Computer
History
Museum

Interview of Russell Preston Brown

Interviewed by:
Dag Spicer

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Spicer: August 23, 2012. Russell, welcome. Thank you for being with us. How did Adobe come to hear about what would eventually become Photoshop?

Brown: Well, we'd have to go on the "Wayback machine" here and go back. Adobe started off doing fonts and it had Adobe Illustrator. And John Warnock had always said to me there were three ingredients to publishing. There was text, graphics, and halftones. At the time John Warnock said that to me, I didn't quite figure that what we were missing was Photoshop, but we had fonts and we had Adobe Illustrator for the graphics. But halftone was really a disguised term for photo manipulation and something that was photographic in nature. And it just so happens walking into the door came John Knoll searching to distribute and sell a product he called Photohut at the time and then it changed its name to Photoshop. Photohut, strange name. And so it was John Knoll who brought it to Adobe. And I must say at this time, John Knoll was the key-- the pivotal key. It's one of those points in time where if John hadn't come in the door and if John hadn't decided to sell Photoshop it just wouldn't have happened at all. It would have-- something else would have taken place in history, but I must give an enormous amount of credit to John Knoll for getting out and marketing his brother's programming, of course Thomas Knoll.

Spicer: And were you the person at Adobe that first met Tom and started discussions?

Brown: I was the key person at Adobe. I'm the one who decided everything and brought all of the success to Adobe. No, that is not true <laughs>. That is not true. I happened to be in the right place at the right time. I believe Fred Mitchell was the first person at Adobe to see the presentation. He took it to John Warnock. John Warnock knew that it was that final ingredient and then finally they asked me, the third person to review this software and give my opinion. I believe my opinion involved running quickly to John Warnock's office and saying, "Buy it. Now" <laughs>. It was that one missing ingredient that I knew that I wanted as a graphic designer -- my graphic design background. I had texts. I had Illustrator. I needed photos and I just didn't have the tool yet to start to work with images. I had worked-- I'd actually worked on a-- with a Scitex machine in the early days and [with] those you had to sit behind the Scitex operator and tell them, "Move that over there." And to say "move that over there" that cost you $600. <laughs> It's the total truth. "Move that over there" and it was quite a complicated task. That was really a transitional, pivotal point. Again, we empowered the user to move this over there and you now became your own Scitex operator.

Spicer: What was it about Photoshop that you thought would make it a good product at Adobe? You mentioned that it was the third piece of the puzzle.

Brown: Yeah.

Spicer: Were there any other features that you thought would be really cool in the marketplace or--

Brown: Well, I'm not a visionary. John Warnock is a visionary. I, however, know a vision when I see it. [I] know there's a distinction. There's a person who can think up something like Postscript and PDF documents like John Warnock and Chuck Geschke. And then there's people like myself who go, "Yes. Postscript is a good idea. Yes. PDF documents, those are incredible" <laughs>. And so along comes Photoshop and I knew I wanted my own Scitex, but I didn't think, "Okay. I should find a programmer to create this." It comes in and then I know what I'm looking at and I know it's right. So I think one of the features that really sold me when John Knoll walked in the door was "soft selections." Soft selections, if I think back to the one thing that I knew that I was missing it was the ability to make a lasso selection and move something with a soft edge. And we hadn't seen that with MacPaint. You could move something and you could physically move individual pixels, but that was a big thing. That was a pretty big thing when you could move something with a soft edge because it led to everything we do today, blending images together, copying, pasting, transitions. And the soft edge brush came into play as well. So those must be the first ingredients that I knew that I had to have. What were the respective roles of John and Thomas Knoll at this stage? Thomas was the mastermind behind the programming. So you had a brilliant mind from Thomas Knoll. He's a computer scientist. He knows how to move pixels around. He knows the science of pixels. And you have his brother, John Knoll, who was working at ILM on such films at the time as I think "The Abyss" with James Cameron. So John Knoll says to his brother, Thomas Knoll, "I need a tool for converting file types for production of "The Abyss. "I need to go from this file type to this file type," because they're doing frame-by-frame stuff. Hadn't been done before. You know, it's all done mechanically cutting and pasting. So he wants to convert. So John Knoll had a need for a product and Thomas Knoll had the ability to create that product. And it was that combination of the two working together that brought the beginnings of Photoshop. And so they developed it together strictly as a tool that John would use and then everyone would say to John, "This is really nice. This is a great tool." They kept on going and going and Thomas Knoll, I believe while he's doing his thesis in college is doing this small project for John. And they keep on adding more and more features until it becomes the early version of Photoshop. And then John says, "This has value." And he says, "I should show this to someone like Adobe and get them to market it," because he didn't want to personally market it. So, yeah, the two of them working together …. Two brilliant minds. You've got John Knoll doing Pirates of the Caribbean. Thomas Knoll, computer scientist. You put the two, gasoline and fire, and "ka-boom" an explosion happens. And then we're lucky enough to be in the right place to get Photoshop and bring it into Adobe.

Spicer: What has been your role with Photoshop over the years?

Brown: Again, I must say I'm the key element that really brought this out and made it the success that it is <laughs>. My role-- what was my role? My role was being in the right place at the right time. And I joined a team of John Knoll, Thomas Knoll, Steve Guttman, the first product manager, and myself as sort of the first user. So I was the professional user and then I started doing presentations and demos to photographers and designers. I was the first "evangelist," as Guy Kawasaki would say. So I become that evangelist and I go out and I give presentations. I try and sell this concept to editing photos and I must admit … every photographer was extremely skeptical in the early days. "Does it have the same resolution as a 35 millimeter piece of film?" You know, how many times did we hear that? And, no, it did if you were

to scan on a Scitex scanner and bring the image in. That, you know, there was this curve that was happening. Slow, slowly you chart the time over acceptance. It [was] really slow in the beginning but there was this point in the curve, right about here, where Kodak and Canon are introducing their first digital cameras. And we hit that threshold point where the likes of a Greg Gorman, photographer out of LA, said, "Russ, it's finally time to switch because I can now achieve just as much resolution as a 35 millimeter piece of film on this new Canon camera or this Nikon camera." And then "phoom" it just took off from there.

Spicer: That's interesting.

<crew talk>

Spicer: I would be curious to see if you could put yourself back in the early days of evangelizing, what was your pitch to photographers? I believe I say you maybe speak at Ted.

Brown: <laughs> Yeah, Ted was early days. I think the earliest presentations I gave evangelizing Photoshop were at the Ted Conference and also at something called the Mac Summit that took place Santa Barbara at the university. You know and I think I sold an evangelized Photoshop to the graphic arts market before I did to the photography market. Graphic designers knew they needed a tool to work with Photographs and, of course, do evil things like adjust them. And as Rick Smolan would attest to "Day in the Life Books," "I need to move this tree or this cowboy to fit it in the frame of the shape of the book cover." And so graphic designers will do evil things in the name of design. And we were looking for that tool to move things around, to do the SiTex work ourselves. So I think at first I was evangelizing graphic designers. Sold them because they could move things and change the design of something without $600 an hour. One of the key things also in the beginning of time was I was evangelizing CMYK conversion was built into it as well. I remember those days when we had to take things to print and there was a lot of concern in the early days, "Will it do CMYK? Can you do CMYK conversions from Illustrator? Can you do CMYK conversion from Photoshop?" And we had to build those in. Today who-- no one cares. Somebody else does that, InDesign will do the conversion for you. But, yeah, I was drifting off. So first evangelizing graphic designers and then in the early days going to, slowly going to photographic shows that sold film and film-based cameras. And we started to come in and give a little session on digital photography. Slowly I recall and then the film photographers would come in and check it out. I'm also thinking of another really big transition. I was at an event in Jackson Hole, Wyoming. It was a sports photography event. I'm forgetting the name of it and there were film photographers and others there. One of the big transitions that Thomas Knoll came up with was camera raw adjustments. Camera raw was always native to all the first cameras, Nikon, Canon, and others. But you can never access it and that was really an amazing transition point where we empowered the photographer to grab their negatives like they've done before and adjust them. I think that was one of those points as well that brought photographers around. I can't even remember when we actually brought that out, but it was a key-- a pivotal point again during the process. "Blah, blah, blah." Yeah, the beginning. Yeah, you got something out of that?

Spicer: Actually, one of thing I'd loved to see if you could put yourself back in there do the picture-- just do it right to-- and then it's like, "This is the greatest thing you've ever seen." Would be able to move trees around. What did you say?

Brown: <laughs> Oh, that. I have never been asked that one before. I think what it was that proved things to photographers was not so much moving the tree like a graphic designer would like to see. That-that was offensive to them in the beginning and I must invoke the Stephen Johnson theory on life, "Never touch." Never. A photographer should never alter or move anything within the image. The only ethical things are adjustment for lightness and darkness and maybe- maybe some adjustment of some-- of some dust in the image. But I remember those days. I remember Stephen Johnson jumping on me because I had moved the tree <laughs>. But he was a purist. There were purists out there. So going into a photography event and moving the tree was wrong, wrong, wrong. Going into the photography event and spotting the noise in an-- it's not the noise but the dust on a-- in a shot or on the CCD, getting rid of dust and adjusting the brightness, and contrast, and the levels--that was sexy. That was really sexy and then you could finish that off and do the print. Instead of going into the dark room, the dodging and burning, and printing right on your computer. That's what I-- that's how-- that was my pitch in the early days for photographers. But I must admit, I made my mistakes in front of the likes of Stephen Johnson. And I learned my lesson many of time to avoid those. They would come up and tell me that I had gone done the wrong path of evangelism on that one. I'm not so much worried about that these days. I think those days have progressed past the adjustments. I think more and more people are willing to work on an image and we look at it as an image, not so much how did you do that? Because we're assuming these days that we can enhance the glare of the sun or use HDR to pull out the detail and the shadow. I think we are a little bit more easygoing when it comes to manipulation because I'm the worst guy.

Spicer: How important was it for Photoshop to model the traditional film photography workflow in it's software to get acceptance from users? You mentioned the *dodge* and *burn* tools.

Brown: I think Thomas Knoll didn't come at this from the perspective of a photographer. In the beginning, he came at it more-- <coughs> sorry.

<crew talk>

Brown: Okay. Where were we? In the beginning of time, I don't think Thomas Knoll approached this from the point of view of a photographer. I think was really focused on a point of a view of a cinematographer and the problems to solve for his brother John Knoll. It wasn't until Thomas started taking photographs himself that I saw the change and then I also saw the change as the marketing group started to grow at Adobe from myself to over 400 people at Adobe now involved with programming, marketing, distribution, packaging.

Spicer: This is just for Photoshop, 400 people?

Brown: I think so.

Spicer: Yeah.

Brown: Let's think. Yeah, programmers, marketing-- I-- don't quote me on that. Don't quote me on that. Okay. I'll start this--. I think now there are-- there are several hundred people working on Photoshop team in terms of programmers and designers and marketing. And I think their influence came into the mix as well. Thomas, of course, started the whole process but then it's influence developed. We can't give full credit to Thomas for everything that happened in Photoshop. The marketing team came in and brought in new features to address different markets. And I think thus came in all of the camera raw adjustments, and advances in selections and masks, layers, and lately we're getting into more and more computer math where we can adjust and fill in an area of a Photograph almost like magic-- it content-aware fill feature for example that making a selection and then it searches the surrounding area for similar textures and then fills it in. Magic. So that's the type of thing that's happening now is a lot-- a lot more digital magic, not only at Adobe but all the other filter manufacturers, adjustments. Everybody's looking for that next, next HDR look, new things. And they're also looking for speed. I'm just amazed at how much people are looking for one-button click adjustments. They just-- they want that Instagram satisfaction in Photoshop these days. And Photoshop has really always been designed for a step-by-step process. So achieving the results, it takes a while to achieve them.

Spicer:. Were there any competitive products to Photoshop at the time?

Brown: Yeah, the very first product that I played with on the Macintosh was called Gray Paint. They only did grayscale adjustments on the early Mac. And then came Color Studio, which was developed by the same programmers who created Gray Paint. And Color Studio came out and it was purchased by Letraset at the time and it had some really amazing things in it. It had-- it was starting to work with masks and a frisket process at the time. And it was exactly that time that we came out and we just introduced Photoshop. And so they were both competing with each other in the beginning of time and it's due to my incredible evangelism that we were successful in making Photoshop what it is today <laughs>. You look through camera, if you believe that, you will believe anything.

Spicer: Did you have any big buyers that really, you know, seminal buyers that kind of kicked off the product for you, large purchases or significant people that bought it?

Brown: So I would-- in the process of evangelizing and working with Photoshop, I put on special events. I called them my art directors invitationals and then photographer invitationals. I think I even did an Illustrator invitational with my friend David Hockney. And so talking-- I suppose he's influential in that David just happened to be interested in digital photography. He had just purchased his first color copier that had come out. I believe Canon had the very first color copier. It was like room size but it was affordable. It was the most amazing thing-- color copies? Color copies? And then you could link to it with a computer and send your images directly from your computer to the color copier. So he had one of these

toys and he wanted to know about Photoshop. So David Hockney came to the event and we had an early- early prototype of a Canon camera. So we were taking photographs and bringing them into Photoshop and then printing them on the color printer. So he was pretty jazzed by all of that and the possibilities for that. So there's, you know, people like that are influential and then others take interest as well. I'm trying to remember some other influentials. I know one. Uhm.. blank on names here, "da-da-da-dah" <sings>. Oh, yes, Graham Nash. So Graham Nash of Crosby, Stills, Nash and Young. So it seems Graham Nash was interested and he heard that David Hockney was coming to our event so he wanted to come too. He's not into photography as very much and he's not into printing. But he came to the session and then Graham Nash went off and created Nash Additions, which was the very first place that fine photographers could go and make prints on a SiTex imaging device. And so-- no. No. No. It wasn't called a SiTex. It was inkjet. It was, oh, brain scan. Come on help me. Help me. First printer. Digital printing.

Spicer: Kodak.

Brown: Indigo. No. Kodak, no. Oh, scanning, drum, putting ink down. I'll think of it later. I'll fake it. So Graham Nash went off to do Nash Additions. He then took an existing printer from the market that interfaced with prepress. He took this high-end, hundred thousand dollar printer and altered it so that he could make fine art prints on any type of paper that he put on the drum. And then this inkjet, this high-end hundred thousand dollar printer would then print onto this paper. And he's not only printing high-level artwork at Nash Additions, he is scanning. So he's scanning original works, photographic prints, art prints. And so it was another phase in that transition where photographers and designers could start to accept this technology of Photoshop because you could get a really great print. Then newer and less expensive printers than the hundred thousand dollars came out and people could start to do their own prints. But, yeah, the influential-- the Graham Nash of the world taking on printing and David Hockney taking on Photoshop and learning about it. Stephen Wilkes, quite a famous photographer out of New York was in that class and went on and inspired people. And the likes of the art directors from Time Magazine come to one of my classes. Nigel Holmes discovering Illustrator and Photoshop at the same time, going back to Time Magazine and saying, "Okay. We're cutting and pasting here at Time Magazine. We should really have Illustration photography combined into our graphics." And so I believe after taking one of my seminars, Nigel went off and bought several Mac computers and brought them into Time Magazine and beginning of time. I mean that-- everything changed there from a paste-up world to a computer world at that point.

Spicer: I'm thinking back to an interview you gave in 1990.

Brown: Uh.. oh. Ninety?

Spicer: Ninety with-- I think it was on ABC News and there was a guy who wrote a book who was upset that Photoshop let people change images. But, in fact, we've always been doing that since the beginning of time.

Brown: Yeah.

Spicer: Do you have any thoughts on that?

Brown: I'm trying to remember. Fred? Fred-- gosh. His name is Fred.

Spicer: I think so, yeah.

Brown: And-- so Fred was there and Rick Smolan was there. It's 1990. We were in-- he was invited on *The Today Show* with Deborah Norville to talk about how digital imaging was coming of age. And he was concerned about it. Fred was extremely concerned about what this was going to do to the world, digital manipulation. And they needed someone to counter him. So they brought on Rick Smolan who was doing digital manipulation on the SiTex for his covers. And they thought the two would combat each other out here. And then Rick says to the producers, "You need Russell Brown to be on the show as well. And he needs to demo this process." And so there I am. That was the deer in the headlights. If you looked at that video, I'm pretty much stunned by that whole process. You cannot believe the trouble we went through to plug a computer into NBC's cameras. I had to purchase a $400 converting box that would take this RGB signal out. I mean these days it seems simple. But this-- oh. It was-- and it hummed and hissed and- and I'm really surprised to this day that they even got that signal out and it was flaky and wacky and everything <laughs>. But, yeah, there we are. Fred's on one side. I think believe-- referred to Rick and I as the evil ones. And very much opposed to digital manipulation and we were-- and I think I stated on there that altering images was just-- I couldn't live without it now that I had it as a graphic designer. And Rick needed it to produce his books. And here's Fred who thought it was the most terrible thing on the planet. Here's the end of the story. After all year-- I think a year went by. Believe or not, Fred ends up teaching Adobe Photoshop classes in New York <laughs>. It's so hilarious. So Fred saw the light and decided that he would get into this as well. Very, very interesting. But, you know, everybody can change their view. I think he probably still has his same concerns and everybody has their concerns about altering photographs. But, of course, it's been done since the beginning of time. And another museum in mind, the Met, is going to open up a show later on this year that's going to talk all about digital manipulation before Photoshop, cutting and pasting. And, hey, I did it myself. I had an Exacto blade and I was moving things around in my early days. So, yeah. Yeah. The good days of 1990 on *The Today Show.* My claim to fame on *The Today Show* with Deborah Norville.

Spicer: That's great. How big is the Photoshop ecosystem now?

Brown: If you-- if you're saying the ecosystem of Photoshop in terms of how many ways has it affected people? How many people are working within this ecosystem, it's pretty amazing. I mean you start something like Photoshop and over the years I've watched this, there are more and more people talking about Photoshop, making presentations about Photoshop, writing books about Photoshop. Then there are people making plug-ins for Photoshop, add-ons, filters, textures, related products that work with

Photoshop. The ecosystem is enormous. There must be, you know, a good number of people who make their business off of working with Photoshop, either using Photoshop on a daily basis or selling something to the Photoshop market in terms of the ecosystem. At the moment, I think it's a fairly healthy ecosystem because it's bringing in graphic designers, photographers into the ecosystem and we're all looking for new ways to adjust and manipulate our same information. Is that what you meant by ecosystem?

Spicer: Yeah, exactly. Can you say without any specifics, of course, how big Photoshop is to Adobe?

Brown: I wouldn't know the specifics. Numbers at Adobe I avoid that-- the numbers of how many sells per se. But I know it's said that we have three buildings at Adobe. I believe the first building was built from revenues from Postscript. And the second building was probably built with revenues from Photoshop and I think the third building was probably built from revenues from Adobe Acrobat and all of our other products. And now I'll get in trouble. What about Premiere? You know, what about Sound Editing, Audition, and End Design, and all the others. I'm sure they all played into it. This is-- this is not true. What I said about them buying those buildings. It's purely something I think. But in terms of Photoshop's contribution to Adobe, it is, of course, enormous. It's the pivotal key product that brought in and opened the doors for many of the other products we have at Adobe. But as I said earlier, we had our fonts, we had our graphics with Illustrator, and then we finished it off with Photoshop. And I think Photoshop, of course, is used in a big way by designers and photographers. But we also have the Illustrator users, and the text, and type users. But the answer is it's enormous the amount of affect that that's had on Adobe.

Spicer: What is the biggest surprise you had about Photoshop?

Brown: Biggest surprise?

Spicer: Something that surprised you, amazed you, about it?

Brown: Biggest surprise. Okay. The biggest surprise about Photoshop is that the moment I think that the programmers have finished everything, there's nothing more you can possibly do with Photoshop. We're done. Levels and curtains. Okay. We're done. It's just each year, programmers seem to come out with something like, "I didn't know it would do that." Thomas Knoll just recently changed the way in which he interprets the raw data coming in from the camera and you're going, "What? You discovered a new way of interpreting the information from the camera to pull out yet even more detail?" Okay. Surprise. And you've made yet another way to magically fill in the gaps in a photograph? You know, I have a missing piece of sky and that's what amazes me today. Is the magic-- the computer engineering magic that can happen within a photograph to fill in a spot that doesn't exist and make it look like it was supposed to be there. That's magic to me. And I continually get surprised by what the programmers will come up with. And I have no idea what they're going to come up with next, but I'm sure it will surprise me. I'll go, "How did you do that?" And I want--

Spicer: That's great. Thank you. You know there's bitmapping, there's vectors. Then there's Photoshop, which allows you to feather and all the different things with the layers. I wonder if you could quickly go through the evolution of those things and describe in lay-terms,, the difference between those three and why Photoshop is an advancement or at least a great improvement.

Brown: So it probably has to go all the way back to Postscript, this story and the evolution of graphics. You have someone like John Warnock and Chuck Geschke who are interested in graphics and have the vision there to-- they see the future. And they see what graphic designers are doing now. So they start to bring the ingredients together. The first ingredient had to be an operating system like Postscript, which could bring all the elements together. And you bring in typefaces. Normally, typefaces were on metal, on letterpress. And now they come into the digital age and you have what's called a Bézier curve to define the shape. So you have an electronic "device independent" was the key word back in those days. It had to be independent in that this letter A had to be able to print at any size and any shape on any printer from now until the end of time. So that was a digital-- and it can't be pixels. It had to be a definition of a shape. So that's their first magical entry into the world was a digital representation of a shape. I always used to say in my presentations, I could print this letter R the size of Rhode Island because John Warnock said it once. It's true. If you had a printer the size of Rhode Island, you could print the letter R. And so, now you got the ingredients for device independence on a shape, which easily led to Adobe Illustrator because Illustrator is drawing device independent shapes. So from fonts, to Illustrator you're filling in the shape and you could draw those shapes with simple tools on a computer. And this simple circle that you've drawn can be printed at any size and any shape and it will always be sharp. It will be as sharp as the printer has the capability of printing it. That's pretty cool. One thing that lasts through the ages that can print at any size. And then finally you've got-- so you've got vectors covered, shapes. You move into halftones and halftones would be the way in which you have to image something onto prepress with the little dots. Halftones are out. Digital presses are in. And a typical printer that we use, an Epson printer in our office or home, doesn't use dots anymore. It puts-- it sprays the colors down so you don't see the dots. But you needed something that would-- something like Photoshop to fill in this final element, something that worked with pixels. You had vectors, the shapes, the letterform but you also had to have photographs. And you couldn't quite define a photograph with a shape that you've drawn. You had to define that with grayscale shades and you had to have lots of them, millions and thousands of these shades. And it wasn't until computers-- 8-bit, 12-bit, 16-bit they started getting more and more millions of shades available to both the cameras and the printers. And the great thing about John and Chuck, they knew that the technology would come up. They knew some day if they created these tools, there would be more and more advances in memory and technology. And they were doing in the beginning would pass on and keep on going no matter-- based on how much memory. So there we are with Photoshop filling in the final gap, creating your pixels, allowing you to edit those pixels and move them around freely. And then bring elements in. They didn't know that there were going to be-- yes, they did. John and Chuck probably knew there would be digital cameras. They knew there were digital scanners. They were smart enough. They probably knew there were going to be digital cameras. I didn't know that. So now the digital camera comes into play, the digital printer. And everything comes to light. All the ingredients form for the perfect world for graphic designers and photographers. All of the elements packaged together. All the graphic needs necessary to create graphics within that world and keep on spinning. But the really

amazing-- the basics of bringing those elements altogether into one world that we have today. And we just think, "Yeah, weren't those always around?"

Spicer: My last question is, updates: What is the process of creating the next version? What kind of team gets assembled and who makes what decisions? Who initiates this? What's your process of getting out updates?

Brown: I always say in the beginning of time, I'd look over at Thomas Knoll and Steve Guttman and I said, "Oh, this is a great idea. Do you like this? Do you like this? Do you like?" "Oh, we all like it. Lets do it." Okay. Three people. These days <laughs> it's much beyond that. These days we ask users. We're on forums. We're on websites. We're searching for ideas, people's comments come into marketing. We're involved with the photographic community. We're involved with the graphic design community. All of this input comes in. It's enormous amount of input coming into Adobe. It's filtered down to the product managers who then propose ideas to the programming team. And then the programming team also proposes ideas back to marketing like, "Here's something that I really want to work on." So not all ideas start from the product manager. Sometimes they start with the engineers and go to the product managers and then they bounce back and forth. So today's design workflow for new features comes from outside and from inside. So you got these ideas coming, ideas going out. And the filtering-- the blah, blah, blah. And in the middle, then they all decide and choose a particular important ones or important to the current market. You know, "We have a need for a particular thing." And that's how-- I see it happening both ways. Sometimes great ideas coming in and same-- and sometimes as I said the programmer just does something really amazing and, "You did what?" And I always love those moments as well. So it's a lot of interaction. And you know today with a social networking, my goodness. My goodness the number of creative ideas that can come flying by to inspire many engineers and the product managers is amazing.

Spicer: How has Photoshop kept its place as the undisputed leader, the gold standard for this kind of thing? Have you had competitors come and go over the years?

Brown: In the beginning I remember a few competitors coming into play. And we have competitors these days. We have very low-cost, inexpensive photo editing available on the Mac and some more on the PC side. Lots of competitors. Hey, we've made Lightroom from Adobe somewhat competitive in that it drew the photographers away who just wanted to do photo adjustments, global photo adjustments to their images and none of this retouching, evil stuff that Russell does. And so have the competitors. We're in a-- we are a-- not an expensive product but we are a worthwhile product for its price. But we have competitors who will offer, you know, something at a very low price and they're on the market right now. But why has Adobe maintained its position? I think it's through creative ingenuity and new features and things you can't live without-- the clone tool, content-aware fill, camera RAW adjustments continually happening. My latest feature that I love is adaptive wide angle where I can take a Photograph and instead of doing a global adjustment to get rid of the warp from a wide-angle lens. You know, you used to be able to just-- okay, it's all or nothing. All or nothing. And now you can go, "Okay. I just want the tree to be straight. I like this look, but make the tree. Not the curve tree but a straight tree." It-- I think it's things like that, that really bring people back to the one and only Photoshop is great things that you just can't do and

others will copy. But that's where we have to-- that's where we have to maintain that and keep on going. Someone will be after us someday <laughs>.

END OF INTERVIEW