3) Binary decomposition, acupuncture points and secondary decorations

Figure 1: ”Spiky Balls” and figure 2: ”Spiky Balls Detail” show a spiky Julia set made up of an infinite hierarchy of balls. The points on the border of each such a ball where the rest of the Julia set join, correspond exactly to those point on the earlier treated circle-formed Julia set which have field lines with the angles (denoted in the form $k/2^n$ *mod1*, k and n integers, for example 3/4, 1/8, 5/16 of a whole turn.)

That's the reason why I have introduced the term *acupuncture points* to these special points. With respect to the *miniballs* I also use the term ”acupuncture points” to the points on the ”miniballs” were the spikes join.

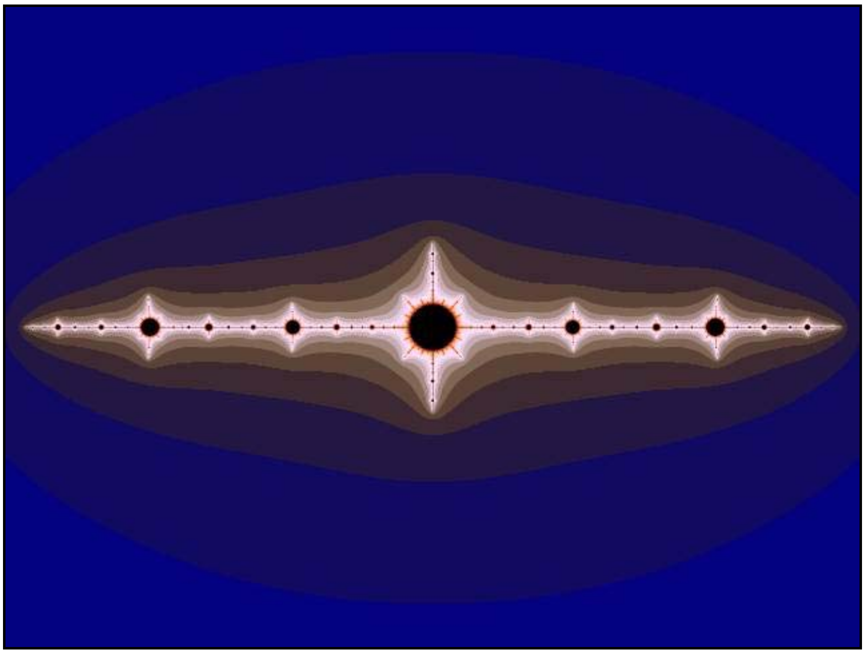

Fig 1. Spiky Balls.

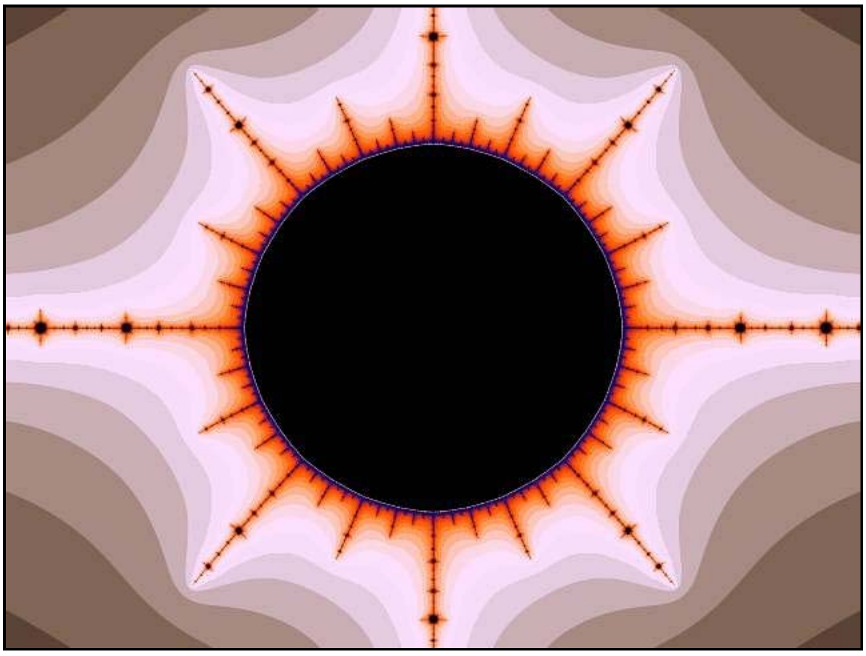

Fig 2. Spiky Balls Detail.

The term *secondary decorations* in this case is applied to the spikes with respect to the miniballs.

Figures 3 - 6: ”C = -1 Distant”, ”Binary C = -1 Distant”, ”C = -1”, and ”Binary C = -1” show the dynamical process for z -> z^2 - 1 (that’s the dynamical process z -> z^2 + c where c = -1).

As the Julia set is a tower-like fractal the field lines is curved near the set. The angles denoted to these field lines are the angles they have far from the set, where they have ceased to be curved.

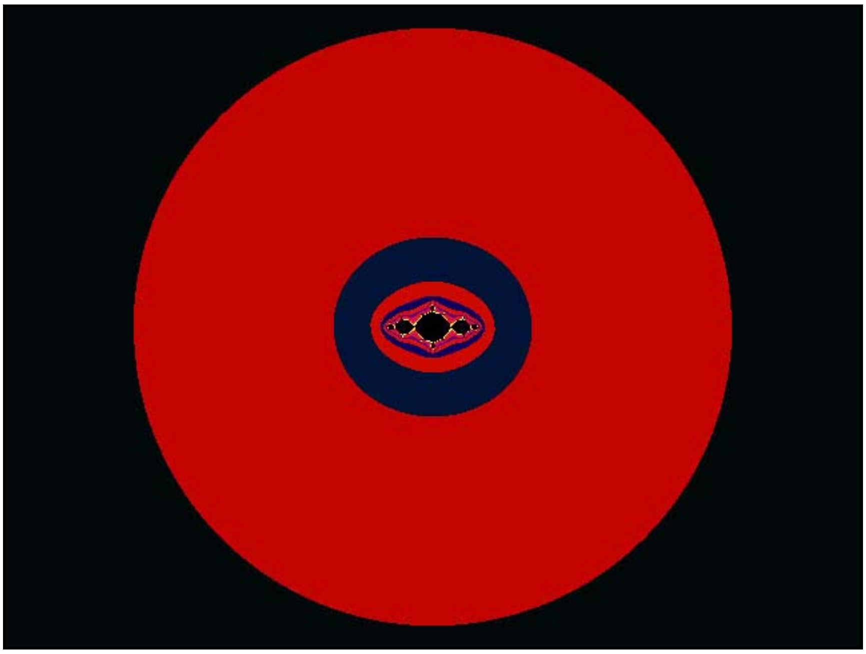

Fig 3. C = -1 Distant.

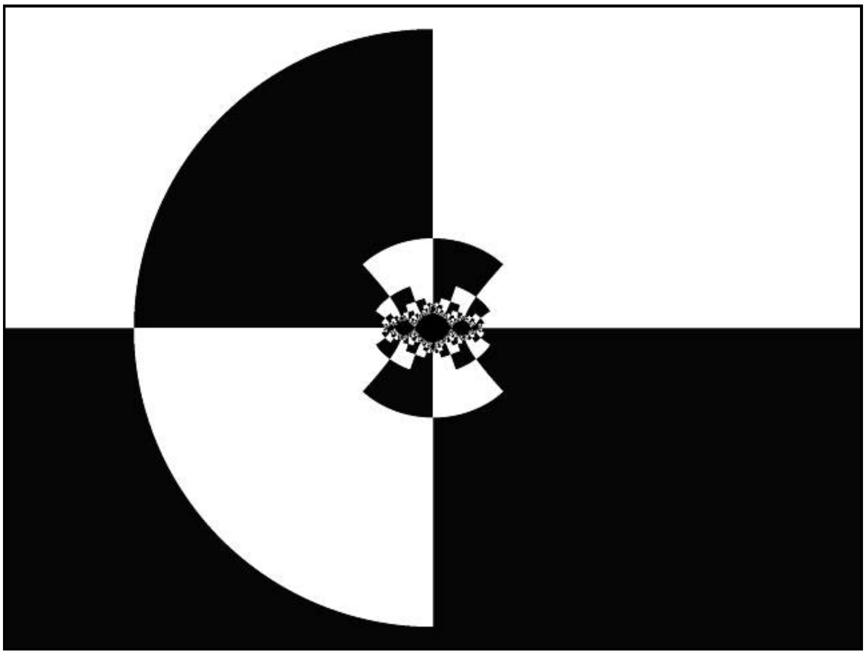

Fig 4. Binary C = -1 Distant.

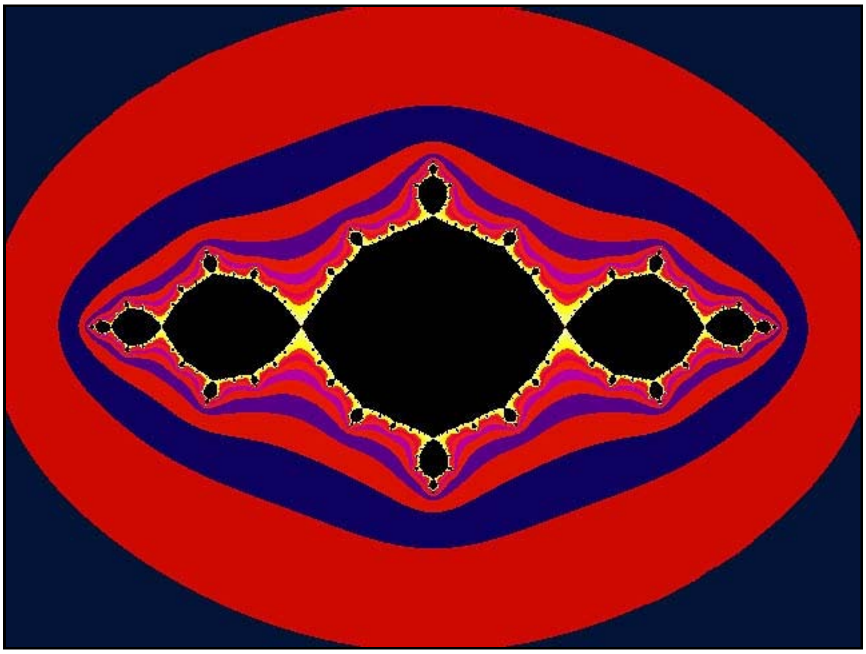

Fig 5. C = -1 .

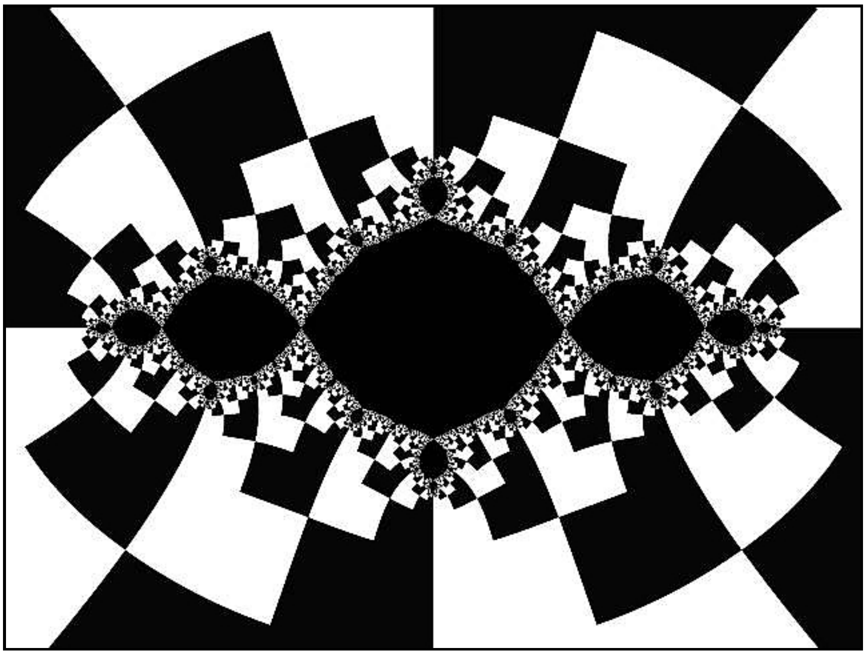

Fig 6. Binary C = -1 .

Figures 7 - 8: ”Spiky Tower” and ”Spiky Tower Detail” shows a spiky Julia set build up of an infinity of tower-like Julia sets with the secondary decorations joining the acupuncture points.

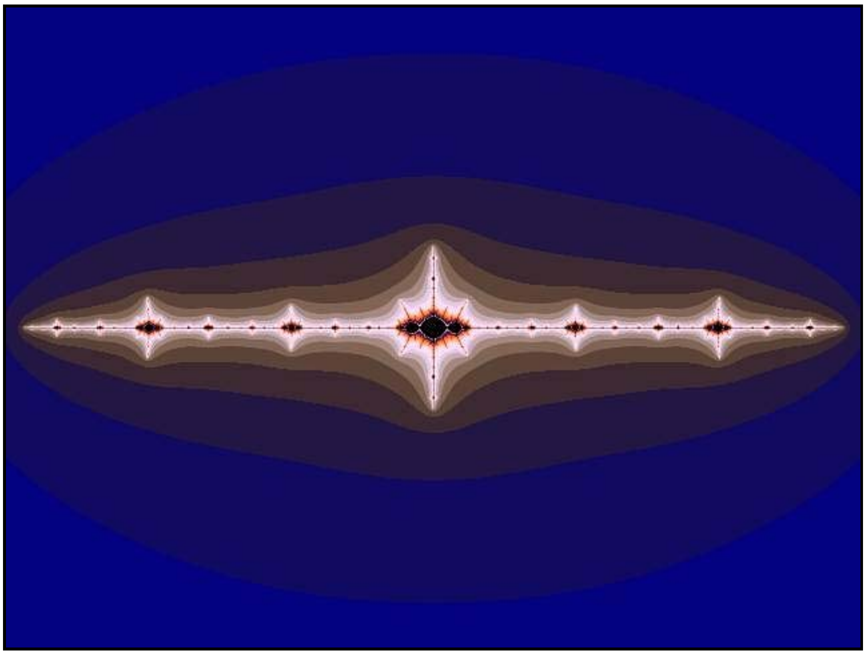

Fig 7. Spiky Tower.

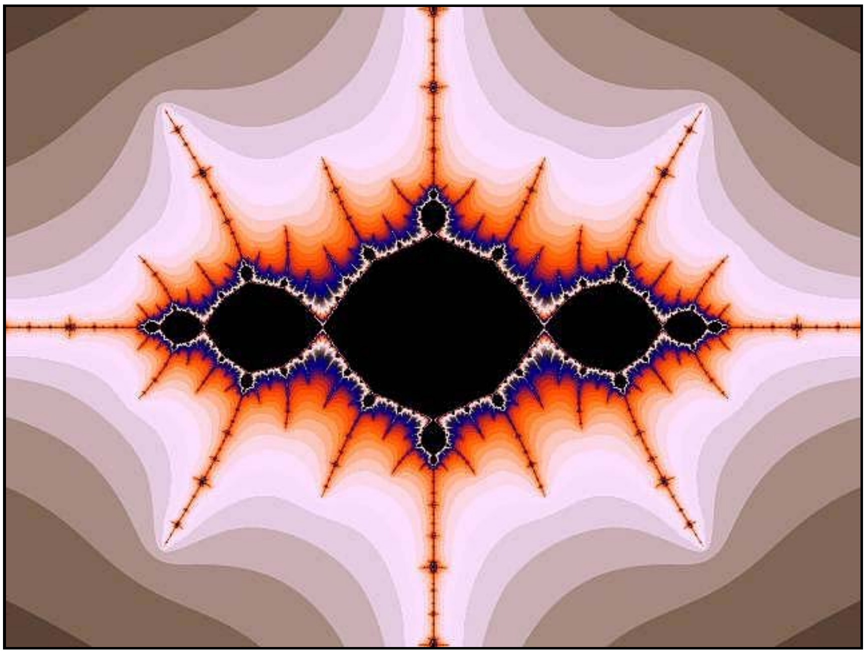

Fig 8. Spiky Tower Detail.

Figures 9 - 10: "C = 0.3" and "Binary C = 0.3" show the dynamical process for z -> z^2 + 0.3 (that's the dynamical process z -> z^2 + c where c = 0.3). This is quite a different type of Julia set. While the previous Julia sets are connected this one is completely disconnected and is made up of so called *Cantor dust.*

Connected and totally disconnected Julia sets are the two main types of *quadratic Julia sets.*

In the next paper we will look at some mysteries of a sophisticated Julia set.

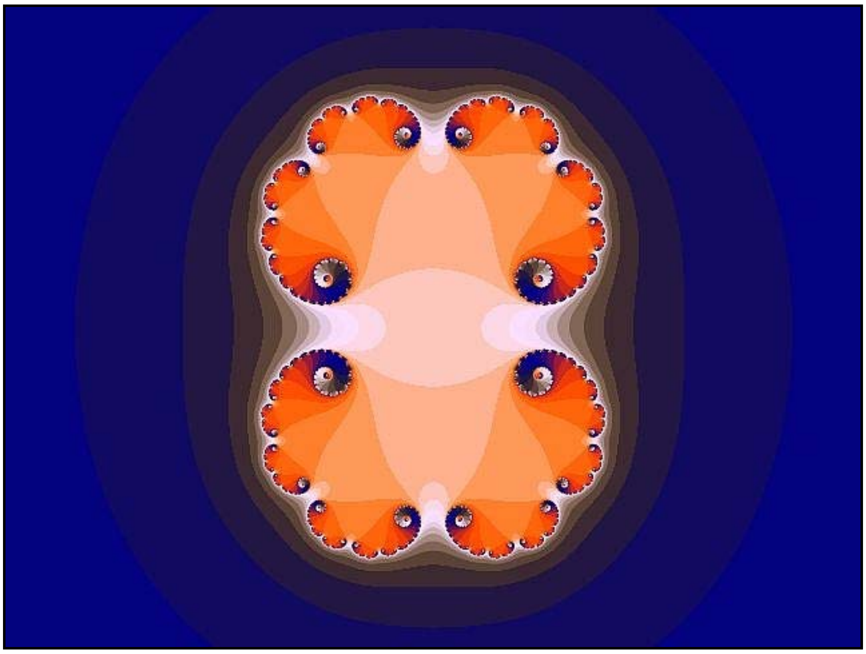

Fig 9. C = 0.3 .

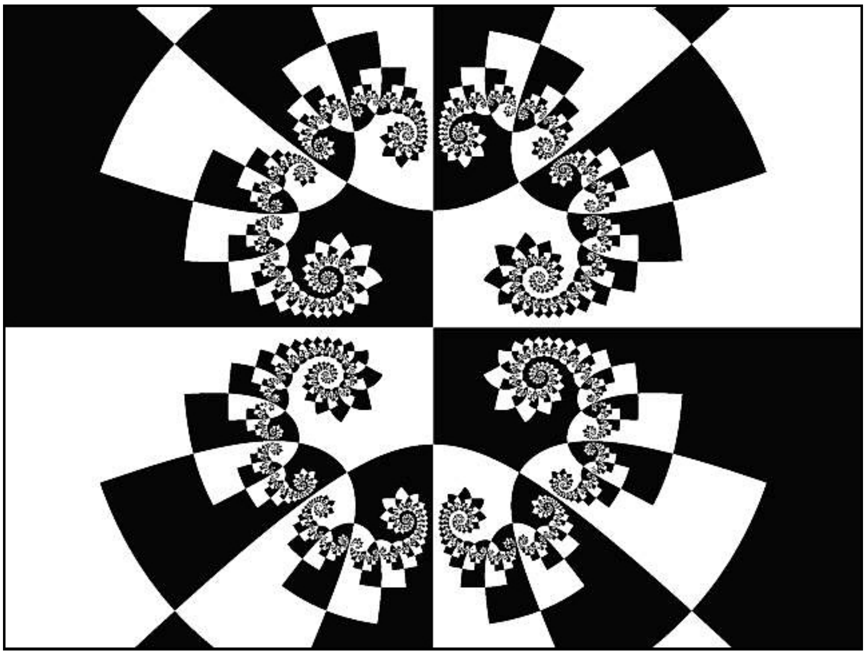

Fig 10. Binary C = 0.3 .

Regards

Ingvar