Despite being fictional, Professor Robert Rosenstone believes that movies based on historical events offer additional perspectives on the times they portray.

Rosenstone Contends Historical Films Help With Understanding

By CHRISTINE CHANG

With the multitude of historical films, such as Cold Mountain and The Last Samurai, entering the box office, the role of films in the depiction and interpretation of history has come under scrutiny of historians. Though most historians criticize the inaccuracies of such films in portraying events, Professor Robert A. Rosenstone asserts that films may perform a valuable service in understanding and analyzing history, as he presented in a Watson Lecture at Beckman Auditorium on March 3.

“I am interested in whether there can be a film representation of history. What are film’s rules of engagement with the past?” Rosenstone said.

Many historians do not consider film to be a valid form through which to study history, preferring the tradition written medium. However, Rosenstone argues that historical truth in itself is based on an empirical foundation which is molded to fit a written discourse. Also, he stresses the differences between film and writing and the manners in which both transmit information. Through the use of images, film can convey certain details which are obscured on paper.

Furthermore, film, as a major way through which the public learns about history, could bring to the public awareness the greater complexities of controversial conflicts, as well as affecting the popular interpretation of historical events. Rosenstone cites Frida as a film which allows the public to realize the greater complexities of the fight for feminism than what is usually thought.

“It’s a different kind of discourse, a different kind of realm. How can we expect film to be the same as writing?” he said. He clarifies, though, that he still advocates reading in conjunction with film.

Critics of historical film often condemn the fiction utilized in film to develop the historical message of keeping freshmen to the seven houses, removing it as an option for those dissatisfied with the house system.

“This will just turn Avery into house number eight—with the same politics, the same stupid cliques,” said Ruddock icon Michael Priolo ’05, who placed second in this year’s IHC chair balloting. “You won’t have a large dorm-like place for people for whom the house system doesn’t work.” Priolo, along with six others, campaigned on a status quo message of keeping freshmen to the seven houses.

Yet, head and economics professor Kim Border, however, held that freshmen—not the house—will be the first to adapt. “There’s a lot of evidence that freshmen are adaptable.”

Nevertheless, Priolo’s fears weigh on the minds of some in Avery, particularly graduate students who’d rather see their house respite turn into a Fleming or a Smith. “It’s a place for people to do something less than an “eighth house” but more than an off-campus dorm,” said council member Ryan Witt ’07.

Critics of the system, however, are adaptable, he said. "I hope that freshmen—whether they are the kind of people working all night on projects or not—are adaptable,” he said.

The measure they’ve brought to the table would treat Avery as something less than an “eighth house” but more than an off-campus dorm. It also aims to offer something more than the same support structure seen in on-campus houses, but with a more studious tone for freshmen on an on-campus atmosphere as seen by soxily. Uniformly, the planned Avery culture would also emphasize interaction with graduate students and faculty.

“If we let freshmen in the people who won’t benefit from the house system won’t be there,” said council member Ryan Witt ’05. “There is a support structure in place here; there are always people working all night on problem sets and most TAs are here. Also, students would benefit a lot from interaction with the faculty. It would be good for the freshmen.”

Still, the council’s foes have major doubts. A concern shared by all is that an Avery with freshmen would gravitate to the fraternities of the seven houses, removing it as an option for those dissatisfied with the house system.

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By DIANA LIN

Last Tuesday evening, the spotlight in Beckman Auditorium was on Josefina Lopez, author of the movie, Real Women Have Curves, Brought to Caltech by the Women’s Center, Josefina candidly shared with the Caltech educational, social and economic barriers. But through her writing and now this movie, Josefina writes to spread her view of the world. These were “third world feminist” who are helping women obtain equal rights, status, simply by pursuing a life
Committee Divided Over Choice
To Let Prefrosh Visitors in Avery

Continued from Page 1, Column 5

The freshmen who choose to come here would already have value and quietness, he argued. He said that only a few of the house's graduate students remain there, however.

Meanwhile, other adversaries saw the opposite problem: that freshman housing is not enough to meet the needs of incoming freshmen. "The faculty members see the need to keep freshers in place, and that's what we're doing," said Edward Kline, former head of the Freshman House Committee. "It's a sentiment echoed by the seniors, who have been there, and the faculty who believe in the system." "We believe in the system because it's the right thing to do," said Kline. "It's about our values, and the idea that the system is more important than the individual."

On some level, the largely flat fee for housing for freshmen seems like a good idea. But there are many who don't agree. "The system is not fair," said a senior. "The freshmen who choose to live in the houses are not being properly housed."

On the other hand, there are also those who believe that the system is fair. "The system is fair because it's the best way to house the freshmen," said a senior.

No IHC member would discuss the matter for the record, but it is clear that there is a lot of discussion going on behind the scenes. The IHC has called support of the Caltech community at large "absolutely essential." And in the past, the IHC has supported the idea of a unified front against the freshmen.

In the end, the debate over the freshmen housing system will continue. The IHC has called support of the Caltech community at large "absolutely essential." And in the past, the IHC has supported the idea of a unified front against the freshmen. But in the end, the debate over the freshmen housing system will continue.
Students Show Tech Staff Appreciation Awards

By CORINNA ZYGOURAKIS

The green-haired younger, dressed in black, approached the smiling woman with grey hair pulled back in a bun. He handed her a gift basket filled with delicious goodies and thanked her for her wonderful service to the Caltech community. The kind lady is shocked. She hugs the smiling woman and notes, "I love working for you. You are all generous people. I love all of you!"

This past Monday, the ASCIT Board of Directors recognized six members of the Staff for their outstanding contributions to student life. Individuals were nominated for their eagerness to go above and beyond the call of duty to help Caltech students.

Service award recipients were Suzette Cummings (former assistant in the Dean’s Office, current assistant to Vice President Margo Marshall), Alice Edel (staff, Tech Machine Shop), and Clara, the smiling, grey-haired cashier in Chandler Dining Hall. Recipients were effusive about Suzette Cummings’ willingness to help students in every way possible, whether in the Dean’s Office or in her new role as assistant to Margo Marshall. Upon receiving the award, Suzette Cummings said, “I feel so honored to be selected for one of the Staff recognition awards. I really enjoy working with and helping out the students. To me, it is one of the best parts of my job.”

Students were also very appreciative of a basket of gifts and chocolate given by Marie Lara (staff, Undergraduate Housing Office). Marie became the second recipient at the award ceremony. Marie said, “I love working for you. You are always friendly to the student waiters and all the students.”

One student described Marie Lara (of the Undergraduate Housing Office) as “very friendly, approachable, and always willing to answer questions. Marie does her job very well and always welcomes me with a smile.” Marie was touched to receive the award and noted that “it meant so much to her that students had taken notice of her efforts.”

North kitchen worker Gilberto Rodriguez was chosen because “he is always friendly to the student waiters and all the students. He drops whatever he’s doing to phone her and to ask for help. He even takes interest in our music and dance time activities!”

In nominating John van Deusen, head of the Mechanical Engineering Machine Shop and role model for future mechanical engineers, one student said: “John displays an amazing amount of patience and really teaches students practical skills and their creativity by encouraging them to try projects even when he is unaware of their outcome. During the last weeks of the ME 272 class, he completely rearranged his scheduling to allow students to work late hours in the shop. John is the cat’s pajamas.”

Students’ love for Chandler’s check-out lady, Clara, is easily explained. A recent undergrad commented, “Clara is really sweet, and it always brightens my day to simply walk up to the store and see her. Her genuine love for all her customers is something that always shines through.”


campus

ASCIT Minutes: Club Funding, CUE

March 2, 2004

President Amy Bendfeld, Ryan Farmer, Jenny Fisher, Shaw Lee, Kelly Lin, Gao Lou, Kim Popendorf, Corinna Zygourakis

Absent: Claire Walton

Hal Bingham, Hsu Hao

Introduction:
1. Call to Order, 12:10 PM
New/Open Positions:
1. Jenny Fisher needs Academic Development and Student Relations.
2. Jenny Fisher needs Academic Development and Student Relations.
3. Jenny adds that in the 2003 Suggestion, the overlap of many social science and BDM courses, and the offering of Chem 3a in only one-day sessions.

4. Congratulations to the new IHC Secretary Joanna Cohen. IHC chair Jeff Smejkal nominated IHC Food Committee (Kasia Gorzycka and Other Members)

5. Galen Loram reports that the presentation of the ASCIT staff award for this year was successfully completed. The recipients were: (See article by Corinna Zygourakis for more details).

6. Fisher, Galen, and Corinna report that members of the CUE (Council for Undergraduate Education, headed by Dr. David Goodstein) were against allowing more undergraduate students to register online for two courses offered at the same time.

7. Jenny adds that in the 2003 Student Faculty Conference Workshops, 68% of the 275 respondents reported that they use Facebook to allow students to register for overlapping classes.

8. Jenny informs us that teaching quality improvement forms and black scheduling will soon go online. Students have ranked 85% of REGIS, academic audits will be made accessible online to students and their advisors. Students are encouraged to meet with their professors once a term to discuss their academic progress and coursework.

9. In response to Galen’s suggestion, Dr. David Goodstein will bring up the issue of allowing one term of pass-fail transfers to students to the Undergraduate Admissions Committee.

10. In response to Corinna’s suggestion, the CUE has discussed instituting a policy that professors cannot assign both a problem set and a midterm during the midterm examination period.

11. At the next CUE meeting, Jenny will bring up the issue of term scheduling, including the scheduling of menu classes simultaneously, (making them difficult for undergraduates to work into their schedules), the overlap of many social science and BDM courses, and the offering of Chem 3a in only one-day sessions.

12. Kim Popendorf reports that the Wednesday meeting of the Student Housing Committee is meeting of the Thursday, 1 faculty student, with the undergraduate students will include discussion on the issue of freshmen in Avery.

13. Kim notes that the IHC has not yet seen a strong indication of interest from students in the residential support for allowing freshmen to live in Avery. The IHC is preparing a report about the freshmen issue from the survey, and is surveying freshmen to determine how they would have chosen to live in Avery.

14. Bendfeld and Galen Loram concluded their presentations of the ASCIT staff award recipients with a series of mind-stretching demonstrations, all the way from freshening to polymers, and including the collaboration policy sheets, (making them difficult for undergraduates to work into their schedules), the overlap of many social science and BDM courses, and the offering of Chem 3a in only one-day sessions.

15. Amy Bendfeld and Galen Loram noted that both the CUE (the Council for Undergraduate Education) and the CUE have discussed the issue of freshmen in Avery.

16. Ryan Farmer suggests the idea and will talk to the devteam about setting it up. The graduate students have gone to Alaska, and it is not yet seen a strong indication of interest from students in the residential support for allowing freshmen to live in Avery.

17. The BoD agrees that this is a good idea and will talk to the devteam about setting it up.

18. The BoD has agreed that this is a good idea and will talk to the devteam about setting it up.

19. The BoD has agreed that this is a good idea and will talk to the devteam about setting it up.

20. The Coffeehouse managers have agreed to purchase a lockbox for 24-hour DVD returns.

21. The BoD walks down the Olive Walk, loaded down with gift baskets for the six recipients of this year’s ASCIT Staff Appreciation Awards, (top)

Thank you, Lyke! Your Fan!

Dear Editors,

I’m an employee of the Caltech library, and I read The California Tech reader regularly. I’ve self-up off the cover over the fact that this piece even made it into the publication, I resolved to express my gratitude to Lyke Chalmers for his article, “Let Me In! A Nice Guy’s View on The Vagina Monologues.” THANK YOU Lyke for offering to a grossly myopic view of the state of women’s rights and particular the relationships between men and women. I couldn’t have said it better there. I think we are all so many, completely healthy, monogamous male/female relations left out of this picture. So much negative generalization. And gender negativity is not bad if it is accurate. For instance, take the statement, “Seabees saves lives.” In general I have yet to hear of anything that we’ve all heard of the instances where they TOOK lives. So that’s a true statement. But to present as a picture of women’s sexuality that completely one-dimensional, with millions of happy monogamous relationships out there, will help women move forward at a glacial rate, at all. I think the whole thing was a bit of a weak play. I will just close by saying thanks again Lyke, and Calif tech, if you are wise, you will do and one of the best classic opinions on subjects and plenty of them!

Sincerely,

Nathan Popendorf

Electrical Department

Letter: Thank You, Lyke! Your Fan!

By STACEY SOCVILLE

At the second term faculty meeting on February 23, 2004, Professor Feynman was pleased to present this year’s Richard P. Feynman Prize for Excellence in Teaching to George Rossman, Professor of Mineralogy. The original purpose of the award was to recognize the achievements of any faculty member for his or her contributions to teaching with enthusiasm and excellence.

George Rossman was chosen because “he is always friendly to the student waiters and all the students. He drops whatever he’s doing to phone her and to ask for help. He even takes interest in our music and dance time activities!”

In nominating John van Deusen, head of the Mechanical Engineering Machine Shop and role model for future mechanical engineers, one student said: “John displays an amazing amount of patience and really teaches students practical skills and their creativity by encouraging them to try projects even when he is unaware of their outcome. During the last weeks of the ME 272 class, he completely rearranged his scheduling to allow students to work late hours in the shop. John is the cat’s pajamas.”

Students’ love for Chandler’s check-out lady, Clara, is easily explained. A recent undergrad commented, “Clara is really sweet, and it always brightens my day to simply walk up to the store and see her. Her genuine love for all her customers is something that always shines through.”

George Rossman has been teaching with enthusiasm and with superb results since he started teaching at Caltech in 1971. His courses include Ge10 and, at present, Ge14 (introduction to applied physics). His style of teaching exploits the beautiful and beguiling qualities of minerals and their relationships to geological processes. He employs a series of mind-stretching demonstrations, often including liquid nitrogen and irradiated crystals. He also sings his way through minerals. He asks probing questions about their color, and then leads students to think in general about the proper approach to scientific questions. Although students have been appreciating George’s...
The Oscar Recap: One Ring to Rule Them All

By HARRISON STEIN

After last year’s exciting ceremony that had some of the most surprising results ever, this year’s Academy Awards turned out to be quite the disappointment, as all of the favorites either were not nominated, or lost to lesser-known competitors. This is a recap of the night’s events.

Mystic River

It’s time to talk about the Academy Awards! Mystic River was the big winner of the night, taking home the Best Picture award. The film was directed by Clint Eastwood and starred Sean Penn, Kevin Bacon, and Tim Robbins.

The King

Sean Penn was the big winner of the night, picking up the Best Actor award for his role in Mystic River. He was up against a tough field of nominees, but his performance was simply outstanding. Penn has now won two Academy Awards in his career.

Rings: Return of the King

In the Best Supporting Actress category, Renee Zellweger won for her role in The Lord of the Rings: Return of the King. She was up against a tough field of nominees, but her performance was simply outstanding. Zellweger has now won two Academy Awards in her career.

Cold Mountain

The Best Director award went to Steven Spielberg for his film, Saving Private Ryan. The film was nominated for several other categories, but it was Spielberg’s direction that really shone through. Spielberg has now won two Academy Awards in his career.

Lost in Translation

The Best Original Screenplay award went to Quentin Tarantino for his film, Kill Bill. The film was nominated for several other categories, but it was Tarantino’s screenplay that really shone through. Tarantino has now won two Academy Awards in his career.

The Bottom Line

In conclusion, a lot happened at this year’s Academy Awards. The biggest winner of the night was Mystic River, which took home the Best Picture award. Sean Penn won the Best Actor award for his role in the film. Renee Zellweger won the Best Supporting Actress award for her role in The Lord of the Rings: Return of the King. Steven Spielberg won the Best Director award for his film, Saving Private Ryan. Quentin Tarantino won the Best Original Screenplay award for his film, Kill Bill.

The California Tech

*Disclaimer: This article does not represent the opinions of the California Tech, its editors, or its students.*
A Liberal's Stance on Social Matters

By PARAG BHAVANI

With regards to social issues, liberals have been regarded with rabid contempt by most right-wing ideologues. They are quick to blame us without fully understanding our positions and gratuitously apply blanket stereotypes. I want to explain my views, and those of most other liberals, in a personal way.

I would appreciate a woman choosing to not abort, but only directly if she felt that getting an abortion was inappropriate, that it is to be decided by her and her doctor only; the government must not have a say in what the nation can have no say in this matter. So-called moral advocates must not be allowed to formulate public policy; otherwise, things like miscegenation (interracial marriage) would probably still be illegal. What the debate boils down to, in my opinion, is essentially a question of personal liberties. I would appreciate a woman choosing to not abort, but only directly if she felt that getting an abortion was inappropriate, that it is to be decided by her and her doctor only; the government must not have a say in what the nation can have no say in this matter. So-called moral advocates must not be allowed to formulate public policy; otherwise, things like miscegenation (interracial marriage) would probably still be illegal. What the debate boils down to, in my opinion, is essentially a question of personal liberties.

Frankly, I opposed the actions of the parents, which is why I understood that Terry was indeed brain-dead. Evidence provided before the courts would have allowed to extricate external stimuli was thin, and it was not appropriate to keep her alive any longer. The conservative crowd must keep on its mind, though, that while I supported the actions of the hus­band, it was only because I felt that Terry Schiavo was vegetative and would not want to be kept alive in such a state. If it turns out otherwise, I would side with the parents. Again, this all comes down to a matter of individual choice. Public outcry should not be allowed to influence the lives of private citizens.

Conservatives argue that while liberals are against life for the fetuses or suffering women, we are for the rights of criminals. But I believe that most people do not want to keep alive in a vegetative state. Complicating the issue was the fact that Michael stood to receive a substantial sum in insurance money if Terry were to pass away (although he said that he would give the money to Terry’s parents to block the court decision, claiming that she did not want to be euthanized and that she was not vegetative. Their actions led to a lawsuit in the Florida legislature con­cerning the “right of life” issue, thus allowing overruling the husband’s choice. Unfortunately, before the accident, Terry never signed a living will that would dictate what would happen to her in such a situation.

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A Liberal’s Stance on Social Matters

Advocates also point to the Second Amendment of the Constitution, which states, “A well regulated militia, being necessary to the se­curity of a free State, the right of the people to keep and bear arms.”

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Continued from Page 5, Column 5

come and talk about their work in the

In addition to these quarterly meetin
gs we organize a weekly stu
dents. Undergrads are welcome to

This year several talks focused on

Fourier transform. Come and join us

at noon in room 200 Guggenheim.

Lunch is provided.

Submit to the Towne! The Towne
is now accepting submissions for the
2004 edition of the literary maga
zine. Anyone in the Caltech com
munity can submit their poetry, short
stories, artwork and/or photography
by email (tote@its.caltech.edu),
or www.classickickboxing.com

Women’s Center’s! 1) Reel Women - Fly Girls
March 11th, 12noon-1pm. Free

lunch and drinks provided!

2) Health & Wellness Series: Hu
man Your Stress
March 18, 2004; Time: 12-1pm.
Location: Women’s Center located in
room 265 of the Center for Student
Services.

Building on “The Joy of Stress,”
co-

and therapist Loretta LaRoche uses her in

erent, unconventional, wacky and just plain funny

style in this video, to show us how to

“lighten our ways.” Find humor in every
day situations and rediscover the joys
of simple pleasures to help conquer the
terrors of life. RSVP required! To
sign-up please call ext. 3221 or
email: wcenter@studaff.caltech.edu

3) Reel Women - Dying To Be Thin
April 8, 12:00-1:00pm. 2nd flr
commom area, Center for Student Ser
vices. An epidemic of eating disorders is
spreading through America’s youth, a
crassification framed by the media’s
obsession with wafer-thin celebrities.
For millions of young Americans, the
conflict between real and fashionable
images of the body can be a matter of
life or death. This video takes view
ers behind the scenes of laboratories
and hospitals where specialists are
experimenting with new approaches
to eating disorders. Lunch and drinks
provided!

Women’s Intermediate Self-
Defense
Sunday, April 11, 1-5pm. This class is
particularly in directing (the play of
the stress of life. RSVP required! To
sign-up please call ext. 3221 or email:

wcenter@studaff.caltech.edu

The Beckman Political Internship will
be available again this semester. The
internship, supported by friends of
Arnold O. Beckman, will pay a stipend of $5,000. It allows a selected intern to spend the summer work

in the office of a politician or a
government agency and to see from the
inside the process of government.
The applicant is expected to make arrangements with the appropriate political persons or organizations.
The internship is open to any Caltech undergraduate who intends to be a student next year. If interested, sub
mit a proposal describing where and
how you would use the stipend along
with one faculty recommendation, to
the Demo Office, 210-87, or email

farras@caltech.edu, by MON

One Act Theater (OAT) has re
ceived funding from MBF to produce
evenings of one acts this term.
We need directors, actors, technical
staff, and anyone who is interested
in helping. If you are interested, par
ticularly in directing (the play of
your choosing), please email: oat@its.
caltech.edu or www.classickickboxing.com

7-12 Events

THE CALIFORNIA TECH COMMENTARY MARCH 8, 2004

Planting

Backyard

Of the future

continued from page 5, column 5
Researchers Find Difference Among Primates in Cortex

By ROBERT TINDOL

PASADENA, Calif.—Even remotely from the Tarzan fan to the evolutionary biologist who knows that our human brain is more like a chimpanzee’s than a dog’s. But is our brain also more like a tiny lemur’s than a lion’s? In one previously unsuspected way, the answer is yes, according to neuroscientists at the California Institute of Technology. In the current issue of the Proceedings of the National Academy of Sciences (PNAS), graduate student Eliot Bush and his professor, John Allman, report their discovery of a basic difference between the brains of all primates, from humans to lemurs and even the flesh-eating carnivores, such as lions and tigers and bears.

The difference lies in the way the percentage of frontal cortex mass increases as the species gets larger. The frontal cortex is the portion of brain just behind the forehead that has long been associated with reasoning and other “executive” functions. In carnivores, the frontal cortex becomes proportionately larger as the entire cortex of the individual species increases in size—in other words, a lion that has a larger brain than a small one. Carnivores don’t have this kind of...
Opportunity Discovers Evidence That Water Once Inhabited Mars

By GUY WEBSTER

This image, taken by Opportunity's microscopic imager, shows a portion of the rock outcrop at Meridiani Planum, Mars, dubbed "Guadalupe." View Opportunity images from this press release. Scientists have concluded the part of Mars that NASA's Opportunity rover is exploring was soaked in water in the past. Evidence the rover found in a rock outcrop led scientists to the conclusion. Clues from the rocks' composition, such as the presence of sulfates and the rocks' physical appearance, such as niches where crystals grew, helped make the case for a watery history. "Liquids once flowed through these rocks. It changed their texture and it changed their chemistry," said Dr. Steve Squyres of Cornell University, Ithaca, N.Y., principal investigator for the science instruments on Opportunity and its twin, Spirit. "We've been able to read the telltale clues the water left behind, giving us confidence in that conclusion.

Dr. James Garvin, lead scientist for Mars and lunar exploration at NASA Headquarters, Washington, said, "NASA's launched the Mars Exploration Rover mission specifically to check whether at least one part of Mars ever had a persistently wet environment that could possibly have been hospitable to life. Today we have strong evidence for an exciting answer. Yes."

Opportunity has more work ahead. It will try to determine whether, besides being exposed to water after they formed, the rocks may have originally been laid down by minerals precipitating out of solution at the bottom of a salty lake or sea. The first views Opportunity sent of its landing site in Mars' Meridiani Planum region five weeks ago delighted researchers at NASA's Jet Propulsion Laboratory, Pasadena, Calif., because of the good fortune to have the spacecraft arrive next to an exposed slice of bedrock on the inner slope of a small crater. The robotic field geologist has spent most of the past three weeks surveying the whole outcrop and then turning back for close-up inspection of selected portions. The rover found a very high concentration of sulfur in the outcrop with its alpha particle X-ray spectrometer, which identifies chemical elements in a sample. The chemical form of this sulfur appears to be in magnesium, iron or another sulfate salts," said Dr. Benton Clark of Lockheed Martin Space Systems, Denver. "Elements that can form chloride or even bromide salts have also been detected." At the same location, the rover's Mössbauer spectrometer, which identifies iron-bearing minerals, detected a hydrated iron sulfate mineral called jarosite. Germany provided both the alpha particle X-ray spectrometer and the Mössbauer spectrometer. Opportunity's miniature thermal emission spectrometer also has provided evidence for sulfates. On Earth, rocks with as much salt as this Mars rock either have formed in water or, after formation, have been highly leached by long exposures to water. Jarosite may point to the rock's wet history having been in an acidic lake or an acidic hot springs environment.

The water evidence from the rocks' physical appearance comes in at least three categories, said Dr. John Grotzinger, sedimentary geologist from the Massachusetts Institute of Technology, Cambridge; indentations called "vugs," spherules and crossbedding. Pictures from the rover's panoramic camera and microscopic imager reveal the target rock, dubbed "El Capitan," is thoroughly pocked with indentations about a centimeter (0.4 inch) long and one-fourth or less that wide, with apparently random orientations.

The distinctive texture is familiar to geologists as the sites where crystals of salt minerals form within rocks that sit in briny water. When the crystals later disappear, either by erosion or by dissolving in less-salty water, the voids left behind are called vugs and in this case they conform to the geometry of possible former evaporite minerals. Round particles the size of BBs are embedded in the outcrop. From shape alone, these spherules might be formed from volcanic eruptions, from flowing of molten droplets by a meteor impact, or from accumulation of minerals coming out of solution inside a porous, water-soaked rock. Opportunity's observations that the spherules are not concentrated at particular layers in the outcrop weigh against a volcanic or impact origin, but do not completely rule out those origins.

Lakes have a surface that lies at an angle to the main layers, a pattern called crossbedding, can result from the action of wind or water. Preliminary views by Opportunity hint the crossbedding bears hallmark of water action, such as the small scale of the crossbedding and possible concave patterns formed by sinuous crevices of underwater ridges. The images obtained to date are not adequate for a definitive answer. So scientists plan to maneuver Opportunity closer to the features for a better look. "We have tantalizing clues and we're planning to evaluate this possibility in the near future," Grotzinger said.

JPL, a division of the California Institute of Technology in Pasadena, manages the Mars Exploration Rover project for NASA's Office of Space Science, Washington.