Boston Sunday Globe
Ideas
SEPTEMBER 4, 2005

& Books

FASCINATING RHYTHM Louise Erdrich's new novel, "The Painted Drum" **E6**
LOVE AND DEATH A look at tennis and bullfighting, in "On Sports" **E6**
FAMILY Inside the New York Mafia **E7**
CHAOS IN KASHMIR From Salman Rushdie, a parable of a post-9/11 world **E7**
RENAISSANCE MAN The endlessly industrious Edmund Wilson **E8**
LEGAL ISSUES Elizabeth Benedict's "The Practice of Deceit" **E9**
WORK IT In "A Reading Life," thoughts on commemorating Labor Day **E9**
Editorials, Letters, Op-eds **E10-12**

Native American technology E2
By Charles C. Mann

Roberts' rules of usage E3
By Jan Freeman

In praise of King David E5
A Q&A with Robert Pinsky

AND...
Taxing Paris Hilton, the joys of unworking, and more

Ideas online
In "The city that will be," Drake Bennett looks at the prospects for rebuilding New Orleans after last week's devastating floods. Should cities built on vulnerable or unstable ground be relocated following disasters of such magnitude? Or do history and memory—not to mention economic and political reality—require that we rebuild on the same ground, no matter what? Record your thoughts on a message board by visiting **www.boston.com/ideas**.

AFTER THE FLOOD

REUTERS PHOTO/RICK WILKING

The city that was

BY JOANNA WEISS

BACK WHEN I LIVED in New Orleans, in the late 1990s, we emerged one Saturday night from a bar-slash-bowling-alley to discover that my boyfriend's car was gone. It had been a fairly easy target for thieves – an old Toyota wagon you could have started with a toothpick – and we figured it might have been swiped by a gang that lived a few blocks away. The next morning we looked and, sure enough, there it was, parked on a side street, unscathed. The thief apparently hadn't woken up yet. On a Sunday in New Orleans, no one could be bothered to do much before noon.

That was the sort of thing that seemed to happen in New Orleans, a place that was languid and lazy with an undercurrent of lawlessness, where every dark encounter became a rambling story with a twisted punchline. For someone who had grown up in the tame comfort of Northeastern suburbs – who arrived for a summer job at the Times-Picayune and stayed for half a decade – the richness and the danger were seductive.

Last week, Americans learned just how physically tenuous life in New Orleans was. But those of us who have lived there know **NEW ORLEANS, E4**

Globe reporter Joanna Weiss is a former staff writer for the Times-Picayune. E-mail weiss@globe.com.

The city that will be

BY DRAKE BENNETT

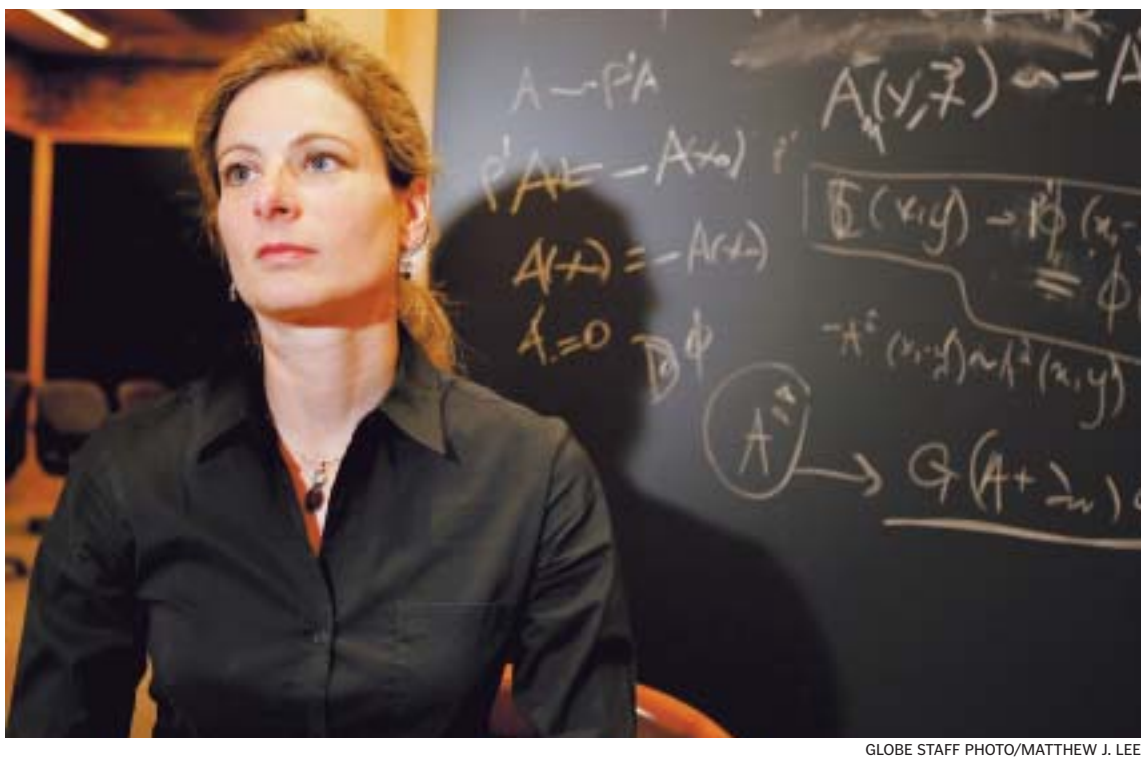
THIRTY YEARS AGO, in their book "3000 Years of Urban Growth," the historians Tertius Chandler and Gerald Fox calculated that of all the cities that had been flooded, burned, sacked, leveled by earthquake, buried in lava, or in some way or another destroyed worldwide between 1100 and 1800, only a few dozen had been permanently abandoned. Cities, in other words, tend to get rebuilt no matter what.

We've been assured that New Orleans will, too. Residents and civic leaders – like their counterparts all along the ravaged Louisiana and Mississippi coast – have pledged to return and rebuild, and the federal government has promised to help. "The great city of New Orleans will be back on its feet," President Bush said Wednesday. "And America will be a stronger place for it."

But, after what promises to be a Herculean clean-up operation, what will the new New Orleans look like? How much will it resemble its antediluvian self?

The short answer is that, right now, no one knows. With the focus on rescuing stranded residents and restoring basic order, with very little sense of what will be found when the waters recede, and with the city likely to **REBUILDING, E4**

Drake Bennett is the staff writer for Ideas. E-mail drbennett@globe.com.



GLOBE STAFF PHOTO/MATTHEW J. LEE

Harvard theoretical physicist Lisa Randall's papers on the warped geometry of the universe have made her one of the most cited physicists in the world.

ACROSS THE UNIVERSE

Physicist Lisa Randall talks about hidden dimensions – and the importance of visible women in the field | BY PETER DIZIKES

WHATEVER YOUR MANNER of repose while reading this article – sitting, standing, lying down – you most likely feel firmly anchored to the earth. The force of gravity, as you experience it, seems impressively strong.

That is not exactly how Lisa Randall, a theoretical physicist at Harvard, views the matter. Like many other scientists, Randall thinks of gravity as a profoundly weak thing – "feeble," as she puts it. Indeed, particle for particle, as it were, gravity is the puniest of the fundamental forces governing the activity of matter in the universe, by a staggering margin.

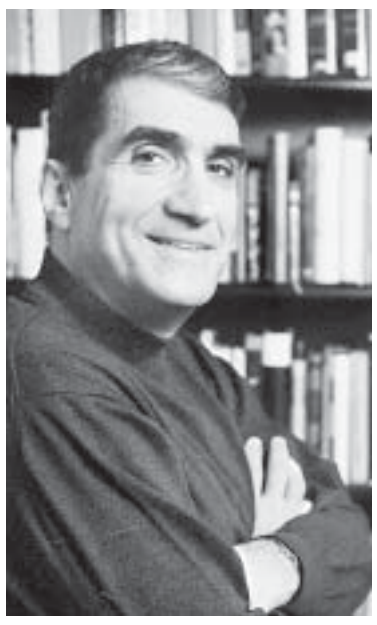
In recent years, Randall has shot to science stardom thanks to her proposed explanation about why this is so. We are living, Randall has suggested, in a universe containing at least one extra dimension beyond those we can perceive. Gravity, she argues, is weak because it has been diluted into this extra space. Moreover, the universe's center of gravity, so to speak, may lie elsewhere; what we feel is just a small spillover of this force. **RANDALL, E5**

Peter Dizikes is a journalist living in Arlington. E-mail peterdizikes@mindspring.com.

Q&A

RETURN OF THE KING

PHOTO/CORBIS



In his new book, Robert Pinsky (left) takes the measure of David, slayer of Goliath and the first king of a united Israel.

AP PHOTO/JULIA MALAKIE

"HE IS WILY like Odysseus," writes former US poet laureate Robert Pinsky in his new book, "The Life of David" (Schocken/Nextbook). "Like Hamlet, he pretends to be crazy.... Like Lear, he is overthrown and betrayed by his offspring. Like Tristan and Cyrano, he masters the harp as well as the sword: a poet as well as a warrior-killer, but as a poet he is far above any other hero, and as a killer no one among the poets can even approach him."

The David in question, of course, is the biblical one, the great Hebrew king who united Israel in the 10th century BC and was promised by God, according to the Bible, an eternal dynasty. Jerusalem, in Jewish and Christian tradition, is the City of David. The six-pointed star emblazoned on the Israeli flag is called the Star of David. And the great biblical poems and songs traditionally attributed to him are known as the Psalms of David.

As a historical and literary figure, few have had more influence than the young shepherd who slew Goliath and went on to conquer Jerusalem. And yet few heroes have sinned so extravagantly, on both an intimate and an epic scale: capable not only of committing adultery with Bathsheba and sending her husband to certain death, but of ordering atrocities that we would today call genocide.

For Pinsky, raised in a "nominally Orthodox" Jewish family in Long Branch, N.J., it is this deeply conflicted, flawed, and human side of David that makes him so compelling. Pinsky, who teaches in the creative writing program at Boston University, spoke to me by phone from his home in Cambridge. —WEN STEPHENSON

Wen Stephenson is deputy editor of Ideas. E-mail stephenson@globe.com.

IDEAS: There's a kind of mysticism in the idea of David as the embodiment of opposites, of good and bad – the "Complete Man," as you say.

PINSKY: I think there's a mystical insight, whatever you want to call it, into what it is to do everything – to act out all these human spiritual dramas and hungers and physical desires. He leads as complete a life as one can imagine. In those 70 years, we see him as a lad, and we also see him as a sin-laden old man....

Some of my friends have said, "I never much liked reading the Bible. I always felt somewhat embarrassed that I couldn't rise to it." And then there's this good story. And it's much more surprising, and crazier, and stranger than Sunday school or the movies might lead people to believe. People tend to domesticate that world too quickly, and the Witch of Endor becomes a very nice Protestant lady, and David becomes a kind of headstrong young rabbi from the suburbs. And it's odder than that. It's more alien.

IDEAS: You've said that David's story is sacred to you in much the way Dante's "Inferno" is sacred to you – not necessarily in a religious sense.

PINSKY: These works of art are sacred not because I think God gave them to us, but because they tie us to our ancestors and to one another.... They go very deep in us.... For me, if anything in human life is sacred, it's the things that hold us together with one another and with the past.

I was in Africa two weeks ago, and I visited a village, and I talked to ... a sort of seer. And when I was brought to see that person, the man who was taking me into the village said, "It's important to understand we do not worship our ancestors. We consult them." Many of the people I met were Christians, including this seer. So it is not an ancestor worship religion, but the seer goes into a special state and a special place, in a ritual way, and consults the ancestors.

And somewhere in that notion, that these works of art and stories are a way to consult all that experience, you know – that's sacred.

IDEAS: It's hard to read the David story now and not think about current events in Israel and the Middle East.

PINSKY: It resonates, and one of the great things about stories is [they] show you the layers. Until I started reading for this book, I probably had a vague assumption that the six-pointed star [the Star of David] was biblical. To discover that it's relatively recent, and it's not an ancient Jewish symbol [the first Jewish source to mention it is from the 13th century], was startling to me. And it became for me an example of how storytelling becomes part of the story. It's not just an arbitrary symbol, it's a real symbol, because it too has accumulated its history.

IDEAS: One reads about David, about a leader at war, who believes that he has God on his side. Are there lessons for President Bush in David's story?

PINSKY: I think history is always there, in every word we utter, and in all our attitudes.... To me, the more striking thing than whether David says God is on his side – that always seems less striking to me in his wars – is the idea of history.

The Amalekites – a hundred generations were against these people because Amalek attacked Israel, meaning Jacob. It's a density of history even in what is tremendously ancient. The ancients, too, feel like they have an ancient heritage that goes back infinitely, it goes back to Melchizedek. If I have a fantasy of any governor, or politician, anyone who is involved in government, reading these stories, it's not so much a theological reading, it's the tremendous density of layers, how everything goes back....

So what I get from [David's story] is less that God is terrifically involved in wars than that history is terrifically involved in everything people do.

IDEAS: Do you find any coherent or consistent moral philosophy in David's story?

PINSKY: For me, he's like a character in Faulkner or Marquez – the questions he raises feel right at the center of one's moral life.

Randall *Continued from page C1*

"Imagine a warped universe where we're just sitting some place off-center," Randall says, explaining her work at a cafe near Harvard Square on a recent afternoon. "We're not exactly where gravity peaks." And don't squint if you can only see three dimensions. Randall suggests we may be living in an isolated neighborhood of the cosmos, with fewer dimensions than exist in other parts of the universe.

Granted, these days, exotic-sounding theories about the cosmos are seemingly a dime a dimension. String theorists insist we live in a 10-dimensional universe – the extra ones are very, very small – while cosmologists ponder "multiverses" in which our own universe is but one of many that have existed. Still, because of the compelling logic of her theory and the suggestive cosmic structure it contains, Randall's papers on the subject (some of which she produced with colleagues Raman Sundrum and Andras Karch) are among the most-cited in contemporary physics, the equivalent of chart-topping hits.

"Her work is very original, very significant," says Mark Wise, a professor of physics at Caltech who has studied problems relating to Randall's theories. "She is one of the very top researchers of her generation."

And should the idea of, say, a five-dimensional universe still seem a bit outlandish to nonscientists, they can explore matters further in Randall's new book, "Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions," published by Ecco Press this month. "Warped Passages" is by turns engrossing and demanding, as Randall outlines her own ideas and details the impasses in physics which have given rise to mind-bending theories like her own. "The cosmos could be larger, richer, and more varied than anything we imagined before," writes Randall.

She hopes her book shows that scientists are a more varied bunch than is usually imagined, too. "I wanted to dispel some of the standard images people have," says Randall – namely, that physicists are men. While Randall – the first woman tenured in the physics department at Princeton, and the first tenured in theoretical physics at both MIT and Harvard – cites no particular female role models or mentors who sparked her own career, she believes a visible female presence in physics can overthrow stereotypes. "One of the reasons I thought it was important for me to write this book is so people could see that there are women like me out there doing this work, who are central to the field," she notes.

• • •

Theoretical physics, as practiced by Randall and her colleagues, requires understanding the universe on both its smallest and largest scales. For decades, physicists have been producing and cataloging an array of subatomic particles – quarks, leptons, bosons, and more – in high-energy particle colliders. Theorists analyze the results and ask a question: What might be the structure of a universe containing these constituent parts?

Physicists would like that structure to neatly link the four fundamental forces regulating the interactions of matter: Gravity, electromagnetism, the strong nuclear force (which binds the components of protons and neutrons, within the atom) and the weak nuclear force (which governs the decay of some atoms). Immediately after the Big Bang, many physicists suspect, the fundamental forces may have been the same, but became differentiated and fixed into place as the universe expanded, cooled, and took its current form.

Physicists have been able to align, in theory and experiments, electromagnetism and the weak force, and have also, but less definitively, connected them with the strong force in the "Standard Model" of particle physics. Gravity, however, is so much weaker that it exists on an energy scale 10 million billion times different in magnitude than the other forces, constituting what particle physicists call the "hierarchy problem." That a tiny refrigerator magnet can by itself counteract the gravitational force of the entire earth – by sticking to the refrigerator door instead of falling to the floor – shows the superior short-range power of electromagnetism.

To explain gravity's feebleness, Randall and Sundrum took some already existing concepts about space from theoretical physics and put them to new use. Their theory suggests that different regions of the universe have different properties: There is a "brane" (short for membrane) comprising the area on which we live, and a "bulk" space with a higher number of dimensions that surrounds or borders it. Gravitons, the particles to which the transmission of gravity is attributed, can travel between the two, even if we cannot.

In their breakthrough paper, published in 1999, Randall and Sundrum proposed that gravity's dilution can be accounted for in a specific cosmic configuration featuring two branes, separated by a higher-dimensional bulk space. One brane, the "Gravitybrane," Randall writes, "experiences a large gravitational force." Some gravity leaks out of this brane, through the bulk, and onto the other brane, which they call the "Weakbrane." We live on the Weakbrane.

As a consequence of this uneven cosmic geometry – in mathematical terms, it is "warped," giving Randall's book its title – the hierarchy problem can be radically reduced. There is plenty of gravity in the universe, but we are only exposed to a small bit of it. And while Randall and Sundrum have since found that their concept is also theoretically consistent with a one-brane configuration, Randall hopes evidence supporting the two-brane model could appear within a decade, after a new Swiss particle collider, the Large Hadron Collider, starts operating. "The universe is about to be pried open," she suggests in a burst of optimism at the end of "Warped Passages."

• • •

If so, the reading public may wonder, how much of it will they be able to comprehend? Popular science books aim to make the complex appear simple. But the cutting-edge concepts Randall trades in often resist reduction to formulas, phrases or images, while unification theories such as hers require background knowledge covering virtually all of physics.

Randall sensibly begins her book trying to make readers feel comfortable about their impending intellectual discomfort. Take the notion of a higher-dimensional world, long a part of mathematics even though, as Randall writes, "we are not physiologically equipped to envision more than three dimensions of space." But, Randall adds, readers need not imagine a dimension only in spatial terms. Think of buying a house. The factors you might consider include its size, price, location, appearance, and more. The number of dimensions in your house search simply equals "the number of quantities you find worth investigating."

Besides, we already use a supple notion of dimensions. Albert Einstein famously posited that our three dimensions of space and one of time form a four-dimensional fabric of "spacetime." Indeed, when we refer to an event, we habitually specify its placement in both space and time.

Randall also notes that we can infer the way familiar physical effects might operate in higher-dimensional spaces. In a new popular-physics image, Randall compares the gravity emanating from an object like a planet to the water shooting from a circular sprinkler, which becomes less dense farther from the source: "Gravity, like water, is more widely distributed when it is further away." Because the Theory of General Relativity, Einstein's description of gravity, is mathematically consistent with a higher-dimensional universe, Randall here also foreshadows the unveiling of her own theory later in the book.

"I could have written a simpler version of it," acknowledges Randall. To make sure lay readers could still follow the text, she had nonscientist friends and acquaintances review chapters; novelist Cormac McCarthy, a Visiting Researcher at the Santa Fe Institute in New Mexico, commented on the whole manuscript. Ultimately, Randall says, she wanted to display the "real richness" of modern physics and highlight the intellectual struggles that animate physicists: "Why do scientists think about these things? What is it like to do science?"

Among other things, doing science can mean tackling problems for weeks, months or years. Reading "Warped Passages" does not take that long, of course, but the book will appeal especially to readers willing to live with unresolved problems instead of just being fed neat solutions. "I don't pretend that we've now discovered all the answers," says Randall. "Who wants to think that all the problems have been solved? Where's the fun in that?"

• • •

Randall, 43, grew up in Queens and attended Stuyvesant High School in Manhattan, as a classmate ("literally – we had all our classes together") of string theorist-to-be Brian Greene, whose 1999 book "The Elegant Universe" was a huge popular-science success. Randall received both her bachelor's degree and doctorate in physics at Harvard, then spent several years as a professor at MIT before moving to Princeton in the late 1990s, briefly returning to MIT, and accepting her current position at Harvard in 2001.

Harvard has been a good fit for Randall, although she could not have been expecting university president Lawrence Summers, in January, to suggest that women may collectively have a lesser "availability of aptitude at the high end" of science, limiting the number who might become, in his words, "physicists at a Top 25 research university" (a category in which Summers would presumably place Harvard). Inevitably Randall has spent a fair amount of 2005 fielding questions about women and science, although she tends to deflect queries about the Summers controversy itself.

"This is an issue that goes beyond Harvard," Randall asserts. For female scientists, she thinks, "there's always that extra little hurdle to overcome" to have work taken as seriously as that of male scientists. Even as an established physicist, Randall says, she has had occasion to ask herself a question shared by many women in academia: "Are you getting the same benefit of the doubt?"

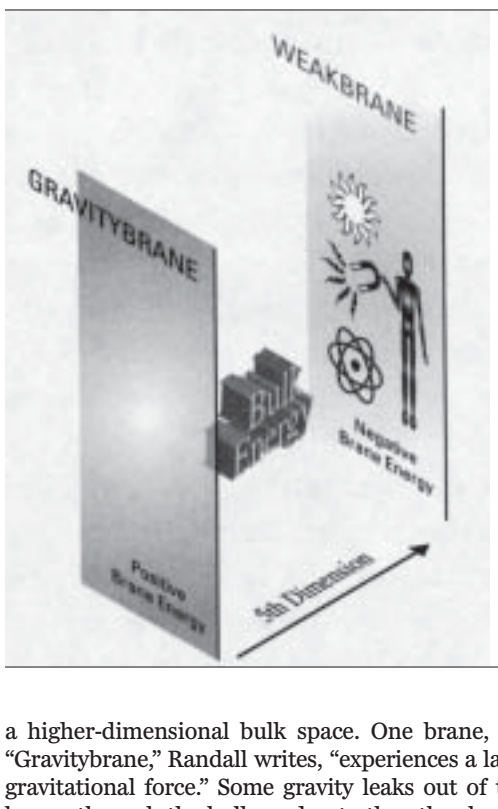
Randall also possesses a true physicist's impatience with social-scientific studies claiming to identify the reasons fewer women than men participate in the sciences. "At this point things are so poorly understood, it's almost the wrong question to ask why things are they way they are," she says. "The question is, what can we do to improve them?"

In that vein, Randall served on Harvard's Task Force on Women in Science and Engineering, created in the aftermath of the Summers furor, and favors practical measures to provide equal opportunities for women in academia, like steps ensuring fairness in faculty searches. Ultimately, Randall seems to prefer leading by example. Sometimes, she claims, "the way to make changes is just to be doing things, and the world eventually changes."

That attitude seems related to the way Randall approaches physics itself. In "Warped Passages," she claims she would sooner be remembered "for imagining new truths than for insisting on the status quo" in science. But Randall does not think of herself as a science revolutionary, just a practical-minded "model builder," as she calls herself in the book.

As Randall sees it, she's just responding to the facts on the ground – or floating somewhere in spacetime – that have not yet been straightened out, like the mysterious weakness of gravity. "Facts so bizarre cry out for a deeper explanation," Randall states in "Warped Passages."

And should it be necessary for scientists to build models representing the form of the entire universe, just to explain the behavior of matter at the smallest scales, so be it. "It's easier to imagine big things rather than small things," says Randall, answering a question about dimensions, but, as it happens, summarizing her ongoing adventures in physics.



Life on the Weakbrane

GRAVITY MAY SEEM like an overpowering force, but to many scientists it is mysteriously weak, by far the least powerful of the four fundamental forces governing the interaction of matter at the subatomic scale.

In a breakthrough 1999 paper, physicists Lisa Randall and Raman Sundrum proposed that the relative weakness of gravity can be explained by a cosmic configuration featuring two regions of space called "branes" (short for membranes), separated by a distinct area with an extra dimension known as the "bulk." While gravity can travel throughout all of these regions of the universe, we may be living on the "Weakbrane," the part least exposed to gravitational force.

Randall, a professor of physics at Harvard, hopes evidence supporting this theory could appear within several years, after the Large Hadron Collider in Switzerland begins operating in 2007.

FROM THE BOOK "WARPED PASSAGES" (ECCO), BY LISA RANDALL

> The cosmos, Randall says, could be far larger and stranger than anything we've imagined.