crack team of Tech investigative reporters was Vice President for Student Affairs Gary Lorden. He acknowledged that the removal of the tree was not authorized by the administration. He further defined administration as being people whose offices are in Parsons-Gates. "It is embarrassing that this happened," said Vice President for Student Affairs Gary Lorden.

In order to avoid future miscommunications concerning student pranks, The Director of Physical Plant recommended that students contact him directly. His extension is x4707. Outside of working hours security should be able to reach him.

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**Olive Walk Maze Results**

<table>
<thead>
<tr>
<th></th>
<th>Students</th>
<th>Professors</th>
</tr>
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<tbody>
<tr>
<td>Perfect trip</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Caught in traps</td>
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<tr>
<td>1</td>
<td>68</td>
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<td>All 3</td>
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<td>Exited from the entrance</td>
<td>5</td>
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<tr>
<td>Became violent</td>
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<td>1</td>
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<tr>
<td>Total</td>
<td>155</td>
<td>114</td>
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*Thought it was Ditch Day | 1 | 5 |

**Profs run maze for students and food**

**by Chris Bisbee**

On Wednesday, May 14, a study was conducted to determine the effects of various factors on maze running ability. While most studies of this type involve animals such as rats, the researchers in this experiment chose to study humans. Therefore, early Wednesday morning they constructed a maze on the Olive Walk and observed their subjects between 8AM and 12:30PM. The subjects were divided into two groups: the younger, sleep-deprived group (also known as "students") and the more mature, hungry group (also known as "professors"). The number and location of the mistakes made by the subjects were noted as they passed through in the proper direction. For all cases, interaction with other subjects was limited and subjects who were led through the maze by the mistakes of others were ignored. While the reaction of most of the subjects was favorable, there was a notable exception. The researchers were startled by the violent reaction of one of the "professors", who, instead of navigating the maze, tore through two of the walls. Repairs were quickly made, and the study was continued.

In addition, many subjects inquired as to whether or not it was Ditch Day. In fact, one of the "professors" went so far as to ask the researchers whether or not he should teach his class that day. The researchers assured the "professor" that indeed it was not Ditch Day, and that he should probably instruct his class.

Ultimately, the research resulted in no conclusions. Similar statistics were achieved by both groups. The researchers believe that more work in this area is necessary, and urge others to seek grants from ASCIT such as the one they received to pursue experiments like this one.

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**THE CALIFORNIA TECH**

Volume XCVIII, Number 28

Pasadena, California

Friday, May 16, 1997

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LETTER TO THE EDITORS

Pranks

Last Thursday night, a palm tree fell in a house courtyard. We decided that a cool prank would be to put it standing up in the middle of the Court of Man.

A little before midnight, we agreed and spent some effort moving the heavy dead tree out to the grassy future yard. We decided that a cool plan which would not do any damage to the tree, since it seemed like the ground crew had put a lot of work into keeping it nice. So we carefully set up an apparatus to hold the tree in the water drain.

At around 1 a.m. Security finally realized what was going on. They asked who had approved the project and why we had a car on the sidewalk (to move some bricks). After finally realizing what was going on, they left everyone discouraged about doing more pranks in the future, especially since one so simple and safe as this was terminated.

In the future, Security should at least inform us if they are going to take down prank and for what reasons so the prank may accumulate their needs and proceed as planned, especially if it is as reasonable as the one above. I just hope that the premature termination of this prank was a mistake and that future pranks may be allowed, as we have for years in the great Caltech tradition of pranks.

Pranks?
Not to my knowledge, that is why it is a prank. The prank was perfectly innocent: it did not cause any serious safety hazards or cause any type of damage. People had agreed to take it down and the drain still functioned fine. Is this the kind of encouragement we are getting from the administration, or was Security "following orders"?

Overall I think the outcome of this prank sucked not only because no one enjoyed the prank but also because it left everyone discouraged about doing more pranks in the future, especially since one so simple and safe as this was terminated.

Minutes of the ASCIT BoD Meeting, 2 June 1997

This was a special closed meeting where we discussed with the ASCIT appointed officers. The BoD (minus Lori) was present. Closed meeting called to order at 6:00 p.m. with BoD votes 6-0-1 to approve $35 for Geoff Matter's request for post-prank beer money.

BoD votes 6-0-1 to approve Andrew Strauss and Ben Wu as Big T Editors and Amy Zheng Big T Business Manager.

BoD votes 7-0-0 to appoint Joe Carroll as ASCIT Movies Chairman.

BoD votes 7-0-0 to appoint Rory Sayres and Ryan Cox as little t editors with their crank smoking 4-person command squad backing them up.

"The IHC bites in ways I can't describe without flow-charts."

Minutes of the ASCIT BoD Meeting, 2 May 1997

Present (at some point): BoD, Kevin Bradley, Nicholson, Breivin, Jim Kreil, Al Fansone, and the Spirit of Christmas Yet to Come (This week Vladimir = Mike W. and Estragon = Mike A.)

Meeting called to order at 10:37.

Dealing with guests

Jim - The Athletic Department's responsibility team's practice schedule in order to make better use of the gym. There is some discussion of transforming (more than the eye) the Tech fencing squad into a club team. Dan Bridges (athletic director) has promised that Tech will stay in NCAA competition as long as there is participation.

Please send submissions for letters to the editor to

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Pasadena, CA 91125

or electronic mail to editors@tech.caltech.edu.

Deadline for submissions is Monday 5 p.m. on the week of publication.

The editors reserve the right to edit or refuse to print any letter for any reason.

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Due to recent changes in management, the business end of the Tech is in need of an office manager as well as some distribution types. You will get paid. For complete details, contact Mic Weitzcoat, Business Manager, at x6154.

The California Tech

DON JUAN IN HELL

by George Bernard Shaw

Produced by special arrangement with Samuel French, Inc.

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The Fifth Element
First, an obvious Caltech Joel Siegel-ism: "The fifth element may be boron, but this movie is anything but!" That oughta get the folks at Columbia to stick a blurb of mine on a print ad.

Anyway, French director Luc Besson's futuristic space fantasy is a stunning spectacle, delivering the kind of sheer entertainment one can only get from the movies.

Critics of the film have good points when they note its generally ridiculous plot and confused first act, but they're way off base when they note its generally ridiculous plot and confusion. I thought it had several very funny lines, but that tone of the film seemed misplaced. Then I realized that the movie was much more an absurd fantasy than the '60s-style high-school comedy I had expected — I had suddenly caught the movie's groove and the beginning of the film was retroactively much funnier.

Mira Sorvino is good (and using an odd accent) as always, and Janine Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly accent) as always, and Janeane Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly accent) as always, and Janeane Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly accent) as always, and Janeane Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly accent) as always, and Janeane Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly accent) as always, and Janeane Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly accent) as always, and Janeane Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly accent) as always, and Janeane Garofalo is fantastic in a supporting role, but the real standout is Lisa Kudrow, showcasing a real gift for creating a comic persona here that doesn't really come through on her more poorly

The Outside World

by Myfanwy Callahan

CAPE TOWN, SOUTH AFRICA—

About 9000 South Africans including Deputy President Thabo Mbeki sought amnesty for their actions during the apartheid era. The applications arrived prior to a deadline on Saturday after which South Africa's Truth and Reconciliation Committee will hear cases.

HARUR, TURKEY—

Turkish troops crossed into Northern Iraq to attack the hide-outs of Kurdish guerrillas seeking autonomy from Turkey. Jets bombed at least five rebel bases.

KINSHESHA, ZAIRE—

Peace talks between President Mobutu Sese Seko and Laurent Kabila were canceled after Mr. Kabila objected to the security arrangements. When asked what he expected would happen next in Kinsheza, a member of the Prime Minister's office replied, "War."

MEDNEN, IRAN—

An earthquake of magnitude 7.1 on the Richter scale destroyed 200 villages in North Eastern Iran, killing 2400 and injuring at least 6000. This was the second major earthquake to hit Iran within 10 weeks.

MOSCOW, RUSSIA—

Russia reluctantly agreed to NATO's eastward expansion, encompassing Poland, the Czech Republic, Hungary and possibly other former Communist bloc nations. Officials are still pushing for a ceiling on the number of troops allowed in the area.

NEW YORK—

The computer Deep Blue beat chess champion Garry Kasparov after the sixth and final game, resulting in a score of 3 1/2 to 2 1/2. After just nineteen moves Kasparov resigned the game saying, "I lost my fighting spirit." This is the first time a computer has ever beaten a human opponent in a multi-game match.

The California Tech

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Deep Blue 3.5 vs Kasparov 2.5
BY SANDY MAAJAN

"I probably know more about opening theory than any other chess player, but I don't want to compete with something that is far superior to me in this contest...I have to be afraid because I can't calculate any player in the world easily but I can't calculate the machine."

In these two sentences, made in the introduction to a reference after Game 5, World Champion Gary Kasparov showed us some of the misconceptions that lost him the match.

Deep Blue, IBM's chess-playing computer, has an opening library consisting of most published opening books knowledge. But Kasparov is the innovator; for his world-championship match, he presented new opening lines, created ideas that weren't yet in the books. He had used that approach for this match; he would have obtained better positions out of the opening, perhaps even winning positions.

But the computer's capabilities and his fear of it would make him play too quiet, passive, cowardly opening moves that didn't give him enough advantage to win, and sometimes gave him a disadvantage, which he had to play brilliantly to overcome.

Creating opening innovations involves deep analysis, similar to what players must do for postal chess games (where you make one move every three days). Computers perform badly at such slow rates. Of course they play better with more time, but human players improve even more through brute-force search does not use the extra time effectively.

(In contrast, at speed chess, with roughly five seconds per move, even personal computers can beat all human players. Tournament chess lies in the middle, with an average of three minutes per move.)

Kasparov probably was not impressed by these more subtle matters of anti-computer play, and only got the standard advice, to avoid tactical lines and wait for the computer to make a positional blunder. Unfortunately for him, the computer made far fewer positional blunders than it did last year, and Kasparov had to struggle every game.

Kasparov can search perhaps one variation per second. Deep Blue can search 200 million variations per second. But 99.999999% of those are garbage; they include, for example, variations where White's king roams around the board gobbling up protected black pieces, while Black, instead of capturing the queen, sends his own queen on a capturing tour of the white pieces. No strong human player would ever even consider such moves.

Deep Blue decides on a move by making a tree of all the variations up to 15 half-moves long in the middlegame (a full move is also known as a ply), with greater depth in the endgame. It scores the final (leaf) positions based on the positional knowledge programmed into its software and special hardware.

The most important term in the scoring function is material advantage, for which a scale like "rock = 5, bishop = 3, pawn = 1" is used. It also includes center control (which color controls more squares near the center of the board), control of squares with lines with no pawns on them), pawn structure, king safety, and so on.

After scoring all the leaf positions (those at depth 15), it works backwards to score the rest of the tree, using the alpha-beta pruning (an efficient variant of the minimax algorithm); it then picks the top-level move with the best score.

Ironically, the entire, multi-billion-node tree doesn't need to live in memory; only the variation currently under consideration needs to be there. Also, the tree doesn't have uniform depth. In forcing variations — those with tactical threats, exchanges, captures, or checks — Deep Blue will expand the search, sometimes to 20, 30, or more plies.

The largest search depth of 15 plies, combined with search extensions, makes Deep Blue a tactical monster. Using alpha-beta and search extensions, one additional ply costs a factor of 5 in time in the middlegame. So the 40 million positions Deep Blue examines per move corresponds to a depth of log 40 billion over log 5, or about 15 plies.

In spite of Deep Blue's tactical ability, Kasparov can, and often did, outcalculate the computer by using his superior scoring function, which tells him how good positions, and also which lines are worth extending.

In Game 4, Kasparov got a middle position out of the opening, because of the passive, and therefore obscure, opening he played, the Priyih Defense. (Grandmaster Tarkhat Schwartzman said, "Don't ask me what to call that opening. I don't know.")

Kasparov spent a half hour on his 15th move, analyzing the pawn sacrifice that he played five moves later (20...exd5). It bore fruit in this position, 18 plies later:

\[
\begin{array}{c}
\text{Kasparov} 2+5 \\
\text{Deep Blue} 1=3
\end{array}
\]

Here, instead of the greedy 37 Qb6, which attacks the bishop at d6 and the pawn at h5, Deep Blue played the positional 37...Kf6. (First move Be4 guards the passed d-pawn, and prevents Black from playing 37...c4, which would advance a passed pawn, and would open a line for the bishop on d6 to attack the white king. The move stops all of Black's counterplay.

Grandmaster Tarkhat Schwartzman, one of the three regular commentators on the match, liked the greedy move, but Kasparov expressed appreciation for Be4, saying the best players in the world would have played that move, instead of Qb6. The end of this game was a dead draw, and the source of most of the controversy in the match. Deep Blue (White) had this totally winning position:

\[
\begin{array}{c}
\text{Kasparov} 2+5 \\
\text{Deep Blue} 1=3
\end{array}
\]

Then it blundered with 44 Kf1, which allows Kasparov to drive perpetual motion with 45...Qxe4 (after 44...Rb5 45 Ra5). Deep Blue should have played 44 Kf1, instead of checking the black king with 44 Be4, which would be a lesser move (which is all that the computer needs to force the win).

Kasparov considered 45...Qe4, but thought, "The perpetual check must not work because, if it did, this brilliant computer, which outplayed Kasparov 37 Be7 earlier, would have prevented it with 44 Kf1. So there's no perpetual — I resign." When he later found out that there was a draw, and that the computer had missed it, he accused the Deep Blue team of cheating; Deep Blue must have had human help in making 37 Be7, since its own play makes stupid moves like 44 Kf1.

Kasparov's argument has no merit; instead it further illustrates his ignorance of how computers play chess. The two situations are different; where Deep Blue played Qe4, its positional knowledge plus large search depth gave it a good understanding of the position. Missing the perpetual check in the opening line has nothing to do with the other line knowledge; likely there is a bug in the code that defies position repetitions, and Deep Blue missed seeing the draw, or perhaps the computer was just deep. Resigning in a drawn position unsetled Kasparov for the rest of the match.

Game 2 shows how much stronger Deep Blue plays now compared to last year. The factor of two speedup (from 100 million to 200 million positions per second) that IBM kept hyping bought very little, according to Kasparov, which would require a factor of root 5, or about 2.2. Most of the improvement came in Deep Blue's positional knowledge.

In Game 6 last year, Kasparov made a monkey out of Deep Blue, trapping its bishop and rook in a corner (where neither played well), and gave Deep Blue a bad game (which would require a factor of root 5, or about 2.2). Most of the improvement came in Deep Blue's positional knowledge.

"I don't want to compete with something that is far superior to me in this contest...I have to be afraid because I can't calculate any player in the world easily but I can't calculate the machine."
what form is chess knowledge stored?

The Deep Blue team made no claims to model human thinking style; instead, they based their hope on Kasparov on a small amount of positional knowledge together with deep searches (15 or 16plies with lots of extensions), obtained using custom hardware designed for searching and evaluating chess positions.

After Kasparov pounded on Deep Blue in Games 5 and 6 last year, they realized that Deep Blue needed more positional knowledge, and we saw the good results of this in the match. But even so, Deep Blue and Kasparov use almost opposite hardware and software to play chess.

I am a bit sad that chess has yielded some of its secrets mostly to calculation. I had hoped that computer chess research would uncover some of the secrets of human expertise. But, done well, brute-force search produces a different kind of chess, and sometimes it finds new ideas that humans may learn from.

For example, the computer has a hard time deciding which side queens first; positional knowledge won't cover such situations. Consider this position from Game 5:

The computer (Black) found a bizarre defense against Kasparov's threat to queen his g-pawn. A human would have to block the g-pawn using the rook and maybe the knight and king. Instead, Deep Blue gobbles up White's a- and b-pawns, and advances its own pawn and king on that side! This allows White to queen his g-pawn with a perpetual check:


Game 5. After 49... Kh4 (final position)

If 50.g5, then Black continues with check on d1 or d2, and White's king finds no shelter. If instead 50.Rab, Kahl 51.g6, then 51... Rdl and White is checkmated. Note in this variation how the black pawn on c4 prevents White from queening with check, which would ruin Black.

No human players would allow themselves to get into this dangerous situation, where they must calculate in many variations each pawn position and weighing time so exactly. The computer, on the other hand, knows no such fear. Hence, it finds a superior defense: in such situations, it plays better chess.

What are the consequences of the match? Kasparov may suffer for a while; his chess game may suffer as well. His ego got a pounding, especially after the way he blundered into a book trap in Game 6. He tried, in an understandable way, to salvage his pride by challenging Deep Blue to a rematch, in which he would prepare properly and would "personally guarantee that [he would] tear it to pieces."

Perhaps the match will happen. Kasparov wants to see Deep Blue enter into a world-championship cycle, playing the best few players in the world. Then it would play on a more even footing with the humans; its style wouldn't be a total mystery before match. Kasparov definitely had a disadvantage in this area. He has played thousands of tournament games, and his style is well known. Deep Blue, on the other hand, had played no public games; Kasparov said that it was "more closely guarded than any computer in the Pentium." In a world-championship cycle, Deep Blue would have to face opponents with different styles than Kasparov. Karpov, for instance— with his preference for and ability at positional chess—would do very well against Deep Blue.

The Deep Blue team, on the other hand, is not eager for a rematch. Kasparov's accusation of cheating strained relations badly. And IBM wants to switch the group's focus to data mining (finding patterns in large databases).

That was the plan before the match ("win or lose," said Feng Hsu, Deep Blue's hardware designer), but the plan may have changed with all the free publicity IBM got from the match, perhaps as much as $500 million worth. IBM is trying to sell its data-mining technology using the line it has built with "IBM Deep Blue technology." The only similarity to Deep Blue is the supercomputer, an IBM RS/6000 SP; perhaps the data-mining software will use special hardware accelerator chips, as the chess software does. But the chips will have little relation to each other. (Should the credit-card fraud detector know about king safety?)

I got the feeling that among the higher-ups at IBM, public relations considerations outweighed science. The actual researchers are scientists, interested in finding out what brute-force search can do. On top of that, the media managers staged a huge show and presented a carefully scripted story about the spin-offs to data mining and drug design. IBM's stock rose on the Monday morning after the match, by 5 points (roughly 2%) to a record high, so the board of directors must be happy.

This version of Deep Blue would probably get beaten by the best few humans, such as Anand, Kasparov, Kramnik and Karpov, if they played sensibly and prepared good opening lines. If the Deep Blue project continues, and the team encodes more chess knowledge into Deep Blue—perhaps about piece cooperation—and faces the problems they found with the current knowledge, it's possible that in two years the machine will be unbeatable.

If that happens, research in computer chess will probably suffer; perhaps computer games researchers will work on a game where search doesn't help, such as go or the chess variant known as bughouse. (If you don't know what bughouse is, consider yourself lucky.) Then they will have to figure out something of the human method.

The worst result, which I hope does not happen, would be for human chess to lose its high profile. People may think, "Why should I watch Kasparov and Karpov play? They are no longer the best. Let's see what the computers are playing."
The comet has now disappeared from view, at least from the Juggs-smoggy-light contaminated bottom of the Los Angeles Basin. It was Hale’s with fatf immediately now be Bopp’s out of our minds. But on its way it has reminded us of an important issue.

We are all children lost in the vastness of space, and even though many among us strive to understand our place in the universe through science, there are some who search for understanding in other ways as well. Jon Pedersen in the accompanying article tells us what to watch for should a spaceship seem to come to our rescue.

A bientôt,

Jean-Paul Revel

In the wake of the recent Heaven’s Gate deaths, most of us are prompted to wonder how such a thing could happen. Why do people get involved with a group that seems bizarre to the majority of people? What makes us vulnerable? How do these groups get their members and keep them? Many people as well want to know how to recognize cults and avoid them.

The intent of this article is to provide some answers to these questions, in a straightforward and helpful way. Because perception, philosophy and religion can be another person’s cult, the emphasis here will be on behavior versus content, categories versus names. As always, it is up to the individual to make the judgments of what constitutes a cult.

How do I tell if I am in a cult?

As is true with so many important questions, there is often no clear or general answer. Below are indications that are found, to varied degrees and numbers, in all groups that are considered cults. To the basic question of “What is a cult?”, maybe the best answer is simply: a group in which there are many of these indications.

• Extreme Premises—Unconditional, eternal love; financial security; complete certainty about life; answers to all questions; superhuman abilities; radical personality change; profound and constant peace of mind; perfect health; eternal life—all are promises commonly made by cults.

• Restricted Freedoms—Because these groups want control, they need to limit their members’ basic freedoms. This includes restricting physical mobility, forbidding doubts or questions; removing the right to choose whom to spend time with, and when; and prohibiting the exploration of other ways of thinking and living.

• Assumptions of Power—Often, restrictions of freedom can also become active abuses of power. The group, or others designated to have power, may require members to perform tasks, acquire money, perform menial labor, and to provide sexual services. And rather than use outright authority, cult leaders will present these demands or requirements as “opportunities” offered to those in special favor.

• Central Leader—Virtually all cults are headed by a single person (sometimes a couple or triad) who either claims special knowledge and status or who claims special access to it (contact with supernatural intelligence; complete certainty; cosmic understanding; God or guru, hellfire, and eternal torture; or omnipotence). Some of the most brutal or destructive cults are controlled in such a way that defying him or her is dangerous and can result in anything from disapproval to ostracism to physical punishment. Although a cult may claim to follow an absent leader (dead spiritual master, a non-corporeal intelligence, a being from another planet or physical plane), there will always be a present leader who benefits from the groups’ existence.

• Deception and Disinformation—Commonly, the group is or is not a cult, and what you do or do not believe to be true.

What gives cults their powerful allure?

Essentially, cult leaders take advantage of the “human condition.” At some level, we are all afraid and yearn for comfort and certainty. Thus, cults offer emotional, physical, financial, and spiritual/situational security. Usually offered unconditionally, friends and family can be ours forever. We can rest assured that either spiritual forces and principles of our new family will supply the money, shelter, and safety we desire. And if we take the rules given us, we can know that we are valuable and that our lives have meaning and purpose.

The problem is not in wanting these things, but in believing any one person can provide them. Tragically, some of us have been so hurt, frightened, and confused that we will grasp at any apparent love, safety, and certainty that comes our way. And we may not alone have the self-esteem, strength, or resources to escape when the mangles become real. Additionally, cults and their leaders can play on our grandiose wishes to be more than average, to be special in a public way (which, sadly, often arises from having not felt valued at all by those we love).

It is truly no mystery that cults can find willing members from all strata of life. The less we are loved and treated with respect, the more needy and vulnerable we become. And intellectual intelligence is no safeguard, for our needs and feelings

Look for new items on the menu, coming soon

The California Tech

EXCITING NEW TIDE PROJECT ANNOUNCED

Development of Educational Planetary Navigation Software

The goal of this project is to develop an interactive educational software application to illustrate the techniques of planetary orbital navigation using gravity assisted trajectories.

For the last 25 years space mission engineers have used the gravitational fields of the planets to change the momentum vectors of spacecrafts thereby achieving planetary tours that would be impossible otherwise. If the missions were limited to the launch and onboard propulsion capabilities of the rockets themselves. Small propulsive impulses are programmed into the cruise trajectories of the spacecrafts to achieve planetary and satellite encounters which accelerate and redirect the spacecrafts to the desired targets.

The planned software will display the spacecraft and its trajectory along with the planets. It will provide controls for the user to apply trajectory correcting propulsion. The host computer will project the trajectory forward in time to show the user how the spacecrafts are programmed into the cruise trajectories of the planets to perform these maneuvers. The software should teach something about the basics of momentum, angular momentum, and energy.

Up to four TIDE students are needed.

Suggested background: two years of physics, one year of computer science, familiarity with C or C++ and graphical user interfaces.

Contact: Jim Collier, JPL Mail Stop 126-234, extension 43159, e-mail James.B.Collier@jpl.nasa.gov.

Suggested reading: "Fundamentals of Celestial Mechanics" by J.M.A. Darby

Deadline to apply for this and other TIDE projects is Drop Day, May 21.
By KANNNAR KARLON

This year’s Caltech Men’s tennis team set out to show the rest of the teams in the conference that it was not to be defeated with lightly. Spirits and morale were high with the return of co-captains Ronak Bhatt and Jason Jenkins, a genius of eager and talented freshmen, and a new coach, Wade Gillam.

This year’s team consisted of juniors Jason Jenkins, Ronak Bhatt, Dazhi Chen, and Eric Dennis, sophomores Gabe Miller and Jeff Custer, and fresh- men Matt Musick, Kanwar Kahan, Stefan Kazackchi, Ian Swett, Kevin Richberg, Albert Miller, and Jeff Custer, and freshman Dennis, sophomores Gabe Bhatt, Dazhi Chen, and Eric

However, the Beavers ran up against some really good teams, and a string of losses was the tale of the times. Yet, coming up was a match against Whitter, a school that the team had beaten before and was sure it could beat again; perhaps it was overconfidence, a referee who didn’t seem to call anything in the Beaver’s favor, or a blatant, unnerving lack of sportsmanship on the part of the Whitter players, in any case, the team lost, and fingers were pointed every which way.

After losing shortly after the Biola, another team that the Beavers had beaten earlier in the season, it was obvious that something was amiss. The coach decided that it was time to refocus, to forget about winning and losing, and give everything, in practice and in the matches, playing hearts out on each and every point, and vehemently encouraging team mates. Everyone redefined themselves to the team, and the results showed.

The Caltech tennis team gave superior opponents a run for their money, playing some close matches, never getting down on itself, and earning the respect of their foes. Now, the season was winding down and all eyes were riveted upon the year-end tournament, which decided where each team stood in the conference.

The Beavers’ first opponent was Claremont, a team which had a thirty-player roster to its credit and was ranked second in the conference during the regular season. Though the players were looking ahead to a matchup with Whitter, they nevertheless made the Starks work for their victory.

Before the team was a match against Whitter; in the aftermath of the same day, the two teams clashed; this match was the difference between a sixth, possibly fifth, and a seventh place finish in the conference.

In the number one singles match, Ronak was pitted against Mark Hoogs, from whom Ronak had not taken a set this year. Ronak won the first set, and had the momentum going into the second, before losing the second and third sets in a tight match. Number 2 for Caltech, Jason Jenkins, also won the first set against Jerry Chou, but was outlasted in three sets by the number 2 from Whitter. However, the streak was not to continue, as number three Matt Musick easily won in straight sets, number four Jeff Custer awoke from his slumber and rolled to victory in three, number five Gabe Miller had the whole team bring its nails before he won in three sets, and number six Dazhi Chen won easily in straight sets.

The Beavers swept the doubles to a decisive 7-2 victory, and were assured of at least a sixth place finish in the conference, its best finish in years. Next up was Occidental; the team was on the upswing of a wave that was on the minds of all the players, yet fatigue and a strong Oxy team proved to be the undoing of the Beavers’ aspirations.

You were right to feel shame; the team had given its all, and given the other teams something to think about for next year; the Beavers had an excellent new coach, whom they respected and appreciated very much, and in the end the conference Team Sportsmanship Award for its class and integrity on the court. The MVP’s for the Beavers this year were co-cap- tains Ronak Bhatt and Jason Jenkins; the Coach’s award went to freshman Matt Musick, and the Most Improved Player was freshman Stefan Kazackchi. With all players returning next season, it shall surely be one, like this one, of which we at Caltech can be proud.