It's a chaotic region, sculpted by the glare of one generation of massive stars that's giving rise to the next.	*Panorama vid*
[Titles]	*Opening titles*
At first glance it doesn't seem like this 5th anniversary image from NASA's Spitzer Space Telescope could tell us much about our own Sun or even Earth. But astronomers see this picture differently.	*[host, wide]* *floating W5 panel*
The strangely chaotic dust structures are like a work of art. But astronomers looking at W5 see not just a picture, but a book that tells the story of how one generation of stars has helped the next be born.	*[host, close]*
Explaining why they've been studying W5, and what they've found, we're joined by Dr. Lori Allen, and her graduate researcher Xavier Koenig, both at the Harvard Smithsonian Center for Astrophysics.	*[host, wide]* *inset video of Lori & Xavier*
Well, most stars probably form in regions like W5, that is massive star forming regions in which hundreds, or maybe even thousands of stars form at the same time.	*Interview: Lori Allen*
The W5 region is about 300 light years across, and that's about 100 times larger than the distance to the nearest star.	*Interview: Lori Allen*
Even at a distance of 6,500 light years, that's still big enough to cover the area of about 4 full moons.	*Graphic of whole area with moon overlay*
While it's filled with thousands of average-sized stars, it's the dozen or so stellar giants here that are really calling the shots.	*[host, medium]* *floating Sun in frame*
Compared to our own G-type Sun, these enormous O-stars, while 30 times more massive, are over 10,000 times as luminous. They're even brightest in the ultraviolet. Yes, we are talking instant sunburns.	*[host, wide]* *floating Sun by host, giant O star appears at edge of screen*

So the radiation these O stars put out, vast amounts of ultraviolet radiation, has a very destructive effect, it breaks up molecules and destroys dust grains and the stellar winds, these very violent energetic stellar winds sweep up material around that creates these large bubble structures that we see, these very large cavities around them.	*Interview: Xavier Koenig*
However, denser areas take longer to clear, lingering as the material around them is swept away by the radiation and stellar winds. This sculpts distinctive pillars that, like accusing fingers, point out the stars that created them.	*Diagrammatic animation of pillar formation*
The effect of this in fact we find can be a constructive effect, that the material gets swept up and gathers up enough material that it can collapse into successive generations of stars.	*Interview: Xavier Koenig*
We're pretty sure dense clumps of gas are likely to collapse under their own gravity and that's how we think stars form. But if you give them a little push like the O stars can with the energy they're putting out and the expansion of these bubbles and the stellar winds that are blowing past, this can help the work that gravity is doing in collapsing these clumps down and help to speed up and enhance the star formation process.	*Interview: Xavier Koenig*
Some of these new stars can be seen forming inside the dense tips of the pillars throughout the region.	*Cross fade between pillars*
In W5 we think we can trace 2 or 3 generations of star formation, starting near the center of the big cavity where there is an O star, which probably represents the first generation of star formation, then working outward to young stars that are found inside this big cavity and then further out to stars that are just now forming in the molecular gas on the rim of the bubble.	*Interview: Lori Allen*

This kind of study simply wouldn't be possible in visible light. So much of the interesting detail is obscured behind dust, and only in the infrared can we pierce the veil and see what's hidden.	*Visible to IR crossfade of the region*
Well what's great about Spitzer is that it's looking directly at the wavelengths where young stars emit a lot of their light so the easiest thing we can do is just go and look for the reddest objects in the image which are picked up excellently in this image by the bright red color relative to the more blue ones which we think are slightly older… they've lost all of their material that was around them when they formed.	*Interview: Xavier Koenig*
In fact, some of those young stars appear to be shedding their surrounding material before our very eyes. At 24 microns a number of smaller stars appear to have dust tails pointing away from the nearby O stars.	*Zoomed images of 24 micron tails*
This could be the ongoing destruction of protoplanetary disks due to the radiation and winds. Indeed, stars unfortunate enough to form too close to an O star could be stripped bare before having time to form planets.	*[host]* *inset video of protoplanetary disk destruction*
W5 shows us how interconnected things can be in our Galaxy. Stars form, then reshape the nebula around them, ultimately giving rise to new generations of stars.	*W5 pan*
Perhaps, 5 billion years ago, some long-gone O star swept up the material that made our own Sun. And if it had been just a little too close the Earth might never have formed, and our species would never have evolved here to look up and wonder why.	*[host, wide]* *animation of Earth orbit around Sun*
For the Spitzer Science Center I'm Dr. Robert Hurt, reminding you there's a Hidden Universe just waiting for us to discover.	*[host, close]*