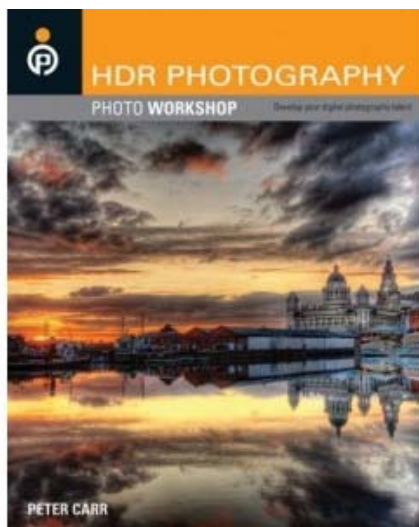


## HDR Tutorial Guide Thing for Photomatix – By Pete Carr (www.petecarr.net)

Photomatix discount coupon code: **VanillaDays**

Put that code in when you **buy Photomatix** and save 15%.

First things first. Why a new tutorial when I've just released a **book on HDR**? Well quite simply that the old tutorial is old and in need of updating. A lot of people reference it on a daily basis so its only fair to update the tutorial. The book still contains more content than this tutorial will, way more. Thats a hint to buy it by the way ;) You'll get a chapter on landscapes, interiors, exteriors, people, street photography, black and white processing and lots of other tips n tricks too. Its by far the most comprehensive HDR book on the market.



**Examples of my HDR work – skip to the tutorial**

I'm a firm believer in only using HDR when its called for, and I also don't believe in going OTT with the settings either.







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## THE PROBLEM: DYNAMIC RANGE

If you go to the beach at sunset and see a brilliant sunset what do you see? You clearly see the detail in the sand, in the sky and can enjoy the sunset. You'll have no problems spotting friends or finding your car. You'll never hearing someone ranting that there's too many silhouettes and that its hard to see. However, if you try and take a photo on your camera it will fill the scene with silhouettes. Depending on the metering mode of your camera, it will probably meter for the brightest object in the scene, the sun. Everything else will be under-exposed. The majority of people will be happy with this because it darkens the clouds and creates an aesthetically pleasing scene. The problem is that you aren't capturing the scene as you remember it. You are capturing it as aesthetically pleasing as possible with the limitations of your cameras dynamic range. This means that you lose an incredible amount of detail in the shadows. This is why you get silhouettes. The shadows / blacks are massively clipped. You can work around this with a ND graduated filter but they are a block that you cannot alter. For a sunset at a beach it maybe fine, but for a cityscape you will find its too harsh resulting in dark patches on the tops of buildings. Basically you can get a nice photo, but its not as you remember it.



This is all because of something called dynamic range. In photography, dynamic range is the luminance values from darkest to brightest. For a camera this is a subset of the scenes dynamic range that can be captured without clipping the highlight ore reducing shadow detail to noise.For your monitor its the luminance range from black to white. Lets talk numbers. A contrast ratio is worked out very easily. Its 2 to the power of the bit-depth. So an 8bit image is  $2^8$ , which is 256:1.

Stage	Dynamic Range	Stops
Typical outdoor sunlit scene	100,000:1	~17EV
16Bit TIFF	65,536:1	~16EV
The human eye	10,000:1	~14EV
A film camera	Up to ~2000:1	~11EV
Average DSLR	typically ~400:1	~8.5EV
Good monitor	500:1 to 1000:1	~9-10EV
JPG Image	256:1	8EV
Photo print	100:1 - 250:1	~7-8EV

What these numbers mean is that as soon as you take a photo with any camera you instantly lose an incredible amount of detail from that scene. Take a photo from the back of your living room looking out and you'll see what I mean. Outside becomes blown out, the highlights are lost. You do not see that though. For years there have been ways for photographers to get around this. We redirect light or create our own to compensate. There's also the option of exposure blending. Bracket a few shots, blend the highlights into a shot. Another way is to use a HDR technique. ([top](#))

## A SOLUTION: HDR – HIGH DYNAMIC RANGE

HDR, high dynamic range. The concept is simple. Take 3 or more bracketed photos, merge them together and then tone map them to re-compress the data into a useable image. Going back to the numbers a typical sunny day has a contrast ratio of 100,000:1. A 16bit TIFF file has a contrast ratio of 65,536:1. So quite a bit of data is lost from that sunny day. A 32bit HDR image has a contrast ratio of 4,294,967,296:1. It's clear that a 32bit HDR image can hold an incredible amount of data. Numbers aside, what this means is that you can bring back detail in the shadows and highlights. The highlight detail isn't clipped causing over-exposed areas, and the shadow detail isn't turned into noise. This is all a bit complex sounding so I'll use some examples. You use your DSLR inside your living room and the outside will generally be blown out, lost detail in the highlights. Using a HDR technique you would instead take 3 bracketed photos and merge them together. Once merged you then compress that image back down to something you can see and you'll hopefully have no blown out highlights. You'll be able to see inside and outside perfectly, something along the lines of how you really saw that scene. Another example is the sunset. Using this technique you can bring out all the detail that is normally lost and appears as silhouettes. Buildings suddenly become visible. Landscape photographers can enjoy perfectly exposed images without the need for an ND grad filter. No more darkened mountain tops due to the filter. Sounds great eh, let's get to work. ([top](#))



## TOOLS

To create a HDR image you'll need a few tools.

- Tripod
- Camera, preferably with RAW support and AEB (Auto Bracket Exposure)
- A HDR program ([Photomatix](#) is my program of choice)
- A RAW converter (Lightroom is mine)
- A fantastically lit scene with contrasting light

A tripod is a good idea, but not essential. Modern DSLRs like the Canon 30D, Nikon D700, etc can shoot at 5fps and higher. What this means is that if you can stay very still the camera can capture 3 images very quickly. So quick that you can minimise the camera shake between shots. Photomatix has a pretty good align tool and 90% of my images come out fine from handheld 5fps HDR. Of course a Nikon D3 would be very beneficial with its 11fps.

**AEB** is Auto Bracket Exposure. This is a feature on a lot of DSLRs that means the camera will automatically bracket the exposures for you. It will drop the exposure compensation down 2 stops, and then up 2 stops. A Nikon D700 can produce 9 images this way for blending with HDR. Its an impressive feat but personally I'm happy with 3. Its quicker and saves memory card space. There are times when shooting more than 3 images can be handy though. Shooting into the sun for example.

Why a camera with RAW? HDR is all about the details, details which can be lost with JPG. If you do a bit of reading on JPG you'll find that every time you save a JPG it gets re-compressed. You lose data every save. We don't want that. Also a RAW image can contain 12bits of data, 14bits on some newer cameras. Thats more than your 8bit JPG. Lastly, when a JPG is saved it has a tonal curve applied to it. Personally I prefer to work with raw data till the very last step which is taking the compressed HDR image and playing with it in Photoshop. This isn't to say that you can't use JPG, just RAW is better.

There are a few HDR programs on the market. Photomatix, Artizen HDR, FDR Tools, Unified Color HDR Photostudio and Photoshop to name a few. I've tried those and my favourite is Photomatix. I feel that its the easiest to use and produces the best results. ([top](#))

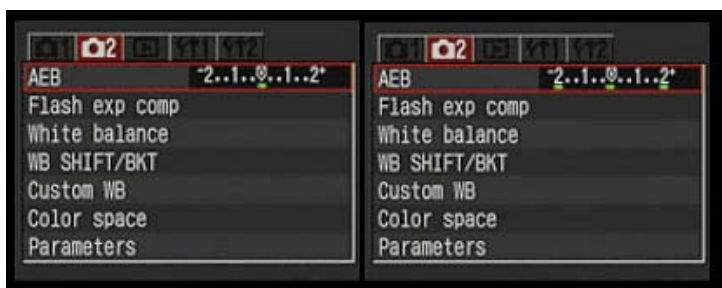
## GETTING THE IMAGES

Before we go any further I'm going to quickly touch on something. Can you produce a HDR image from 1 RAW? No. But how do you

get HDR images with moving subjects? These are tone mapped images using Photomatix from 1 RAW. Basically, you tone map a single RAW file. The result is different to that of processing using Adobe Camera RAW or Nikon NX2. Often it can bring out the detail in areas that other software doesn't. Technically speaking its not a HDR image. However, the technique can still yield some interesting photos so its worth experimenting with. I'll discuss the 1 RAW method later.

So you've got the gear and its a lovely day, how do you get the images?

1. Set your camera to the lowest ISO possible for the shot. If its a landscape and you have a tripod definitely set it to ISO100, or 50 if you can. This is because when you run it through Photomatix it will come out noisier than the original image. Feel free to use high ISO if need be, if you're someone like me who doesn't use a tripod and does handheld HDR. You may need high ISO to prevent the shutter speed dropping too low.
2. Compose your shot. Do everything just as you would normally. Get the settings right for the 0ev exposed image just as if you were taking 1 photo.
3. Put the camera into Av, aperture priority. Don't use Tv, shutter priority because when the camera drops the exposure compensation down to -2 it will alter the aperture not the shutter speed. This will then alter your depth of field, which isn't what you want.
4. Set the camera to AEB. Auto Exposure Bracketing. We want to produce an image with as much detail as possible so set it to +/- 2 stops. What this then means is that your camera will automatically change the exposure compensation after each photo. You take the first at 0, then it drops it down to -2. You take another, it puts it up to +2 and you take the last. Note that on the Nikon system to get +/- 2 stops you need to take 5 images as each image is 1 stop apart.



5. You're all set. Take the photo when you are ready. Just to point out, you will want to take the 3 fairly quickly. If its a landscape you don't want the clouds to move too much between shots. A tip for Canon users is to put the camera into timer mode. I don't know why but in this mode it will take 3 shots automatically. I never use it myself but its a handy feature.

You should now have 3 images. A normally exposed one, an under-exposed one and an over-exposed one. If you find the over-exposed or under-exposed isn't producing the detail you want there is something you can do. On a Canon you can manually change the exposure compensation. You can set it higher or lower to capture more detail. In theory you can use this to capture 7 images for HDR use, if the scene is that contrasted. On a Nikon you just increase the number of photos it takes in the AEB setting, up to 9 can be taken. (top)



## CREATING A HDR IMAGE USING 3 OR MORE RAWs

You've had a nice day out and you have 3 RAWs ready to be ran through a HDR program. When I get in I load all my images into Lightroom. At this point you want the images to be as default as possible. Don't convert them to black and white or process them just yet. The reason is that you'll need to process 3 images when after being run through Photomatix you will only have 1 image to edit. Save processing for later.

There are a few ways of using Lightroom to merge to HDR in Photomatix.

One way is to find your 3 shots and select them. Goto File, Export. I have saved a preset just for HDR. The important bits are;

- File settings
  - TIFF - Compression: None



- Image settings
  - Color Space: sRGB
  - Bit Depth: 16 bits / component
  - Resolution: 300 pixels per inch

Once exported load the images into Photomatix via the Process menu and Generate HDR.

Another way is to select the RAW images and drag them onto Photomatix's icon in the dock on OSX, or the window in Windows. You can do this via Explorer/Finder or Lightroom. Photomatix has good RAW support and will read most RAW files. Drag n drop.

A third way is to use the [Photomatix Plugin for Lightroom](#).

An options box will appear after. Tick align source images, just to be safe. I've never had much success with the reduction of ghosting artifacts so I never use it. Lastly I set the tone curve to "Take tone curve of color profile (recommended)". If you're loading in RAW files you will get some other options. Set the colour space to sRGB, if that's what you use. Keep the white balance on Auto. Click "ok" and your HDR image will be generated. What you will see is the result of the contrast ratio's I mentioned earlier. The image will probably look odd, blown out in places and dark in others. This is to be expected. Remember that a 32bit HDR image's contrast ratio can be incredibly high. Your monitor will only be able to display a minute amount of that. So the next step is to tone map the image, to compress that data down into something usable on screen and prints. ([top](#))



## tone mapping

Tone mapping is the process of converting the tonal values of an image from high to low. So for a HDR image with a contrast ratio of 100,000:1 it will be converted down to have tonal values from 1 to 255. To do this go to HDR, Tone Mapping. This is where the fun starts. A new window will open and you should now see something a little more normal looking. There are lots of options for tone mapping so I'll walk you through them.

- Strength: This controls the strength of the contrast enhancements, both locally and globally.
- Colour Saturation: Controls the saturation of colour in the image. I wouldn't use this to create a black and white HDR image.
- Light Smoothing: Controls smoothing of light variations throughout the image. I always leave this on high. If you set it to low you can have halos around objects, and the image may look unusual.
- Luminosity: Controls the compression of the tonal range, which has the effect of adjusting the global luminosity level. Basically a positive value increases shadow detail and brightens the image. A negative value gives a more natural feel to the image.

Below these options is a box with four tabs. Tone, colour, micro and shadows / highlights adjustments.

- Tone Adjustments;
  - White & Black point: Remember how I said tone mapping compresses the image down from a high contrast ratio to tonal range of 1 to 255? These options control the clipping of those luminance values. Moving them to the right clips the image, making the image more contrasted. However you have to watch that you don't clip the highlights too much to create over-exposed areas.
  - Gamma: This adjusts the mid-tone of the image, making the image brighter or darker.
- Colour adjustments;
  - Colour temperature: This is similar to white balance. Moving it to the right makes the image warmer, and to the left makes it colder. This can be useful for sunset images. Sometimes Photomatix will create images that are too warm to the point of looking wrong.
  - Saturation highlights & shadows: Adjusts the colour saturation relative to the colour saturation slider. Right to increase, left to decrease.
- Micro adjustments;
  - Micro-contrast: Sets the level of accentuation of local details. This can appear to make the image a little more contrasted.
  - Micro-smoothing: Smooths out the local detail enhancements. This can reduce noise and produce a more natural looking image. If you feel the image looks too fake, you can use this to produce an image similar to what you may get with exposure blending.
- Shadows / Highlights adjustments;
  - Highlights smoothing: Reduces the contrast enhancements in the highlights. This is useful to prevent highlights turning grey, and can reduce halos around objects.
  - Shadows smoothing: Reduces the contrast enhancements in the shadows.
  - Shadow clipping: Controls the clipping of the shadows. Handy for reducing noise in dark areas of an image taken in low-light.

That's a quick run through of the settings. There is also the "Tone Compressor" option. Personally I never use this, but from the times I've had a look at it, it can produce images that are more realistic looking than fine art. Its good if you want a solid well exposed image with detail in the shadows and highlights.

Now all these settings can cause confusion. What exactly is local contrast or local detail enhancements? I feel that this falls outside the scope of this tutorial. So instead of explain what they are I will demonstrate various settings in Photomatix. That way you can see what happens and decide for yourself what you like and have a play.

These settings are pretty much my favourite. Strength 75%. Colour saturation 60%. Light smoothing, very high. Luminosity +5. White point set to 10, black to 3.35. However the white and black points can easily be adjusted in Photoshop. Gamma is 0.85. Temperature set to 0 unless it looks off and then adjusted to correct colour issues. Micro-contrast 0. Micro-smoothing +2. Highlights smoothing 0. Shadows smoothing 0. Shadows clipping 0. That, for me is a nice image. I would then put it into Photoshop and tweak some more.

(See image next page)



You can take it further. This is what you get by maxing out the settings. Strength 100, luminosity +10. Micro-contrast +10. Micro-smoothing 0. (See image below)



If you feel this is too dramatic, too far removed from a normal photo you can tone it down. Strength 75. Colour saturation 65. Luminosity 0. Micro-smoothing 20. (See image below)



This next image shows why, in my opinion, you shouldn't set light smoothing lower than very high. Its a dramatically different image. It seems quite plastic in a way. The sky is odd and there are halos around the buildings. Basically the light is really harsh, and it appears like the local contrast has been turned up quite high. For me, I use HDR techniques to create images that remind me of the scene I saw, that allow others to see it as I did. I can't imagine ever seeing a sunset in this way, and if I did I would probably be visiting the opticians the next day.

(See image next page)



The next image shows what happens if you drop the luminosity to -10. Keeping the settings from the first image here and light smoothing is still set to very high. You can see that the light isn't smooth. There are blown out areas and lots more shadow. Seems to go against the point of HDR. (See image below)



The final image is a combination of luminosity set to -10 and light smoothing set to very low. I have seen this sort of image on Flickr and imho I don't like it. There are massive problems with the image. Halos around everything. The clouds look odd. The whole image just looks horrendous. I just don't see it as a decent representation of what you saw, unless you're tripping while you go out taking photos.



So the settings here should allow you to create nicely exposed images, be creative and produce fine art images that evoke feelings in the viewer, or go completely nuts. One thing to note. When you save the image basic EXIF information is saved. Camera, aperture, ISO, focal length. A trick I use to put all that data back in is to open the original 0EV exposure in Photoshop using Lightroom. Lightroom will create a PSD and open it in Photoshop. I open the tone mapped JPG and copy it into the PSD, then save. Any work I then do on the image will retain the full EXIF information. Once that's done you can process the photo as you see fit. Convert it to black and white, cross processing, adjust the levels, etc. ([top](#))

## tone mapping with 1 RAW

So now you have an understanding of 3 RAWs, 1 RAW isn't too different. Its only really the initial step that's different. In Lightroom I select the 0EV image and duplicate it 2 times. Then I select the 2nd image and drop the exposure down by 2 stops. I select the 3rd and increase the exposure by 2 stops. This gives me the 3 images I need. Using the HDR export preset I previously mentioned I export those images. That's the only different part. I load the images into Photomatix just as I would 3 16Bit TIFFs from 3 RAW files. Photomatix detects the EXIF information is the same and gives me a set of options. 8/10 times it will get the exposure values right. Sometimes it doesn't so I select the bracketing used from the drop down, 2 stops. I tone map the image the same way and save it for Photoshop.

As Photomatix has great RAW support there is a quicker way. You can simply drop the RAW file into Photomatix and it will generate the HDR for you. You'll need to set the white balance to "As shot" and the colour space to "sRGB" but apart from that you're good to go.

Just to reiterate the point I made earlier. Doing this isn't technically creating a HDR image. Essentially its getting round limitations in current RAW editors. This method proves just how much data a RAW file contains. However in a RAW editor the only real options you get is exposure control, fill light and recovery. It's a great feature if you've under-exposed an image. You can rescue the image. What if you want to bring back detail in the shadows without blowing out the highlights? You can use Photomatix to accomplish this. Its not HDR, but then once you compress a HDR image down to an 8bit JPG thats not HDR either. So you its swings and roundabouts really. If you like the effect, go for it.



This is a side by side comparison of 1 RAW vs 3 RAWs. See if you can spot the difference. The left is the 1 RAW and the right is the 3.



Its easier to see the difference at 100% crop. The 1 RAW has more noise in the shadow areas, but other than that they are pretty close. (top)



## ISSUES WITH TONE MAPPING

The main issue is noise. You can use the shadows and highlights smoothing option in Photomatix to smooth out some of the noise, then clean up the remaining in Photoshop. Generally its best not to use high ISO. Anything over 400 will be incredibly noisy. As noise handling on cameras gets better this will become less of an issue. Right now however, if you need to increase the ISO think about using a tripod instead so you don't have to. Another problem is that sometimes Photomatix can create patches of light and dark. I am unsure as to why this occurs but with careful dodging and burning in Photoshop it can be fixed. Halo effects around buildings and people can occur too. This can also be fixed with the highlight smoothing, or adjusting the luminosity. For some reason whites can turn grey. Fluffy white clouds can become fluffy grey clouds. They can also become too saturated, along with some other colours. Highlight smoothing can sometimes fix this, or there's creative de-saturation in Photoshop. (top)

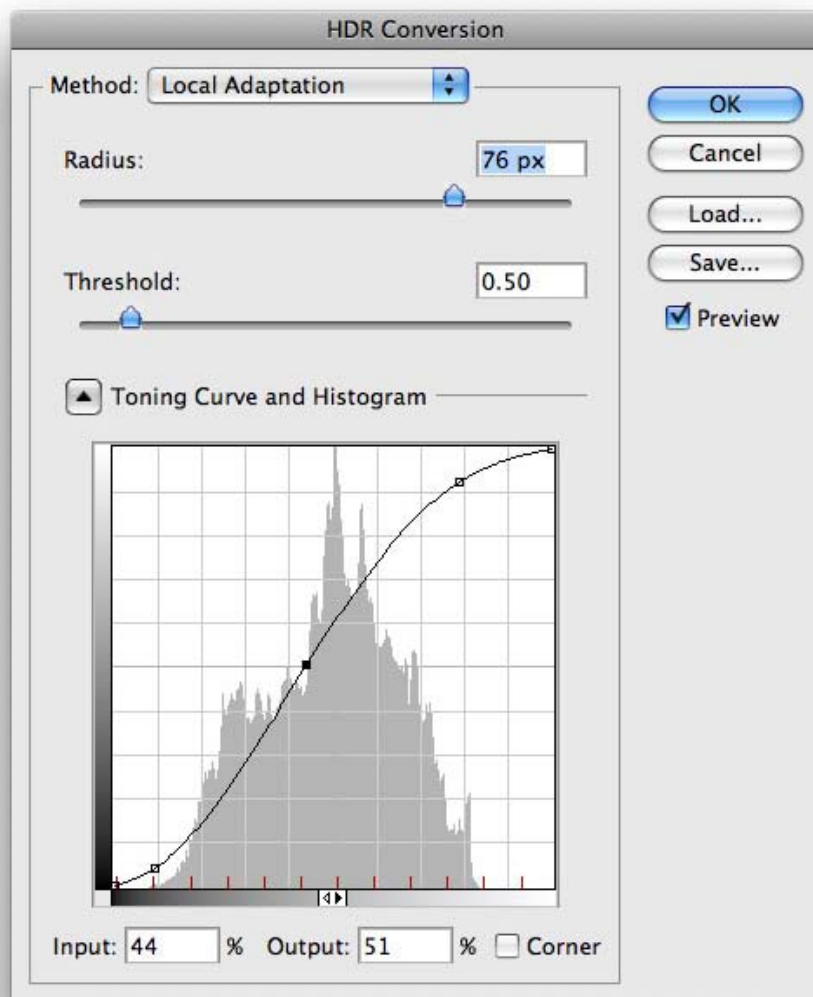
## TIPS FOR GOOD HDR

The most obvious tip is to take a good photo first. HDR processing won't rescue a bad photo any more than converting it to black and white. Wait for good light, shoot in the golden hour just before sunset. Don't be afraid to use an ND grad. HDR is all about bringing detail out of an image. Using an ND grad filter will give you even more detail. Use a tripod to reduce camera shake between shots if you're getting that. If you have a camera capable of shooting at more than 5fps you can capture the 3 images without a tripod if you are careful. (top)

## PHOTOSHOP TUTORIAL USING LIGHTROOM

Doing HDR with Photoshop and Lightroom is very easy. In Lightroom you simply select the images you want to merge, they have to be RAW files, and then right click goto "Edit" then "Merge to HDR in Photoshop". It will load the images in and present you with a window. It will then display the image on screen so you can adjust the histogram to make sure the image isn't overly dark or too blown out. When its finished you'll get the 32bit HDR file. To make it usable you need to tone map it. Go to Image -> Mode -> 16 or 8 bit and it will bring up another dialog box. From the drop down select "Local Adaption." Using this you can tweak the levels in the image. You have to be careful as it can cause the image to look horrible. Too high a threshold and you will create halos.





The end result will be a well balanced image that you can further edit in Photoshop. The results are quite natural looking and don't feature any of the extreme looks that a lot of HDR images do. The first image here is the unedited one straight out of Photoshop. Its the bland HDR.



Its not bad but its not great either. Its better than the original thats for sure. So you save this and its automatically loaded back into Lightroom for editing. After a few minutes editing you can get something like this. (top)



## FDR TOOLS

**FDR Tools** seems more complex than Photomatix at first glance, but it isn't really that complex. The interface is a little odd as its just a bunch of windows floating around. So you can directly open 3 RAWs into it, just as Photomatix. Its got a nice alignment tool for tweaking if it gets things slightly wrong. Generally it seems ok though. Once its aligned the images you click on the "Tone mapping" button and can tweak the settings. This is where I ran into a problem. There aren't that many settings. I set it to "compressor" and was able to get a similar result to Photomatix however there was some oddness in the sky. Its like the clouds have been embossed. I used the following settings;

- Compression: 10
- Contrast: 6.1
- Smoothing: 10
- Gamma: 1.00
- Saturation: 1.88



I also clipped the levels a bit. It just wasn't able to produce the results that I like from Photomatix though. I went back to the HDR option and started playing. I found adjusting the "Shadows" slider did remove the emboss effect in the clouds. This is the beauty of FDR Tools. With Photomatix its a case of letting it run and it makes a HDRI, then you tone map. With FDR Tools you can swap back and forth tweaking either. You can adjust the HDR settings, then tweak the tone mapping to compensate, just as I did.

- Shadows: 8
- Highlights: 9
- Balance: 4.5

So with those settings I went back to the tone mapping option and bumped the contrast up to 10. Now I was closer to Photomatix. The only real issue was that it was fairly noisy. More so than Photomatix. Another issue I have is that it takes a very long time to save the image. A good few minutes.



The most interesting feature in FDR Tools though is the dynamic range information. It can give you the contrast ratio of the image and the dynamic range of it. I am unsure as to whether its measured in stops though. ([top](#))

- Played with it, can't make it produce results I like
- Prefer Photomatix

## CONCLUSION

Is HDR the future? It seems logical. Modern DSLRs are now moving from 12bit sensors to 14bit. Medium format digital cameras are already on 16bit. One day I'm sure we will have cameras capable of shooting in 32bit. Obviously we will still have to tone map them if printed. For me HDR is about capturing a scene as I remember it and then processing it to allow the viewer to see, and feel things as I did. If I see a fantastic looking building with stunning light I can use HDR to grab as much detail as possible from that scene. I'll tone map it in a certain way to create a dramatic image, and use Photoshop to finalise that image. My aim is to make the person looking at the image go "Wow" just as I did when I was there. For others HDR can simply be about creating a more balanced exposure. It can be very handy for architectural photographers to allow them to shoot interiors without losing detail in the highlights. The software is out there right now. You can increase your camera's dynamic range very easily, and cheaply. I don't see HDR as a fad that will go away in 6 months. Its been around for over 10 years now and will continue to be developed. I will continue to use it in my photography both commercially and with fine art. Photography is all about capturing light. HDR just gives you more to play with. ([top](#))

## FAQ

- [Dynamic Range](#)
- [HDR Photography](#)
- [Gear](#)
- [Photographic Techniques](#)
- [Software options and settings](#)

## DYNAMIC RANGE

What is dynamic range?

Dynamic range is simply the ratio between the smallest and largest possible values of a changeable quantity. In photography it is the amount of light your camera can capture, and its measured by a contrast ratio.

### What is a contrast ratio?

A contrast ratio is defined as the ratio of the luminance of the brightest colour (white) to that of the darkest colour (black) that the system is capable of producing. Paper, monitors, cameras, cameras lcd's, your eyes are all governed by a limited contrast ratio.

### Why does it affect your photos?

Your camera will have a limited dynamic range and as such will only be able to capture a set amount of detail. Hence silhouettes at sunset. Sunset is too bright and little light on certain areas, the result is a dynamic range greater than your camera.

### What is the dynamic range of your camera?

It varies. A DSLR will have a greater dynamic range than a digital compact in general, and a digital compact will have a greater one than a mobile phone. Essentially it'll have a contrast ratio around 400:1.

### What is the dynamic range of a sunny day?

On average a sunny day will have a dynamic range of around 100,000:1.

### What is the dynamic range of your eye?

The dynamic range of the human eye has been estimated to be around 10,000:1.

(top)

## HDR PHOTOGRAPHY

### What does HDR mean?

HDR stands for High Dynamic Range.

### What is LDR?

LDR stands for Low Dynamic Range. A standard 8bit JPG is an LDR image, even after it has been tone mapped.

### What does HDR software do?

HDR software allows us to merge exposures together to create images with a high dynamic range, above what the camera is normally capable of.

### Why do we need it?

Cameras are limited to a fixed dynamic range so they can only capture so much detail in a scene, in the shadows and highlights. HDR allows you to take photos for the various levels of light and put them together with amazing results.

### What makes a good HDR subject?

High contrast scenes like sunsets. Old buildings, cityscapes, gritty industrial areas all make for good scenes.

### How is it done?

Simply you take 3 or more photos using AEB and merge them together to a HDR image. Then you tone map the HDR image which compresses the tones from 32bit down to 8bit so you can use it normally.

### What should I avoid when using HDR?

Avoid shooting directly into the sun as you may end up with a large over-exposed area that doesn't work well in your photo. Avoid camera shake between exposures too.

### Will the image print like a normal photo?

After the tone mapping process you can print it like any other photo.

### Can I use HDR to rescue poorly exposed images?

Ideally you want to make sure that you get a good exposure at the scene. If you shoot RAW you can rescue a poorly exposed image. HDR isn't really designed for that.

### Will HDR fix a blown out sky?

If the detail is there to be rescued it can be brought back with HDR.

### Whats the difference between HDR and tone mapping?

HDR generation is the process of combining various exposures together to create a 32bit HDR image. The image will have a higher contrast ratio to that of your monitor and of paper so you then need to tone map it. Tone mapping is the process of compressing the data down from 32bit to 8 or 16bit so it can be edited, displayed and printed.

(top)

## GEAR

### Can a digital compact do HDR?

As long as it has manual mode or AEB you can do it.

### What is a good lens for HDR?

There is no one good lens for HDR. It depends on what you are planning to photograph.

### What specialist equipment do I need to do HDR?

Ideally you need a camera that can do AEB, but realistically as long as you can alter the exposure you can do it with any camera.

### Can I use filters and still do HDR?

Yes. You can use a ND grad, a circular polarizer or even an Infrared filter.

### Do you need a tripod?

If your camera has a high FPS (frames per second) you may be able to get away with that. But if you absolutely want to reduce camera shake you're best using a tripod.

### What is a good FPS to have?

Ideally 5 or above is good for handheld HDR.

### Do you need a remote release?

They can help reduce camera shake between photos.

(top)

## PHOTOGRAPHIC TECHNIQUES

### What is AEB?

AEB stands for Auto Bracket Exposure. It is a camera feature that automatically adjusts the exposure after each photo.

### How do I bracket if I can't do it automatically?

You can manually adjust the exposure up and down after each photo with exposure compensation or in manual mode.

### Do I need to always do 1 or 2 stops over and under?

2 stops is a number that works for many people. You may find smoother results with more images spaced 1 stop apart. Ideally you want a wide range, hence 2 stops either way.

### Should I vary shutter speed, aperture or ISO to change the exposure?

You only want to alter the shutter speed. If you alter the aperture your depth of field will change. If you alter the ISO the noise will change in the image.

### Is HDR designed to replace a good exposure in a single shot?

No. HDR is designed to give you more detail in your image. What you do with that detail is up to you.

### How do you get great skies?

Ideally you want great light, so shoot during the golden hour with a wide angle lens to capture the whole scene.

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## SOFTWARE OPTIONS AND SETTINGS

### What software do you need?

Photomatix is the program of choice. There are others such as FDRTools, Artizen HDR and Photoshop.

### Does making a HDR image reduce the image quality?

Not really no. If your source images have camera shake you may find that they don't merge correctly resulting in ghosting.

### Is JPG ok or do you need RAW?

RAW makes things easier as it retains more detail than JPG, but it is possible with JPG.

### Can I make HDR images without paying for specialist software?

Yes. There are free HDR programs available. Otpfsgui is available.

### Can you edit a HDR image as a normal photo?

Yes. Once the HDR has been tone mapped you can save it as a normal 8 bit JPG and load that into your favourite image editor.

### Can you do HDR from a single JPG?

No. A JPG doesn't have any real range to increase. You can tone map it for effect but the result will likely be pretty bad. It would increase the noise level and in all likelihood create areas of varying exposure. Essentially you're trying to compress the tonal range of an already compressed image.

### Can you use masks to part HDR an image?

HDR software isn't that sophisticated. You could create a HDR image and use masks to combine it with the original.

### Can I do a HDR panoramic?

Yes. Take the images, HDR and tone map them then align the result as a panorama.

### Can I HDR a black and white photo?

In a way. You are best creating the HDR image and then converting it to black and white after tone mapping.

### Can I make a realistic HDR?

Yes. If you increase the micro-smoothing option, set the luminosity to 0 and lower the strength you can produce realistic looking HDR images.

### Can I make a HDR photo from a single photo?

Technically a HDR from a single photo isn't a HDR image because there is no increase in dynamic range. However, you can use a single RAW to create a HDR image and then tone map it to bring out more detail in the scene as RAW is able to store a lot of detail in it.

### Why does the HDR image look unrealistic or plasticity?

If you set the light smoothing to low you can end up with very strange and bizarre results. If you set it to very high you will get something more normal looking.

### Is it better to save the HDR as a JPG or TIFF?

A TIFF file won't lose detail due to compression after each save, a JPG will. Whether you notice it is a different matter. If you are happy with JPG then use that.

### How do you reduce noise?

It is best to shoot at a low ISO to reduce the initial noise. After that you can use a noise reduction program such as Noiseware to help.  
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## EXTERNAL LINKS

- [Talk Photography](#) – Forum for photography discussion
- [Flickr HDR Group](#)
- [Luminous Landscape Photoshop HDR Tutorial](#)
- [High Dynamic Range Workshop](#)
- [How to create professional HDR images using Photoshop](#)
- [The Definitive Guide to Realistic High Dynamic Range Images](#)
- [How to Create High Dynamic Range Images](#)
- [Modern HDR photography, a how-to or Saturday morning relaxation](#)
- [NatureScapes: The HDR Landscapes Tutorial](#)
- [Stuck in customs](#)

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