NATIONALGEOGRAPHIC.COM/MAGAZINE | MARCH 2010

# NATIONAL GEOGRAP''IC

Secrets of Peru's Nasca Lines 56

THE VENUS
FLYTRAP DIET 80

UPHEAVAL IN THE OMO 96

SHANGHAI SHOWS OFF 124

## WolfWars

ONCE PROTECTED, NOW HUNTED



MARCH 2010 · VOL. 217 · NO. 3

Wolf Wars 34 Packs are back. Westerners are glad, scared, howling mad.

By Douglas H. Chadwick

Peru's Puzzling Lines 56 Why did the Nasca etch giant birds and whales in the sand?

By Stephen S. Hall Photographs by Robert Clark

Killer Plants 80 They lure bugs into death traps, then gorge on their flesh.

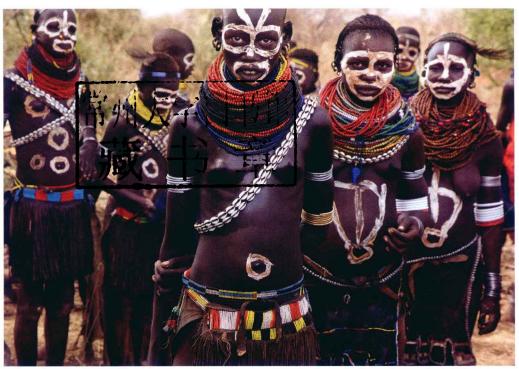
By Carl Zimmer Photographs by Helene Schmitz

**Changing Tribes**96 Books and guns edge out old ways in Ethiopia's Omo Valley.

By Neil Shea Photographs by Randy Olson

**Shanghai Reborn** 124 The megacity tries to juggle a storied past and future glory.

By Brook Larmer Photographs by Fritz Hoffmann



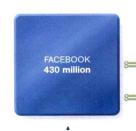
Women from Ethiopia's Nyangatom tribe painted themselves with clay—no mirrors needed—then danced to mark a treaty with rivals. Story on page 96.

BANDY OLSON



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#### World Wide Friends -----

U.S.-based social networks like Facebook have a host of international competitors.



#### ----- Not Beyond Compare

They say you can't compare apples and oranges. But how different are the fruits?

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#### Slithering Secrets

Scientists now understand why snakes can move so well on a seemingly smooth surface.

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#### A New El Niño

Modoki—Japanese for "similar but different" is shaking up the world's weather.

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Gene therapy has cured male squirrel monkeys of color blindness.

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#### Small-Town Nukes 30

An underground mini-reactor could provide cheap power to thousands of homes.

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Flashback
GeoPuzzle

#### nam.com



#### When Wolves Fly

An airlift brought the animals back to their onetime hunting grounds in Idaho and Yellowstone National Park. Our interactive map traces their journey.



#### On the Cover

When a filmmaker and photographer arrived, this Wyoming male began to howl-calling his pups to come home.

Photo by Jess Lee



**Black Lemur** (Eulemur macaco) Size: Head and body length, 39 -45 cm (15.4 - 17.7 inches); tail, 51-65 cm (20 - 26 inches) Weight: 2 - 2.9 kg (4.4 - 6.4 lbs) Habitat: Tropical moist lowland and montane forests Surviving number: Estimated at 10,000 - 15,000

Indian Ocean

## WILDLIFE AS CANON SEES IT

Fantastically fruitful. The black lemur's fruit-centric diet is hugely beneficial to the growth and health of its forest home. One of the most frugivorous primates in the world, the lemur spreads the seeds of 38 species of trees, and acts as the sole seed disperser for all but four of them. It is also an important pollinating agent for certain trees. Small groups, generally led by dominant females, forage in the middle and upper canopy, constantly uttering guttural grunts to keep in contact with one another as they move through the trees. But both the lemur and the forest it nurtures are in danger as habitat loss and hunting threaten to upset their fruitful balance.

As we see it, we can help make the world a better place. Raising awareness of endangered species is just one of the ways we at Canon are taking action—for the good of the planet we call home. Visit canon.com/environment to learn more.



#### EDITOR'S NOTE



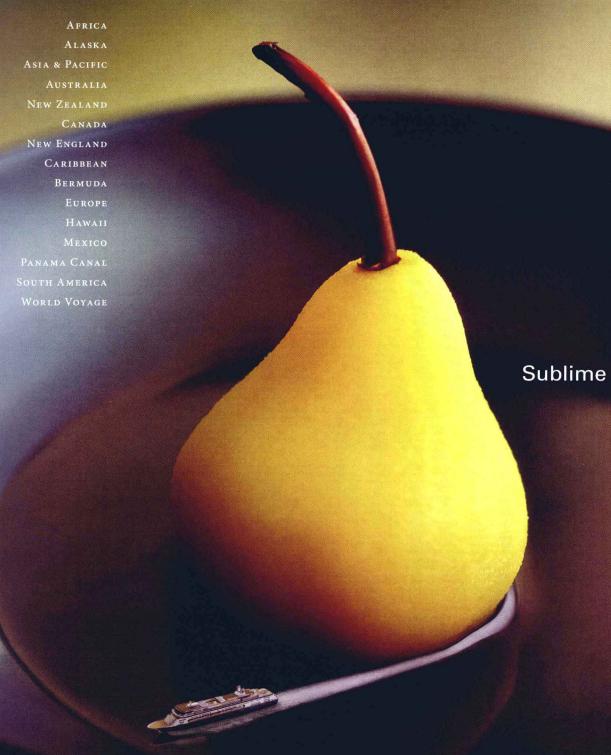
A lone male gray wolf patrols Wyoming's Blacktail Pond area of Yellowstone National Park.

**I saw the damage** on a crisp autumn morning when I checked the pasture where I was raising a dozen ewes for my Future Farmers of America project. Several lambs were down. Six were dazed and wounded, their faces chewed. I tried to save them, but two died in my arms. The others died the next day. I was sad, angry, and wanted answers. An animal control officer investigated and concluded that they had been attacked by dogs. I received compensation, but to a 16-year-old, it seemed woefully inadequate.

We have a complex relationship with canines. At worst it seems like an ugly divorce from an ancient, once fruitful relationship. All my life I've lived with dogs and loved them, but I guarantee that if I'd had the chance to shoot the dog that killed my sheep, I would have pulled the trigger without hesitation. I know the same is true for a shepherd who sees a wolf tear into his flock. How else to explain the extermination of wolves from the Rocky Mountains in the early 1900s? Now they've returned and reestablished themselves in our lives.

The debate over the return of wolves is emotional. There is confusion, anger, and misinformation, making it even more important to examine facts and listen carefully to those involved. To my mind, no one does this better than Doug Chadwick. He lives in Montana wolf country. In fact, a radio-collared wolf often visits his front yard. In our cover story, Doug examines the impact wolves are having on the West—with respect for the wolves and for their human neighbors.

toris shus



We invite you to feast. To captivate not only your palate, but your eyes as well. To dine in a manner not easily forgotten; to release your inner sous-chef; to indulge the notion to have breakfast appear daily on your private verandah. We invite your senses to be delighted, time and again, on your spacious mid-sized ship. We invite you, and we are at your service. Call your Travel Professional or 1-877-SAIL HAL, or visit www.hollandamerica.com.



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John and Shirley Spinelli included National Geographic in their estate plans.

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## Support the Future

"We believe in the work of National Geographic and wanted to be involved," says John Spinelli. He and his wife Shirley grew up reading *National Geographic* magazine and passed that love on to their children and grandchildren. Now retired, they enjoy in-line skating, tennis and bird watching.

The Spinellis set up a charitable gift annuity which provides them with steady income and tax savings while supporting the Society's efforts worldwide. "National Geographic is an important source for solutions to the challenges facing our planet," says John. "We want the world to be in good shape for our grandchildren."

For more information about a charitable gift annuity or other ways to include National Geographic in your estate plans, please contact the Office of Estate Planning.

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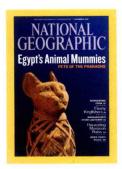
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#### LETTERS



November 2009

#### **Animal Mummies**

As a quilter I was delighted and amazed to see the traditional "log cabin" pattern so exquisitely laid out on the cat mummy gracing the cover. The log cabin is a familiar quilt block here in America, and I felt an instant connection with those long-ago artisans who obviously found the same beauty in its textures and design.

> JENNIFER KLEINE Nashville, Tennessee

#### Reinventing Syria

Your article draws an unfairly bleak and inaccurate picture in stark contradiction to current objective reporting covering Syria. It is skewed to highlight solely negative aspects of an otherwise vibrant country undergoing tremendous transformations on the social, cultural, economic, and political levels. Syria is admittedly far from a perfect place. Although author Don Belt unfairly focuses on the mukhabarat [intelligence agency] legacy of Hafez Assad, he makes a point in depicting that President Bashar Assad had much reform to undertake. However, to show that Syria is still a tenebrous place-where people live in fear, where

education is lagging and progress is stagnant, where everything is run by "Beverly Hillbillies" and mobsters-is an egregious fallacy.

> **IMAD MOUSTAPHA** Ambassador of Syria to the United States of America, Washington, D.C.

Congratulations to Don Belt for his excellent story about Syria. I knew little about this country's recent history, and he has brought it to life for me. I have a friend from Syria to whom I read this story, and he testifies to its accuracy, particularly since his own uncle served 25 years in prison on suspicion (never proved) of belonging to the Muslim Brotherhood.

> SALLY WILTON Bournemouth, England

#### When Crocs Ruled

I enjoyed your artist's beautiful impression of a crocodile ancestor battling a dinosaur 80 million years ago. However, in the picture I could not locate the wormhole that allowed seagulls to time travel to witness the scene, about 50 million years before they are known in the fossil record.

> NICO VAN BELZEN Steenbergen, Netherlands

The bird shown in the artwork is not a seagull. It's a ternlike bird of the genus Ichthyornis, fossils of which have been reported at sites all over North America, in the Old World, and Antarctica, Ichthyornis was not quite like modern birds: Within its long beak lurked a row of sharp, rear-facing teeth.

#### Kingfishers: Blaze of Blue

My wife grabbed the latest issue of National Geographic and, seeing the pictures of

kingfishers, asked me if I had ever seen one. I replied, "I'll never forget where I saw the only one I have ever seen." It was midsummer, and I was fishing in a little stream next to the railway line between Fleet and Winchfield in Hampshire, England, when this wonderful blue-and-orange bird darted along the stretch where I was fishing. I was in awe. I couldn't believe my eyes when I read photographer Charlie Hamilton James's quote: "Everyone in England who has ever seen one will remember where they saw it." It was almost verbatim what I had said to my wife. I should add that my sighting occurred some 45 years ago.

> JON FARADAY Bogis-Bossey, Switzerland

#### Visions of Earth

I was so touched by the photograph of chimpanzees grieving over the passing of one of their own. I come from the central African region where that shot was taken and where chimpanzee meat is a delicacy for quite a few people. I hope that this photograph will move those chimpanzee eaters to feel compassion and greater respect for these closest relatives of humans. This advocacy also needs to be extended to other apes and monkeys.

> BONGLACK NYANGANJI Brooklyn Park, Minnesota

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## Perfect imperfection, the natural raw 2 carat diamond

Ready for some rough stuff? We recently found a rare cache of extremely large uncut diamonds at an extraordinary price.

ometimes it's impossible to improve on perfection. When the world's most desired stone is pulled from the ground, why not just brush off the earth and leave it alone? White cut diamonds may be nice for a polite kiss on the cheek, but extra large uncut diamonds can really ignite some raw passion. And isn't that what a great piece of jewelry is all about? These few rare 2 carat plus natural stones will certainly turn up your thermostat.

#### A real diamond in the rough

For centuries, large raw diamonds were treasured without a hint of facet or polish. We believe the early artisans were on to something. After a search through countries on four continents, we have found a cache of rare, very large, 2 carat plus uncut diamonds at a



Similar rough diamonds sell elsewhere for thousands! Please compare the size and price of our raw diamond in the Stauer Raw Diamond Necklace with those at your local jewelry store.

spectacular price from our Belgium dealer.
Major gemstone experts across the globe have commented that rough diamonds will be the fastest growing trend on "the red carpet" this year and our long love affair with flawless cut white gemstones may have some competition. All one has to do is flip through the

world's most exclusive catalog to find that "rough is all the rage." Our luxury retail friends in Texas recently featured a raw solitaire for \$6,000, but they buy in such small quantities that they cannot compete with us on price. You see, Stauer is one of the largest gemstone buyers in the world and last year bought over 3 million carats of emeralds. No regular jewelry store can come anywhere close to that volume.

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geology and geometry. Each one-of-a-kind raw diamond is fitted by hand into its "cage," a crisscross embrace of gold vermeil over the finest .925 sterling silver, bead-set with 18 round diamonds. The caged diamond hangs from a triangular bail with an additional 8 diamonds (26 total). The pendant is suspended from an 18" gold vermeil rope chain with spring ring clasp. Each raw diamond is naturally unique. This is an extremely limited edition since it took us 3 years to find this small cache of stones.

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#### LETTERS

#### **Photo Journal**

Regarding the bullfighting pictures from Portugal, does respect of another's culture include not speaking out against the barbarism that is part of that culture? It was especially heart wrenching to see the picture of the young children staring down a future foe. This teaches young people that it's appropriate to abuse an animal. How sad that these men are viewed as macho and even as heroes. Bullfighting is nothing more than animal abuse that some call sport.

> CAROLE RITENOUR Holland, Michigan

#### Your Shot

When I was a boy growing up in southern Arizona, family members often told me the

story of the campamocha (Spanish for "praying mantis") that ate a hummingbird in my mother's zinnia patch. Someone from the biology department at Eastern Arizona College actually came over and photographed the event. Being too young to remember it, I went on faith and told the story through the years to many skeptical audiences. Finally, after 50 years, I have photographic vindication of my implausible claim. Thank you!

FRED C. ROWLEY Cedar City, Utah

I saw the chilling picture of a mantis on the hummingbird feeder. We have never had an accident near our feeders, but we have had to guard them constantly against mantises.

This past summer we planted several basil plants near the feeders and, surprisingly, we didn't see a single mantis. I am almost certain that this was not a coincidence. As an additional benefit, the hummingbirds like the nectar of the basil flowers.

DENKA KUTZAROVA-FORD Urbana, Illinois

#### **Culture: Qat Goes Global**

This brought memories of the years I spent on the staff of Amoud Teacher Training Center in northern Somalia from 1962 to 1964. The young men there received a monthly stipend. Many of them spent it immediately on qat. Fortunately, the price was too great for it to be of much influence. The expert quoted in your article left out one of the effects: constipation.



In those times much qat was smuggled in from Ethiopia. The areas from where it was smuggled are actually populated mostly by Somalis. Qat is forbidden to Muslims. The devout do not partake.

R. G. BLAIR Paso Robles, California

"Soon you'll feel less hungry, more alert, a little euphoric." In light of skyrocketing levels of obesity, sleep deprivation, and depression, it seems that a little qat might do America some good.

NEL DE JONG Durham, North Carolina

#### The Big Idea: Electric Cars

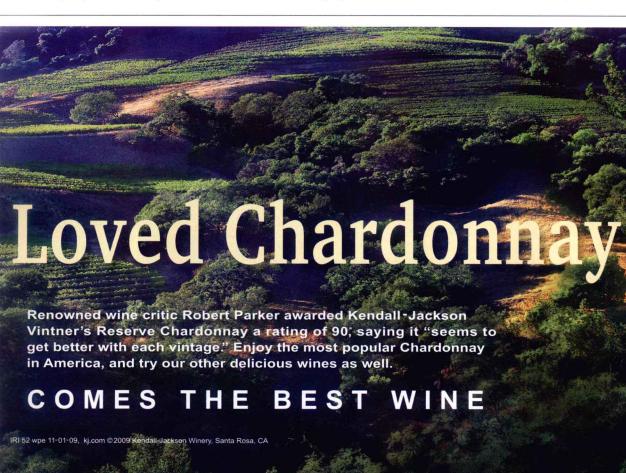
This article made interesting reading from a European perspective. In 43 years of

driving, I've never owned a car that did less than an average of 30 mpg. My current diesel car does on average 45 mpg. but a gallon of fuel costs me £4.95 [\$8.31], which equates to £0.11 [18 cents] a mile. The average American car, according to your figures, does 21 mpg at a cost of about £.07 [12 cents] a mile. If the American market were faced with European fuel costs. perhaps there'd be some incentive for manufacturers to develop a new generation of less polluting vehicles. I am not holding my breath.

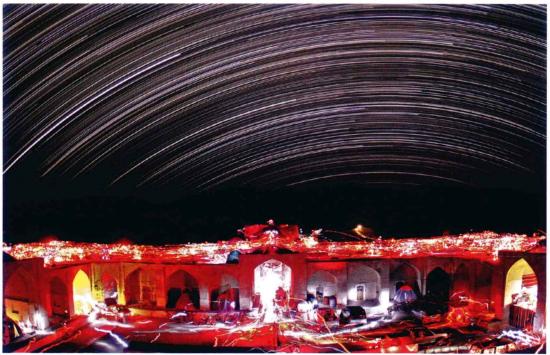
> BOB ENNION Shropshire, England

Like many articles that deal with charging electric vehicles, "The Future of Filling Up" overlooks the American talent for promotion. If McDonald's offers free (or discounted) battery charging while you eat and Burger King doesn't, where do you think people will eat? If one shopping mall offers it and others do not. where do you think people will shop? If one motel chain lets you charge for free or cheaply overnight, where will people stay? If one cinema provides at their snack bar coupons for charging and its competitors don't...well, you get the idea. Not to mention all the other businesses looking for a way to keep one jump (pun intended) ahead of their competitors. I foresee not a dearth of places to charge one's car, but a glut. Say watt?

> ALAN DEAN FOSTER Prescott, Arizona



**Up and Down** Are your eyes drawn to the celestial or the terrestrial? There's plenty of beauty in both. Just find a sight you haven't seen before and capture it with your camera. Then send it to us; we might publish the result in National Geographic. Every month this page features two photographs: one chosen by our editors, one chosen by our readers via online voting. For more information, go to ngm.com/yourshot.



EDITORS' CHOICE

#### Amir Hossein Abolfath Tehran, Iran

An astrophotography teacher, Abolfath, 28, joined 200 other stargazers in April 2008 at Bahram Palace, an ancient site in Iran's Kavir National Park. His 6.5-hour exposure yielded this heavenly shot of stars moving across the night sky.

#### Christian Meyn Penedo, Brazil

"This is one of the most beautiful butterflies I've ever seen," says Meyn, 40, a software developer who noticed "perfect mimicry" in his parents' yard. "The textures and shades of its wings are amazingly similar to the leaf."



READERS' CHOICE

#### EARTHGRAINS® BREAD NOW HAS ECO-GRAIN™ WHEAT.

## WHAT IN TARNATION IS ECO-GRAIN™ WHEAT?

There's a lot of "eco" this and "eco" that these days. "Save Energy," "Buy Green," "Drive Less," "Hug a Tree." Some of it is hard to do, but some of it is surprisingly easy. That's why we want to tell you about Eco-Grain™ wheat.

#### THIS WHEAT COULD CHANGE THE WAY AMERICA FARMS.

The average American uses 137 pounds of flour annually. It takes millions of acres to grow all the grain we require. Which is why Eco-Grain™ wheat is so smart. Thanks to a more sustainable farming approach, Eco-Grain" farmers conserve natural

resources and use less fertilizer. These are the sorts of environmentally responsible things the world needs more of.

#### WHERE CAN YOU GET SOME OF THIS ECO-GRAIN™ WHEAT? YOU ASK.



Idaho, an odd place for a revolution.

Today, there are just a handful of family farms in Idaho that grow Eco-Grain™ wheat. And there's just one bread company baking with Eco-Grain wheat -EarthGrains Baking Companies.

Eco-Grain wheat currently accounts for 20% of the flour in our line of 100% Natural 24 oz. whole-grain breads, but as our sales grow, so will this percentage.



#### A DELICIOUS WAY FOR YOU TO HELP THE ENVIRONMENT.

The Eco-Grain™ movement is starting small, but with your help it won't stay that way. You see. if more wheat

farmers



Can your turkey sandwich help save the Earth?

see how well Eco-Grain™ wheat sells, they'll be more likely to grow it using these more sustainable farming methods. That's where you come in.

Now, you're probably going to the store anyway,

so why not do a good deed while you're at it? By simply buying our tasty and wholesome EarthGrains' bread, you're supporting a way of farming that needs all the support it can get. And you could do it the next time you run out to buy milk, trash bags or hummus.

#### HELPING TO PRESERVE THE EARTH. ONE FIELD AT A TIME.

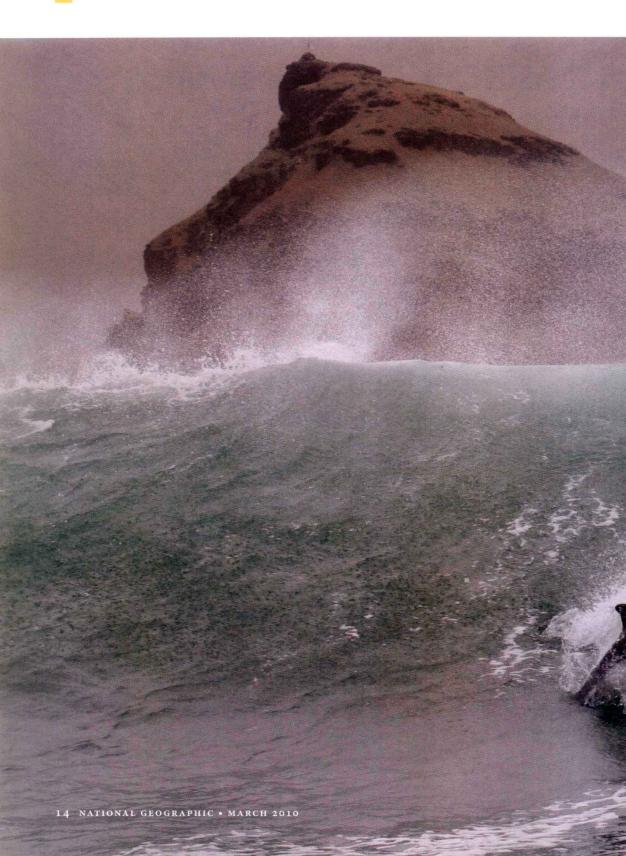
At EarthGrains Baking Companies, we're committed to making a real difference - one wheat field at a time. You can help, too - one sandwich at a time. The impact on the environment from Eco-Grain™ wheat so far has been small, but with lots of farmers growing it, the impact could be very big.

So, do the Earth a favor. Try a loaf of EarthGrains® bread and join the Eco-Grain™ movement at earthgrains.com



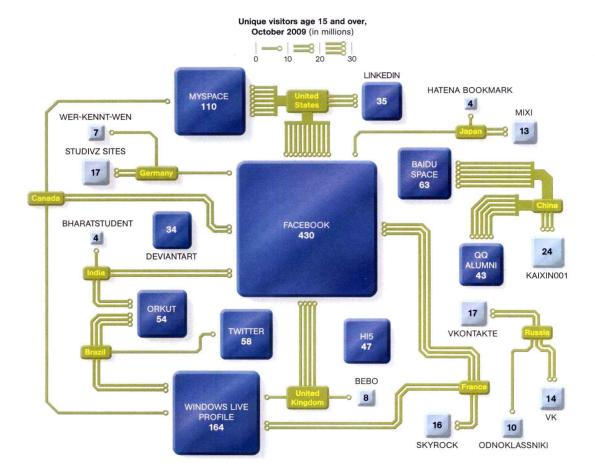
Fco-Grain

### VISIONS OF EARTH



#### **World Wide Friends**

In October 2009 more than 830 million users visited social networks via home and office computers. Ten sites (below in dark blue) had the most visitors. Green lines connect countries where networks are most popular to their three favorite sites.



The first social-network website, known as SixDegrees, launched 13 years ago. Its members could find and send messages to pals—and then communicate with each other's friends and family—online. The site went off-line in 2000, but the trend of social networking has surged. More and more people are joining sites that let them set up profiles and share photos and updates about anything from their lunch to their daydreams.

U.S.-based giants Facebook and Windows Live are popular just about everywhere. But why is Google's Orkut site number one in both Brazil and India, countries miles apart literally and culturally?

Researcher Michael Thelwall credits that site's simplicity, which gives it an advantage in places with slow Internet access.

In many countries nuances of language and culture make homegrown networks such as China's Baidu Space and Russia's VKontakte stronger than imports. Japan's top site, Mixi, lists blood types as part of its member profiles, catering to the local belief that knowing that tidbit can predict compatibility. And in South Korea, Cyworld users create avatars, or alter egos, that express emotions and repair friendships on behalf of their real-life counterparts. —Shelley Sperry

