

# Writing mental ray shaders

by Andy Kopra

*Introduction*

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Image



Czar's Waiting Room, Main Railway Station, Helsinki (Eliel Saarinen, 1910, watercolor)

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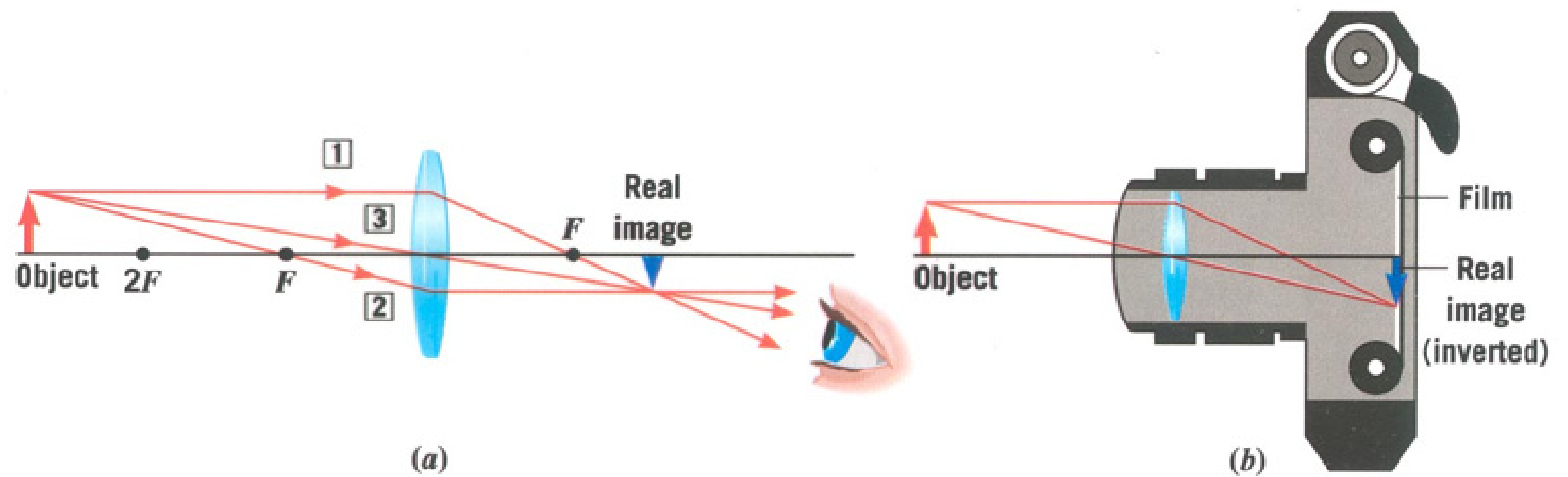
- Lighting and atmospheric environment

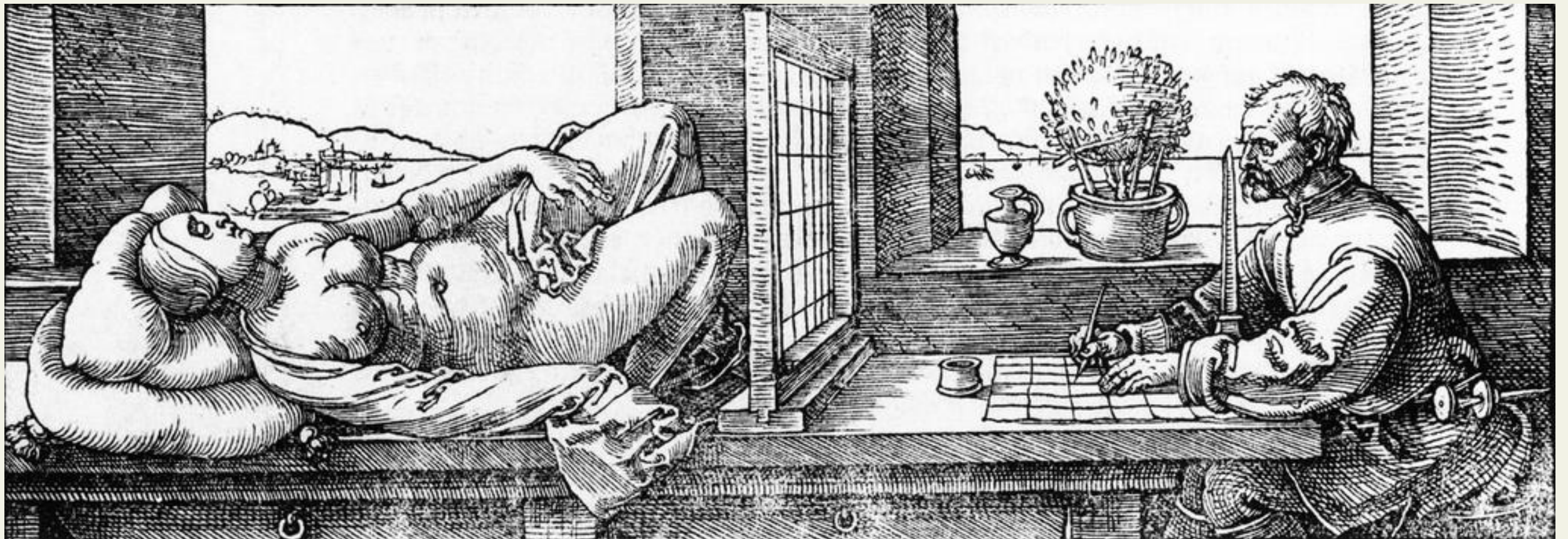
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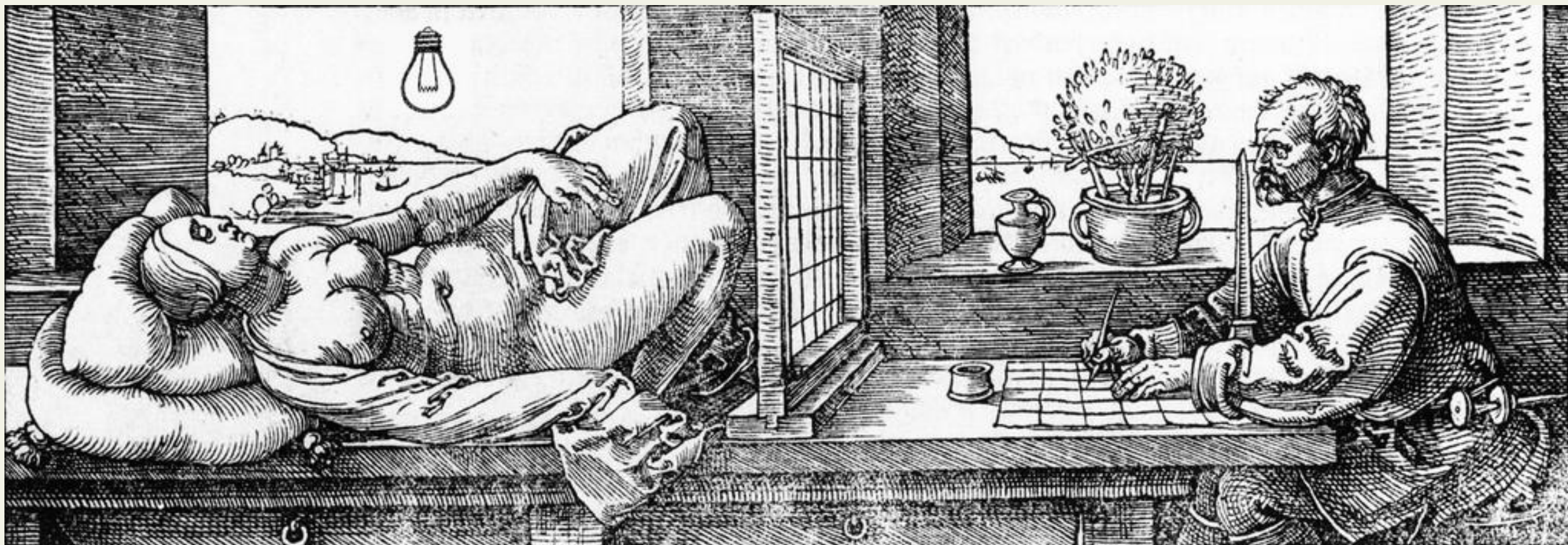
- Output image specifications





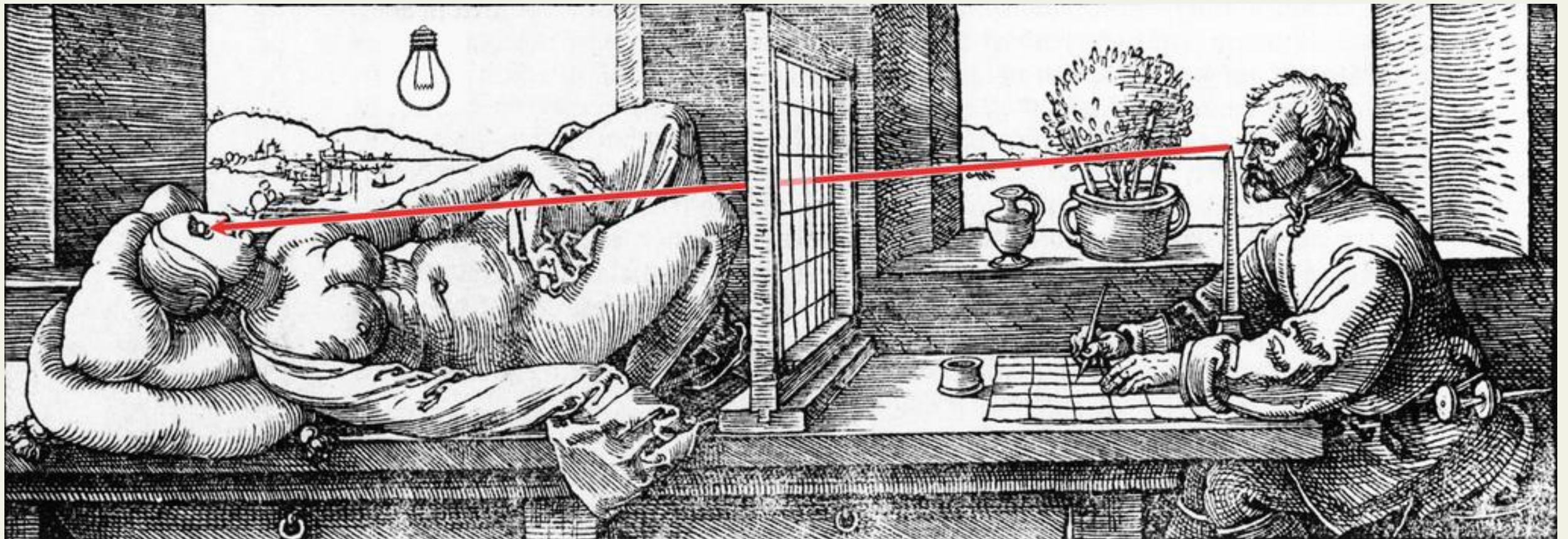
Draughtsman Drawing a Recumbent Woman (Albrecht Durer, 1525, woodcut)





A light illuminates the scene





An observer samples the illuminated scene

*mental ray*



```
graph BT; shaders[shaders] --> mental_ray[mental ray];
```

*mental ray*

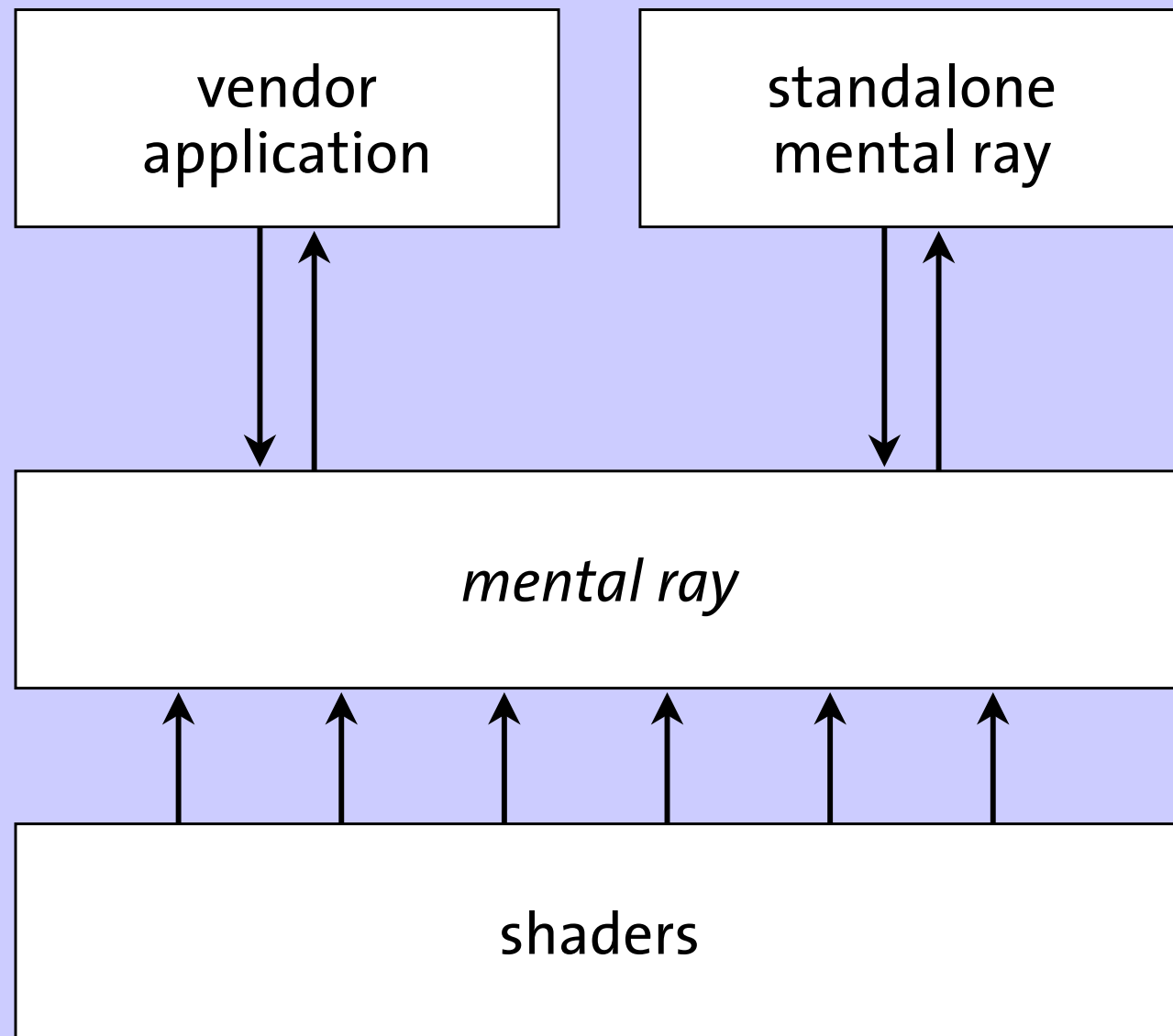
shaders

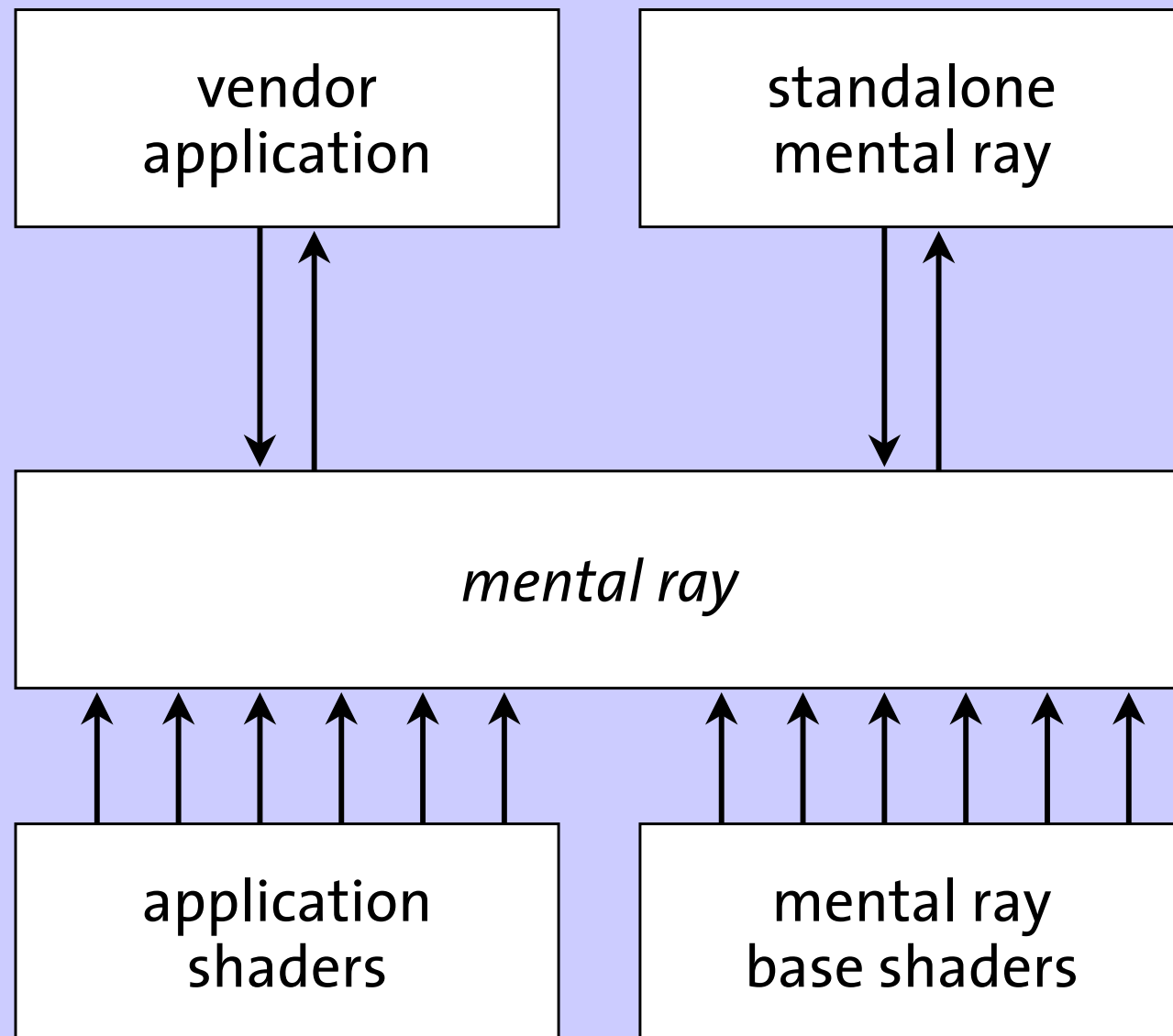
vendor  
application

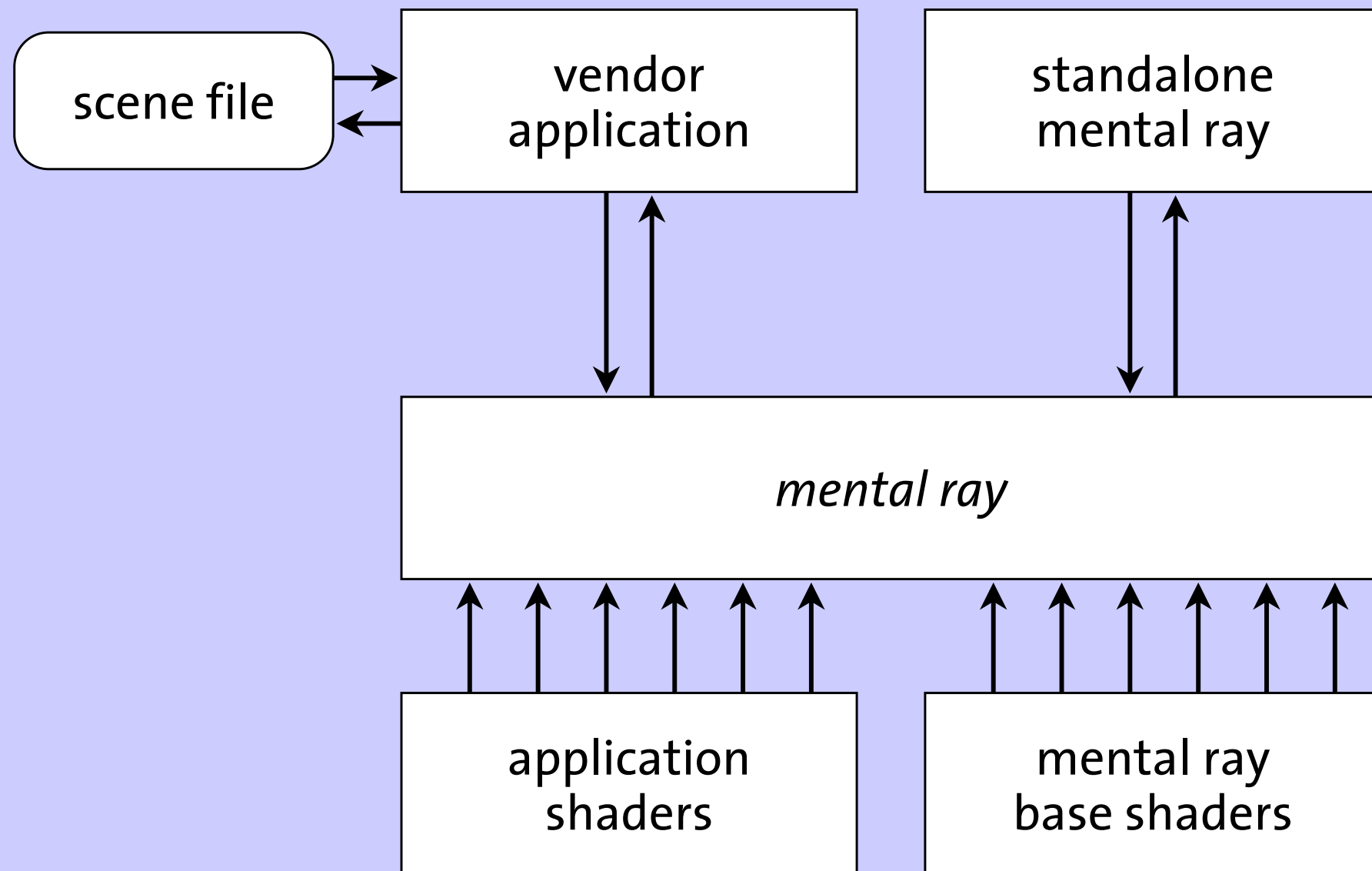
*mental ray*

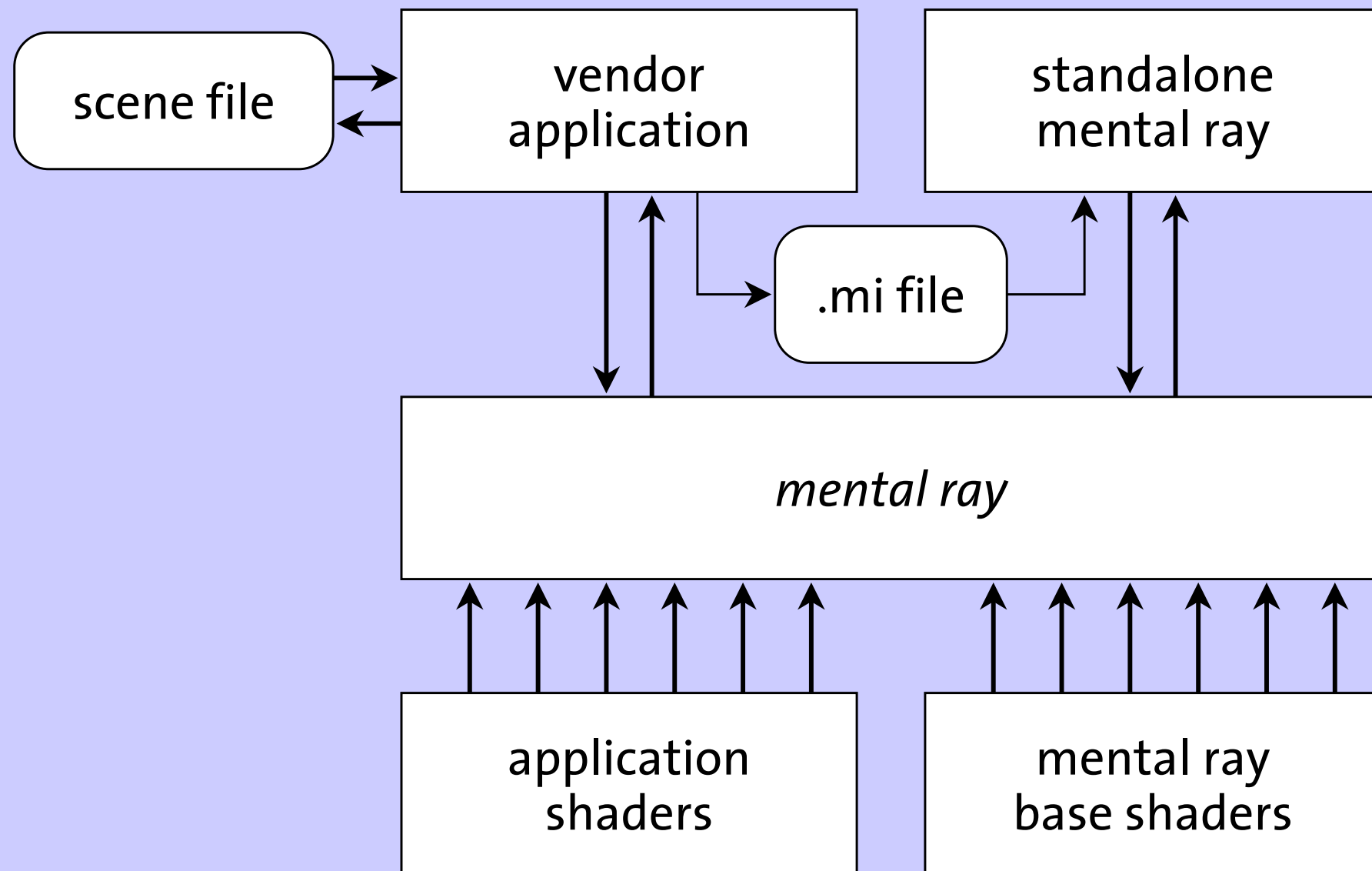
shaders

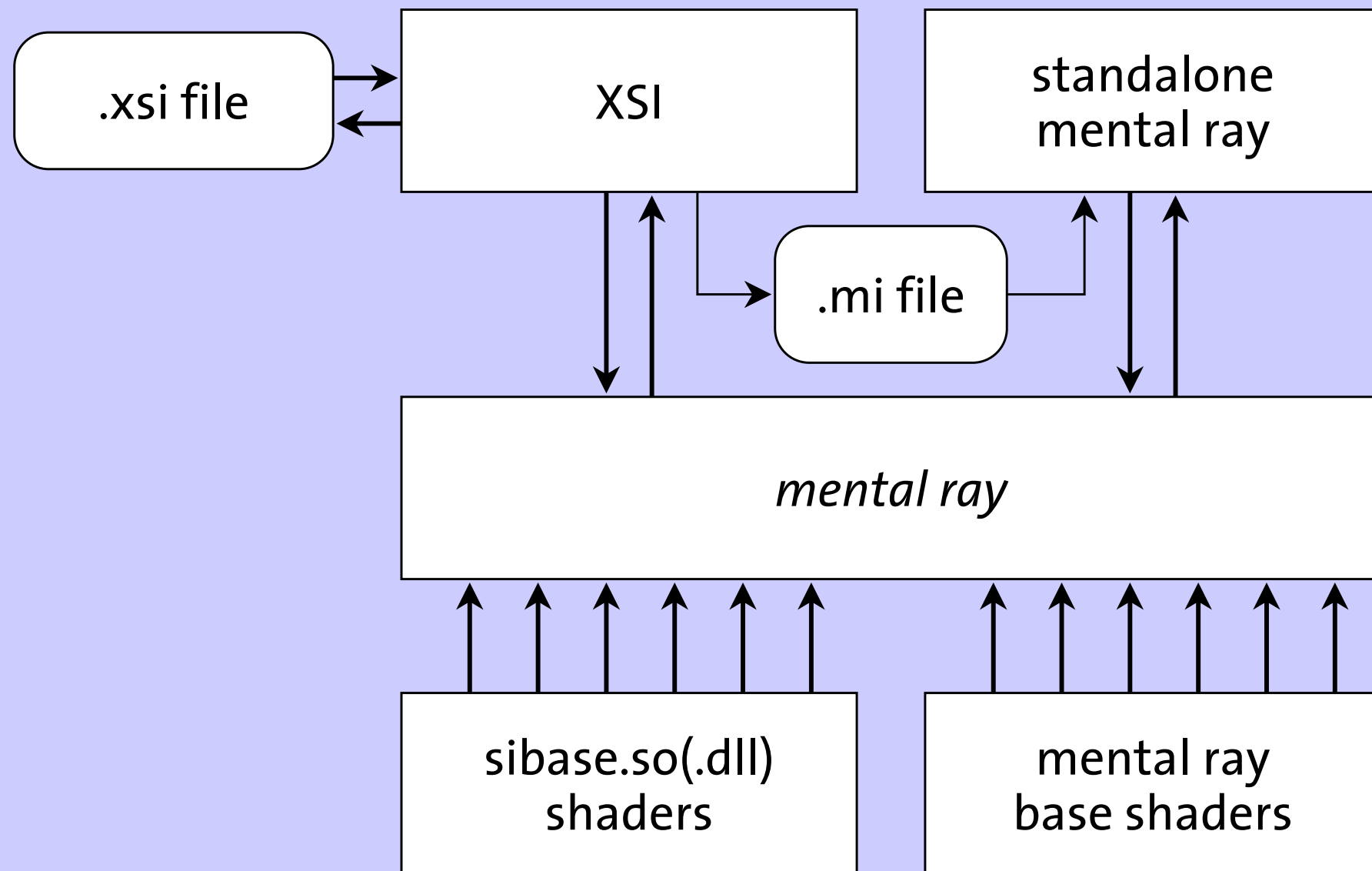


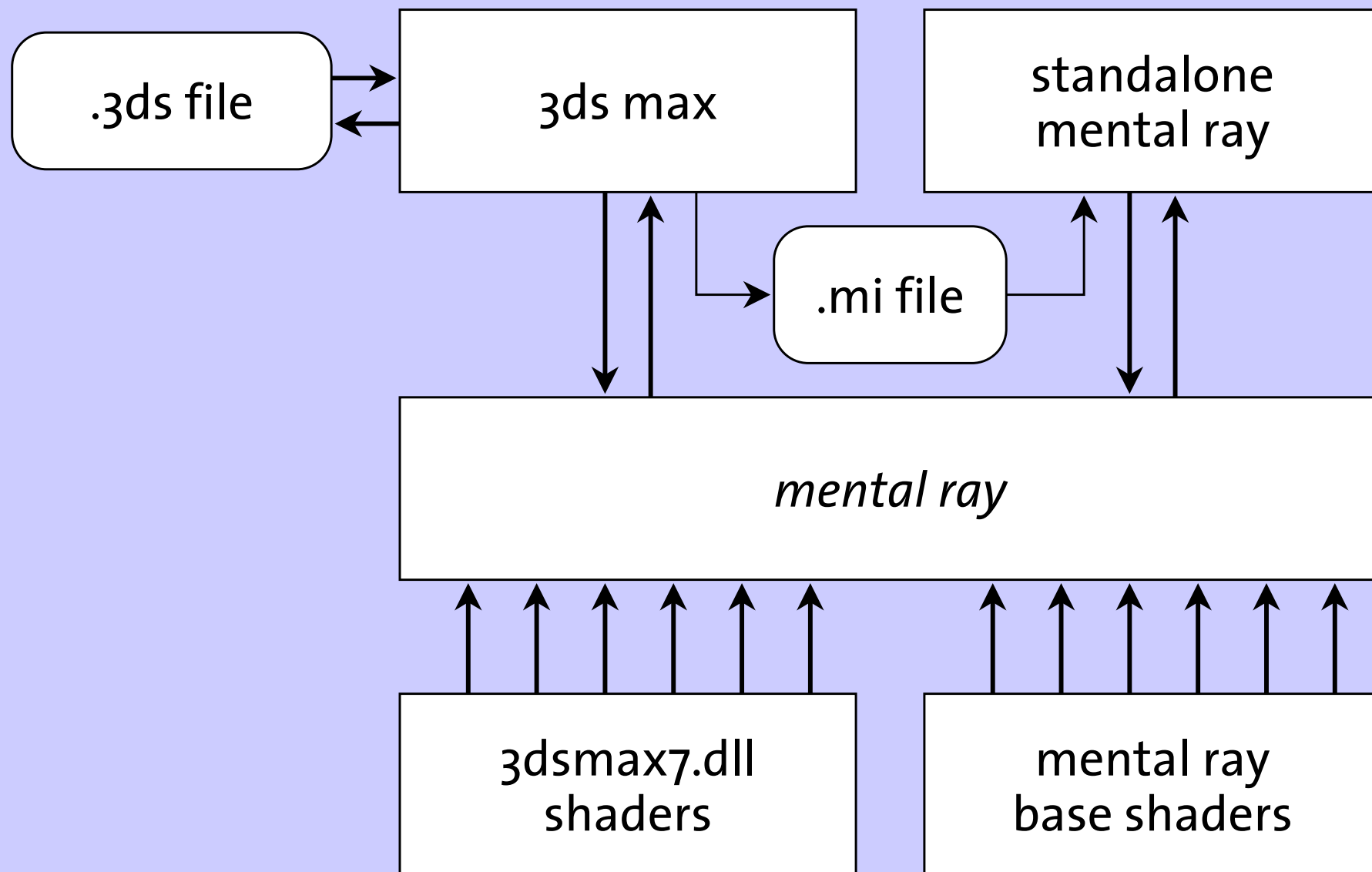




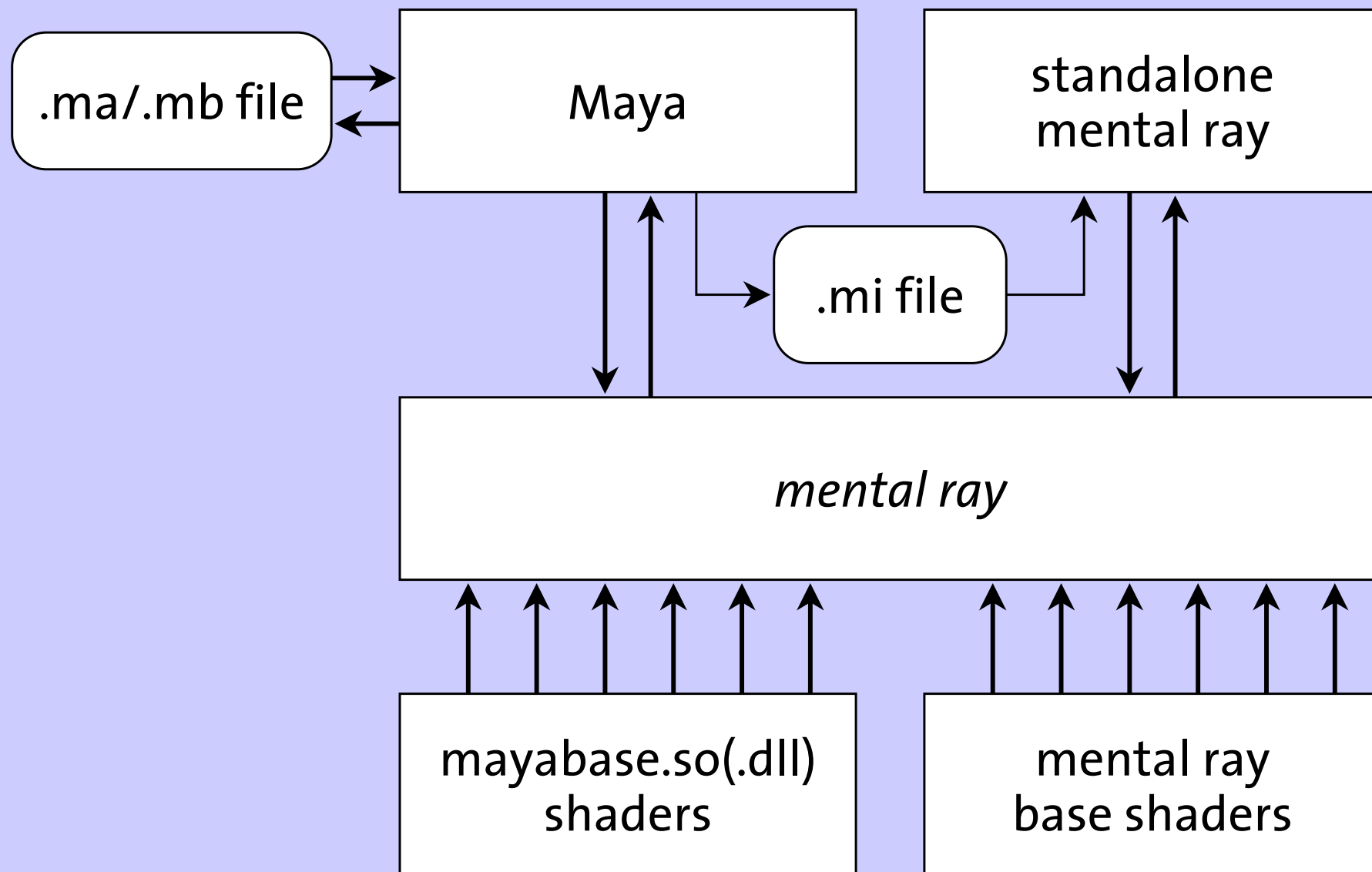


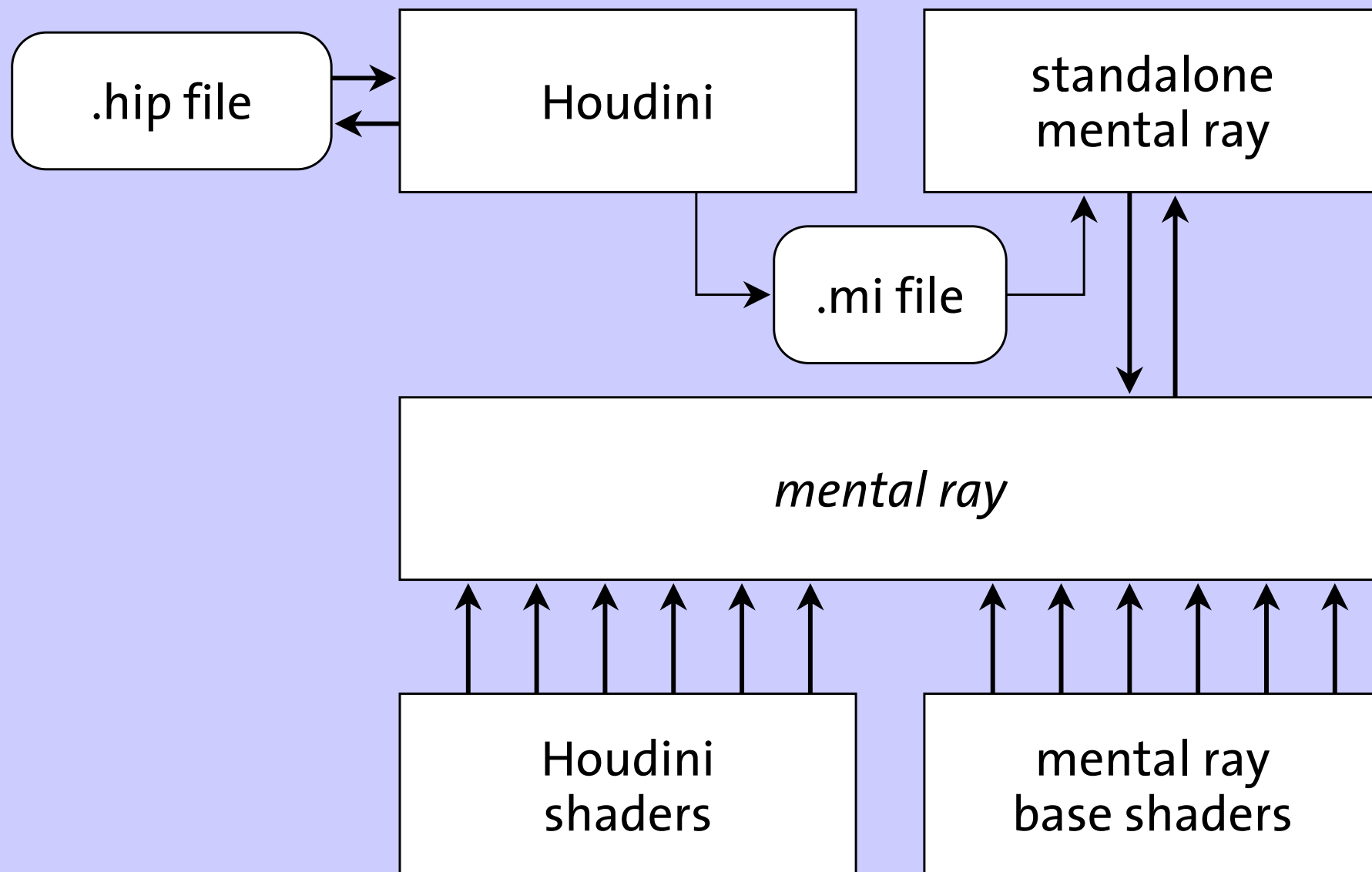


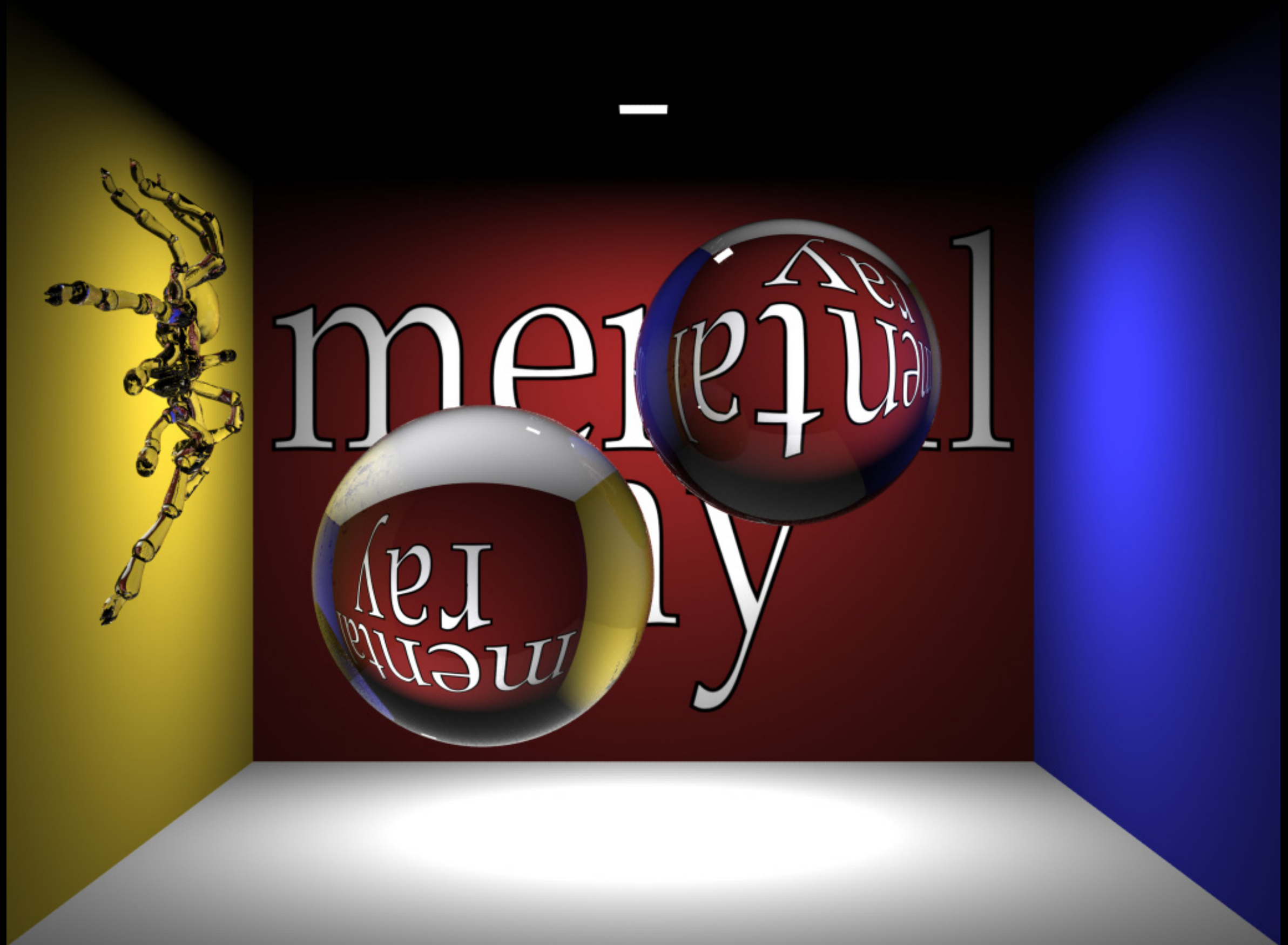












ray intro.mi



ray -shadow on intro.mi





ray -shadow on -globillum on intro.mi



ray -shadow on -globillum on -caustic on intro.mi



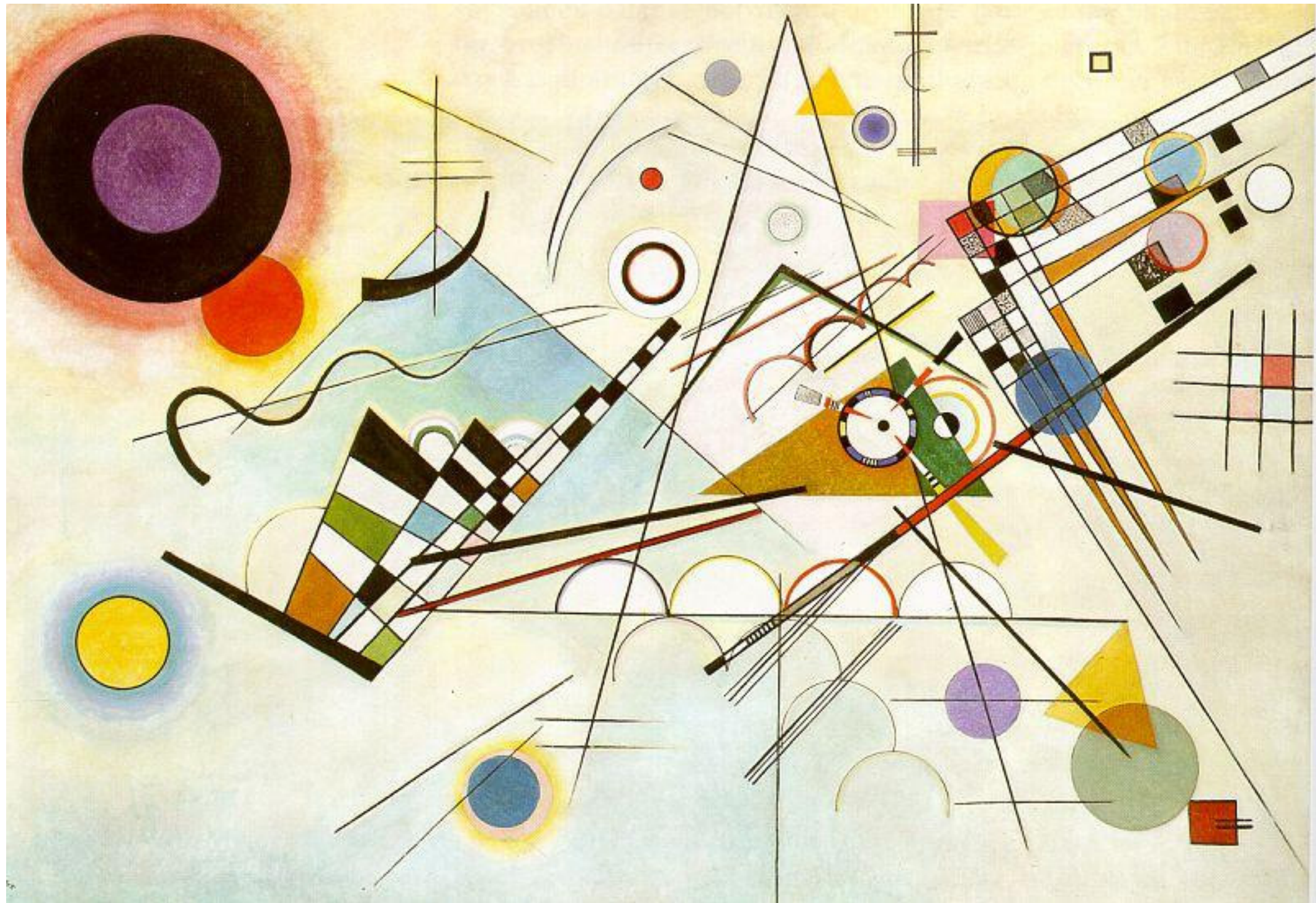


ray -shadow on -globillum on -caustic on -volume on intro.mi

## ***Exercise 1: Rendering and displaying a scene***

1. In a terminal window (Command Prompt in Windows, the Terminal app in OS X, or a shell in Linux), go the `MRT/scenes` directory.
2. From the command line, check version: `ray -version`
3. Check licensing status: `ray -v` and exit by entering `<control>-C`.
4. Render the scene: `ray intro.mi`
5. View the rendered scene: `imf_disp intro.tif &`
6. Render: `ray intro.mi -shadow on`
7. Render: `ray intro.mi -shadow on -caustic on`
8. Render: `ray intro.mi -shadow on -caustic on -globillum on -volume on`
9. Find `verbose on` statement in `intro.mi`, equivalent to `-v 5`
10. Increase debugging information: `ray -v 6 intro.mi`





Composition VIII (Wassily Kandinsky, 1923, oil)



