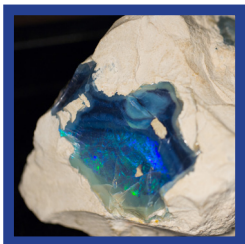


# Gemmology Today

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Karma  
Karma



# OPAL challenge

## Grading the ungradable

While the identification of opal, compared to Fei Cui is relatively straightforward (even considering the presence of lab-created opal in the market), the same can not be said for opal grading.

It is curious that a gemstone that is so entrenched in the gem industry would still not have a recognized grading system. Many have tried, most notably Paul Downing, and yet we are still faced with a gemstone that is not only tricky to grade but also, like Fei Cui, almost impossible to price.

In this article, we will look at two systems, one developed by Gemworld International and the other by Paul Downing. Having taught both systems, I can say that they at least help in understanding the complexities of opal and more importantly reinforce which characteristics have a more profound effect on value and which do not.

### GEMWORLD INTERNATIONAL

From a grading perspective, this system is very easy to use and is based on five factors:

- Brightness
- Colour
- Fire Pattern
- Colour Layer
- Directionality

Each factor is scored from 1 to 10. To assign a final grade for the opal, the base score must first be calculated by adding the individual scores together and then dividing by five to arrive at the average score.

Adjustments are then made based on certain characteristics to arrive at a 'Final Score'. This score is then used to determine the quality of the opal using GemGuide (Commercial, Good, Fine and Extra Fine) based on the opal type, and the carat weight.

### Brightness

Brightness is evaluated based on six categories:

Brilliant - 9 to 10

Very Bright - 7 to 8

Bright - 5 to 6

Moderate - 3 to 4

Dull - 2

Very Dull - 1

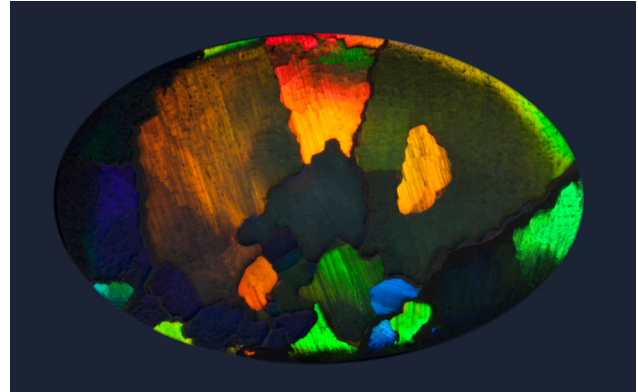
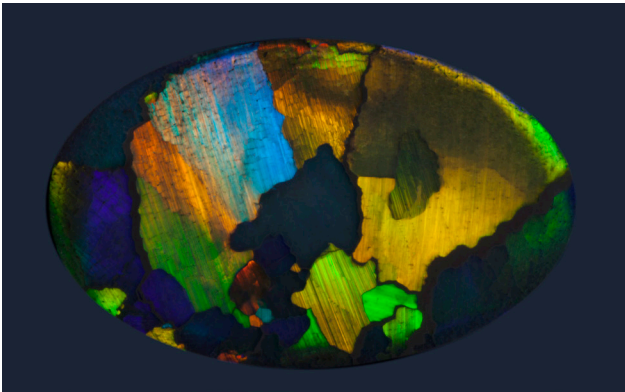
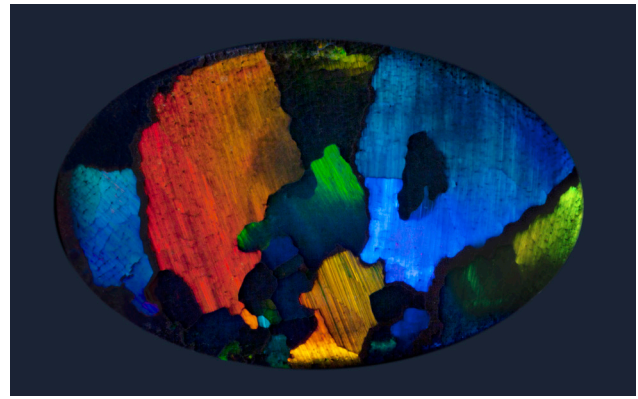
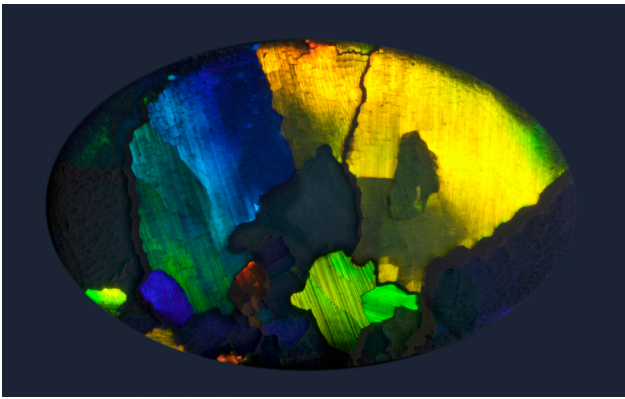
While it is easy to determine the extremes of these six categories, settling on a mid-range score (moderate to bright or bright to very bright) requires considerable experience working with opals. As with any grading of gemstones, the more experience and practice you can gain, the more consistent and accurate your grading will be. Having pre-graded samples can really help to ensure consistency.

### Colour

Red-Blue multi-colour (representing both extremes of the spectrum) and Red multi-colour are considered the most desirable (9 to 10), followed by multi-colour, Orange-Red, Red only or Orange Green (7 to 8), then Green-Orange or Green Blue (5 to 6) and finally Blue-Green, Green only or Blue only (1 to 4).

The biggest challenge here is assessing which colours are the most dominant, and define the overall colour of the opal. As we can see from the images on the next page by Robert Smith, the position of the stone in relation to the light can produce many different variations. Grading should be done against a dark background and with a daylight equivalent lamp.





Black Opal from Lightning Ridge (Photographed with Different Lighting Positions)  
(All Photos by R. Smith)

### Fire Pattern

The Gemworld International system consists of four categories, namely:

Harlequin or Flagstone (9 – 10)

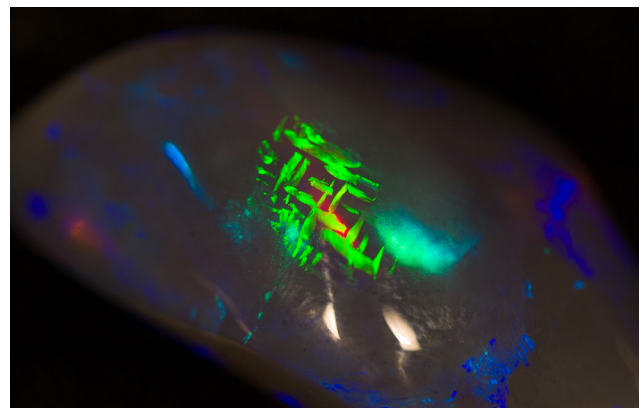
Rolling Flash or Broad Flash (7 – 8)

Floral or Pinfire (5 – 6)

Poorly Defined (1 – 4)

This particular grading characteristic is very difficult for students and even seasoned professionals to assess because of the infinite array of fire patterns available. While harlequin, flagstone, broad flash and pinfire are quite distinctive, the floral category is not. The 'Chinese Writing' fire pattern to the right would be categorized as a 'Rare Pattern' but how would you establish the value?

In the image at the bottom right, what fire patterns would you use to describe the different opals? Could you fit them into these four broad categories?



Chinese Writing Pattern (Top)  
Assorted Black Opals (Bottom)  
(Courtesy of Down to Earth Opals - Photo by Tino Hammid)

## Colour Layer

Colour layer is far easier to determine since it is the ratio of play of colour to potch and is classified as:

80% to 100% play of colour to potch (9 – 10)

60% to 80% play of colour to potch (7 – 8)

40% to 60% play of colour to potch (5 – 6)

## Directionality

The importance of directionality depends on what type of jewellery the opal will be set in. For a ring stone, directionality is very important, whereas for a pendant stone, it is not as critical. Like colour layer, directionality is classified into four categories and is based on a 360 degree rotation:

No extinction of play of colour (9 - 10)

Slightly directional (7 - 8)

Somewhat directional (5 - 6)

Highly directional (1 - 4)

## Calculating the Base Score

After the five factors are graded and the scores are assigned, the total is divided by 5 to arrive at the base score.

## Adjustments

After we have calculated the base score, it is time to make some final adjustments. Certain characteristics will add value, such as a good dome, an N-1 or N-2 body tone, while others will reduce the value, such as a pear shape, an elongated oval or a free-form. Flat, thin or dangerously thin stones, sand-type inclusions or webbing will also have a negative impact on the value.

## Final Score and Value

Once the final score has been calculated, it is time to go to GemGuide, find the correct opal type, the correct weight category and then, the price per carat.

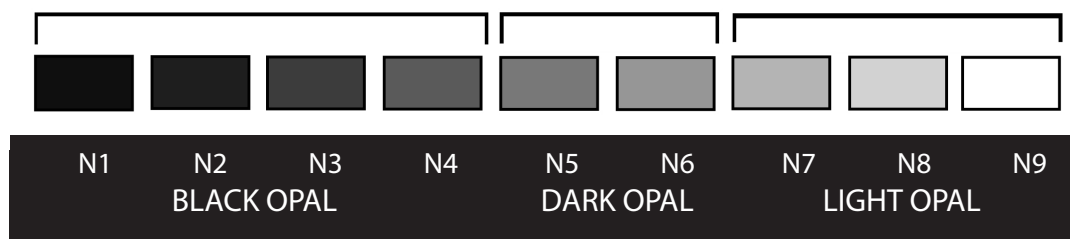
Value Factor	Observation	Score
Carat Weight	1.50 carats	
Opal Type	Semi-Crystal	
Brightness	Bright	5
Colour	Orange-Red	7
Pattern	Pinfire	6
Colour Layer	60 to 80%	7
Directionality	Slightly Directional	7
<b>Total Base Score</b>		32
<b>Average Score</b> (Base Score divided by 5)		6.4
<b>Adjustments</b>		
	Pear Shape	-1.0
	Good Dome	+1.0
<b>Final Score</b>		6.4
<b>Price per Carat</b> (as per GemGuide)		\$ 75
<b>Total Value</b>		\$ 112.50

The example above was taken from the 5th edition of the Handbook of Gemmology.

## Conclusion

As an instructor and gemmologist, I think the biggest flaw with this system is that each of the five value factors are considered to be of equal importance. Surely, brightness, colour and fire pattern are more important than colour layer.

Ultimately, these systems not only provide a means of grading opals but also a rationale as to how the grade and value was established. This is important especially in cases where a valuer is called to testify. We may disagree with his logic but if a method has been used, it becomes a difference of opinion.



Classification of Opal by Body Tone

## OPAL GRADING (PAUL DOWNING)

While the system described by Paul Downing in his 'Opal - Identification and Value' is over 30 years old, it is still relevant in the marketplace and is therefore included here for the sake of completeness. In Paul's system, the value is based on four main factors: opal type, base colour, brightness, and carat weight. Adjustments are then made to the 'Base Price' so that the opals can be priced using GemGuide.

In this system, opal 'brightness' is considered to be the most important factor and is assessed using low light, indirect sunlight, and a grading lamp. Paul recommends using a 100-watt frosted bulb. The lamp should be positioned so that the bottom of the lamp shade is 50cms from the surface where the opal is being graded. It is critical that this assessment is done correctly since this will have a significant effect on the value if a wrong judgement is made.

The 'Price Range' refers to the pricing charts published by GemGuide, while the 'Base Price' is the average between the highest price and the lowest price and the 'Price Spread' is the difference between the highest and lowest price.

Adjustments now need to be made. These include fire colour, fire pattern, the shape of the dome, the overall cut, shape, inclusions, whether it is crazed or cracked, the consistency of the brightness and fire pattern, the directionality, and the size.

Once these have been noted, they are added up and inserted under 'Total Adjustments'.

To determine the 'Base Price Adjustment', you must multiply the 'Price Spread' by the 'Total Adjustment'.

### Adjustments:

Characteristics & Description	All Other Stones	Black, Semi-Black, Black Crystal	Adjustment
Fire Colour:			
Blue only	-.50	-.50	
Green only	-.10	-.20	
Blue-Green	-.05	-.10	
Green-Blue	.00	-.10	
Green-Orange	.00	+ .10	
Orange-Green	+ .05	+ .15	
Red only	+ .25	+ .25	
Orange-Red	+ .10	+ .30	
Multi-Colour	+ .10	+ .30	
Red Multi-Colour	+ .20	+ .40	
Red-Blue Multi-Colour	+ .25	+ .50	
Fire Pattern:			
Pinfire	-.05	-.05	
Flashfire	.00	.00	
Broad Flashfire	.00	.00	
Rolling Flashfire	+ .10	+ .10	
Harlequin	+ .20	+ .20	
Rare Patterns / Picture Stones	.00 to + .20	.00 to + .20	
Dome:			
Low dome	-.10	-.10	
Medium dome	.00	.00	
High dome	+ .10	+ .20	
Cut:			
Floor out or Finish	-.10 to -.50	-.10 to -.50	
Excessively flat out	-.10 to -.50	-.10 to -.50	
Shape:			
Standard Oval	+ .15	.00	
Other Standard Shapes	.00	-.20	
Free size Oval	.00	.00	
Freeform Shapes	-.20	-.30	
Carvings	+ .10 to -.30	+ .10 to -.30	
Inclusions:			
Badly included	-.20 to -.50	-.20 to -.50	
Slightly included	-.15	-.15	
Not included	.00	.00	

2

Characteristics & Description	All Other Stones	Black, Semi-Black, Black Crystal	Adjustment
Cracked (Crazed):			
Cracked (Crazed)	No value as Jewellery	No value as Jewellery	
Consistency of Brightness & Pattern:			
Major dull spot	-.20	-.20	
Minor dull spot	-.10	-.10	
Undesirable pattern mix	-.20	-.20	
Disrupting variation in the base colour or density	-.20	-.20	
Consistent	.00	.00	
Directionality:			
Highly directional	-.30	-.30	
Very directional	-.20	-.20	
Somewhat directional	-.05	-.05	
Slightly directional	.00	.00	
Not directional	+ .10	+ .10	
Size:			
20 carats to .99 carat	-.20	-.30	
.20 carat to .49 carat	-.30	-.50	
.15 carats to .20 carats	-.15	-.15	
.20 carats to .30 carats	-.20	-.20	
.30 carats to .40 carats	-.25	-.25	
Above .40 carats	-.30	-.30	

Total Adjustments: \_\_\_\_\_ (Line 4)

Determine Base Price Adjustment:

Calculate the 'Base Price Adjustment' by multiplying the 'Spread Price' (Line 3) by the 'Total Adjustments' (Line 4):

$$\text{Line 3} \times \text{Line 4} = \text{_____ (Line 5)}$$

Determine Adjusted Base Price:

Calculate the 'Adjusted Base Price' by adding or subtracting the 'Base Price' (Line 2) and the 'Base Price Adjustment' (Line 5):

$$\text{Line 2} + \text{Line 5} = \text{_____ (Line 6)}$$

3

Determine Total Estimated Price:

Calculate the 'Total Estimate Price' by multiplying the 'Adjusted Base Price' (Line 6) by the weight of the opal in carats (not needed when dealing with Boulder Opals since they are sold by the piece):

$$\text{Line 6} \times \text{Weight} = \text{_____ (Line 7)}$$

Final Review and Adjustment:

Adjust the price and give reasons below if you feel the 'Total Estimated Price' is inappropriate.

4

### Opal Grading Worksheet

Opal Type:

Solid	Boulder	Matrix	Treated	Assembled
Lab-created	Simulant			

Base Colour:

Black	Semi-Black	Black Crystal	Crystal	Semi-Crystal
White or Grey	Orange	Other Colour	Boulder Black	Boulder Brown
Boulder White				

Brightness:

1	Faint	Shows play of colour only under direct sunlight and even then the fire is faint.	Less than commercial
2	Dull	Shows some colour under low light but even under indirect sunlight or the grading lamp the fire is dull.	Commercial
3	Bright	Shows fair colour under low light and very nice fire under indirect sunlight or the grading lamp.	Good
4	Very Bright	Shows good colour under low light and sharp crisp colour under indirect sunlight or the grading lamp.	Fine
5	Brilliant	Shows exceptionally bright crisp colour under indirect sunlight or the grading lamp and often shows even brighter in subdued light.	Extra Fine

Carat Weight:

Actual Weight: \_\_\_\_\_ Estimated Weight: \_\_\_\_\_

Price Range (GemGuide):

Price Range: \_\_\_\_\_ to \_\_\_\_\_ (Line 1)

Determine the Base Price and Spread:

A. Base Price - Calculate the midpoint of the Price Range (Line 1)

Base Price: \_\_\_\_\_ (Line 2)

B. Price Spread - Subtract the 'Low Price' in the Price Range (Line 1) from the 'High Price'.

Spread Price: \_\_\_\_\_ (Line 3)

1



This will then be added to the 'Base Price' to arrive at the 'Adjusted Base Price'.

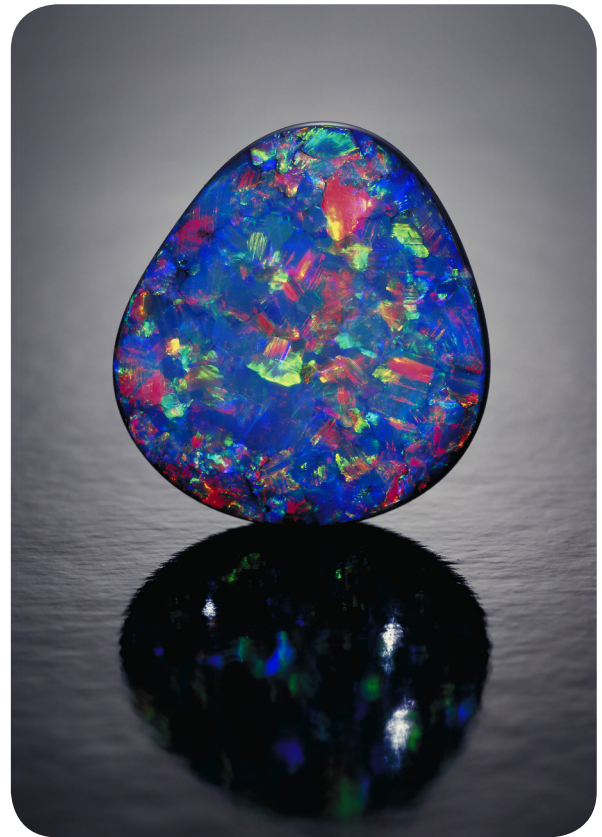
To calculate the value of the opal, the 'Adjusted Base Price' must be multiplied by the weight of the opal.

Finally, as with all gemstone evaluations comes a moment of reflection and this is where experience counts. There is simply no substitute for experience. Does the price seem right based on your knowledge of the market? If it does not, now is the time to make any final adjustments.

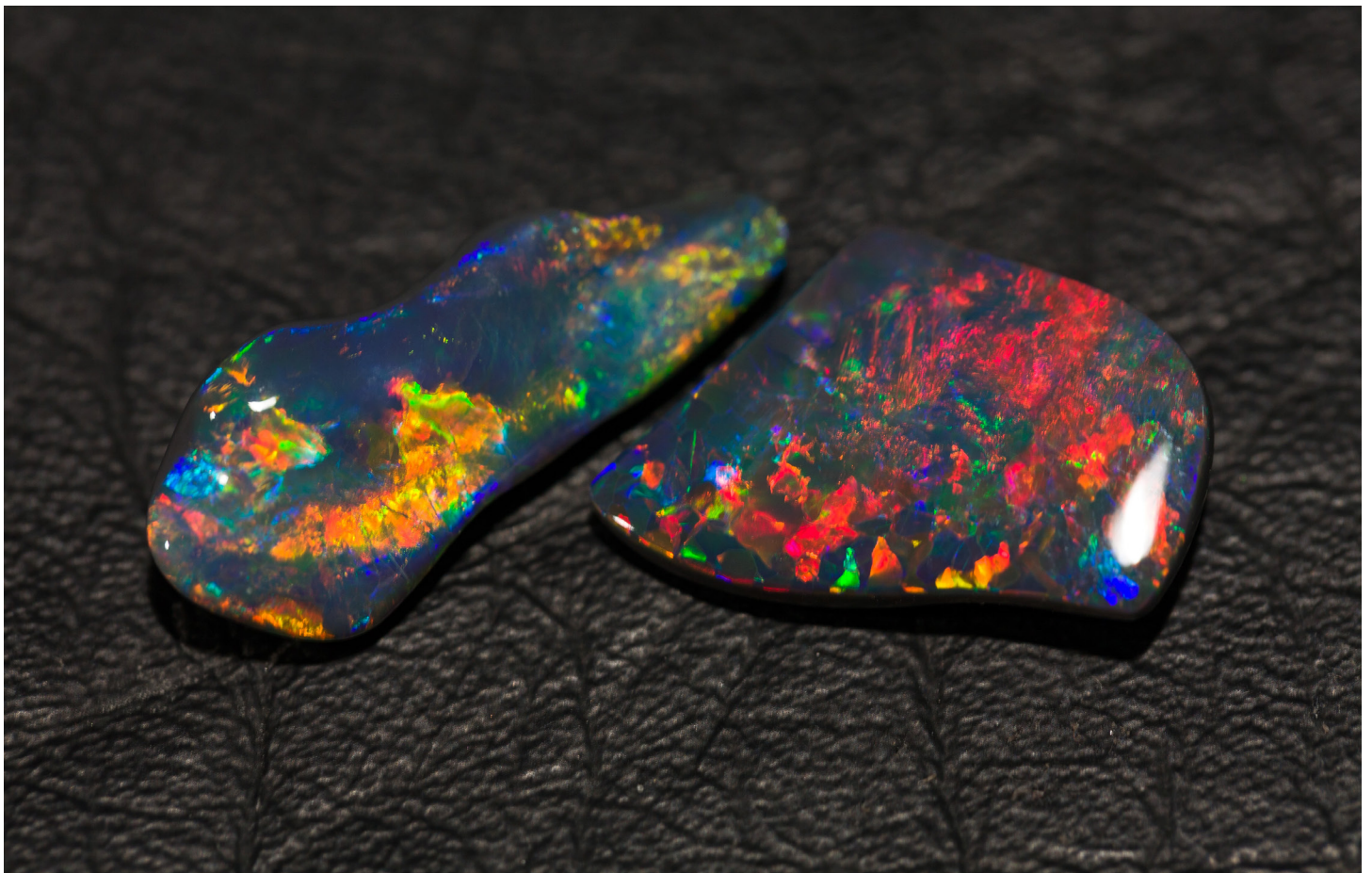
### Conclusion

I have to admit that the first time I used this system, I found it very time consuming but as with anything, the more I used it, the simpler it became. Do I think that opal brightness should be the most important grading factor? Probably not, but when I looked at the final prices for the selection of opals I graded using Paul's technique, I had to agree that the values were fair.

By breaking down the grading components, it makes it easier to maintain grading consistency and this should be the goal of every grader. The ability to replicate grades repeatedly.



Stunning Black Opal (Photo by Tino Hammid)



Black Opals from Lightning Ridge (Courtesy of Vicki Bokros & Down to Earth Opals) (Photo by Tino Hammid)





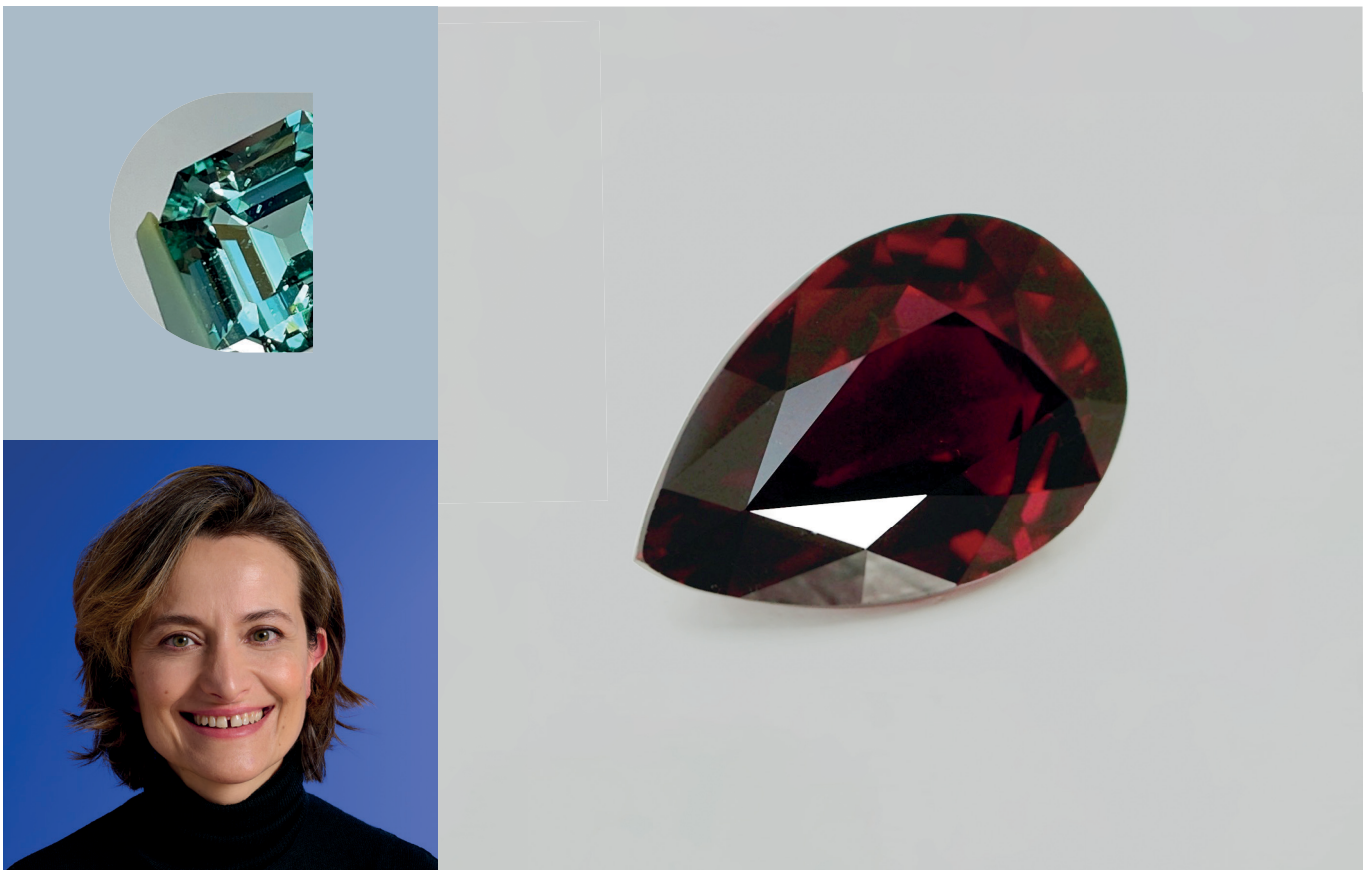
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