Yutaka Taniyama, this conjecture concerns certain characteristics of elliptic curves. A proof of this conjecture would automatically imply that Fermat's last theorem must be true.

Starting about five years ago, Wiles took on the extremely challenging, highly technical task of proving the Taniyama conjecture itself. But he proceeded in such secrecy that even his closest acquaintances and colleagues were unaware of the extent of his effort.

Last week, Wiles was finally ready to reveal that he had proved a significant part of the Taniyama conjecture. He chose to describe his results in his native land during three lectures presented at a workshop at the recently opened Isaac Newton Institute for Mathematical Sciences of the University of Cambridge in England, the university where Wiles had done his doctoral studies. His audience included Mazur, Ribet, and many other experts in this particular specialty.

At the end of his third lecture, almost as an afterthought, Wiles noted that he had proved enough of the Taniyama conjecture to show that Fermat's last theorem was true.

"The feeling in the field had been that the Taniyama relationship – this conjecture for certain curves – was absolutely untouchable, an incredibly deep, very difficult problem to solve," says Princeton's Henri Darmon. "Wiles really shocked the mathematical community by announcing he had proved a large part of the Taniyama conjecture."

By following a course that built on previous, well-understood results, and because of his own reputation for being extremely cautious and careful in his mathematical work, Wiles has already earned a great deal of respect for his proof. Nonetheless, the details of Wiles' 200-page proof need to be checked thoroughly by experts. That might take as long as a year.

"There are a number of subtle points," Darmon says. "But given that he's using fundamental theorems, the basic ideas seem correct."

Five years ago, Yoichi Miyaoka created a considerable stir when he announced that he had proved Fermat's last theorem – using an approach that differed considerably from the one taken by Wiles. However, Miyaoka's proof turned out to be flawed (SN: 4/9/88, p.230).

If Wiles' proof holds up, it does far more than establish Fermat's conjecture as a theorem. Mathematicians now have new techniques – developed by Wiles – for tackling other important, difficult questions in number theory.

"For the specialist, that he has proved Fermat's conjecture is the less exciting part," Darmon says. "His work completely changes the field."

In fact, says Sarnak, "this is not the end of a subject, but the beginning."

– I. Peterson

Evolutionists pick up on one-night stands

Men and women approach one-night stands altogether differently, the result of millions of years of sexual evolution, according to a recent study. This sexual divide hinges on the question of what men and women look for in a mate. It turns out that men leave their standards behind when scouting for a casual liaison, while women consistently maintain theirs.

"From an evolutionary perspective, mating is the most important game around; the more you understand it, the better you'll be at succeeding – or at not being dissatisfied or horrified with what the opposite sex does," says Douglas T. Kenrick, a psychologist at Arizona State University in Tempe. Kenrick and his colleagues researched the differences between men and women's criteria for a mate in the gamut of relationships from one-time sexual encounters through marriage.

The psychologists asked 327 college students to state their criteria for 24 traits, such as intelligence, status, and emotional stability. The students also evaluated themselves on the same traits. Unlike most previous efforts, the study synthesizes two often disparate theoretical approaches: social psychology and evolutionary psychology (SN: 10/12/91, p.232). Combining the two helps reveal the deep-rooted reasons for different mating behavior between men and women, says Kenrick.

The gap between the sexes appeared greatest when students were asked to consider a one-night stand, the study found. In addition, men's standards for a mate correlated less closely with their self-appraisals than did women's, particularly for casual relationships. But when it came to the question of marriage, the differences faded away, with both men and women desiring agreeable, attractive, and emotionally stable mates. The study appears in the June JOURNAL OF PERSONALITY AND SOCIAL PSYCHOLOGY.

Both social and evolutionary psychologists view relationships as a kind of market exchange in which each person seeks the best possible deal, leading to partners of about equal assets coupling up. Social exchange theory, however, emphasizes the role of culture in setting the value of a trait, such as beauty, wealth, or kindness. Social psychologists downplay innate differences between the sexes, emphasizing the impact of socialization on sexual behavior.

Evolutionary psychologists, in contrast, view differences in sexual behavior as a basic aspect of human nature that is shaped by evolution. Therefore, traits that appeal to the opposite sex and help one compete for a mate – such as social dominance in men and physical attractiveness in women – have been favored and passed down. Evolutionary theorists point out that, to our ancestors, social dominance signified the ability to compete well and provide for offspring, while attractiveness and youth indicated the health needed to bear children.

To test evolutionary theory, Kenrick's group reasoned that men and women would differ most when considering a casual liaison. Men would be relatively indiscriminate, given the chance to "enhance their genetic interest with no resource investment," notes Kenrick. Women, who could end up paying a high price for a rash mating session, were expected to be selective.

The study incorporated an important assumption of social psychology – that individuals perceive the costs and benefits of sexual behavior differently depending on the type of relationship pursued. It also applied social psychologists' awareness that men and women take mating seriously.

Many social psychologists continue to hold evolutionary psychology at arm's length because they consider humans' behavioral past outside the purview of present-day experience. But, says Kenrick, "We should not research human mating behavior without asking about its evolutionary significance – just as we ask about all other animals." *– B. Wuethrich*

Cooperation evolves via reward strategy

Birds do it, bees do it, even you and I do it: Instead of selfishly helping only ourselves or our close relatives, we sometimes choose to cooperate with genetic strangers. In the past decade, scientists have suggested that a strategy of "tit-for-tat" guided the evolution of cooperative behavior in the animal world. A creature employing this scheme cooperates with a compatriot on a first encounter, then responds in kind to that animal's subsequent actions, whether cooperative or selfish.

But cooperation may have evolved largely in response to another rule of thumb, according to a report in the July 1 NATURE. A cooperative act that reaps rewards gets retained, in this theory; once it produces a loss, cooperation is abandoned for selfish behavior. The same pattern of "win-stay, lose-shift" governs selfish acts.

Computer simulations find that this strategy eventually outperforms tactics emphasizing tit-for-tat, selfishness, or cooperation alone, yet it facilitates a great deal of cooperation in its own right, assert zoologist Martin Nowak of the University of Oxford in England and mathematician Karl Sigmund of the University of Wien in Austria.

The late B.F. Skinner and other "behav-