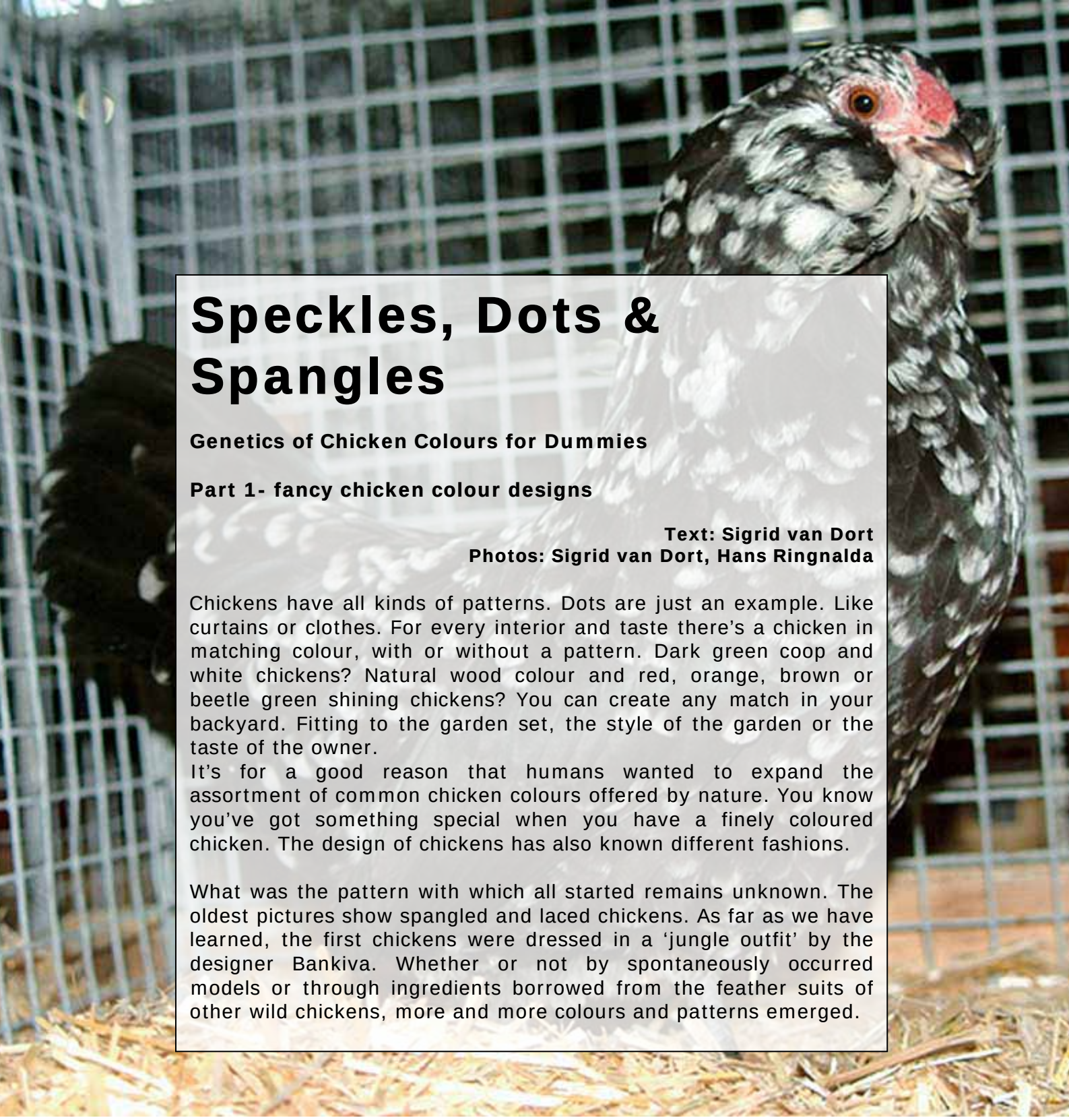

Speckles, Dots & Spangles

Genetics of Chicken Colours for Dummies

Part 1- fancy chicken colour designs

Text: Sigrid van Dort
Photos: Sigrid van Dort, Hans Ringnalda

Chickens have all kinds of patterns. Dots are just an example. Like curtains or clothes. For every interior and taste there's a chicken in matching colour, with or without a pattern. Dark green coop and white chickens? Natural wood colour and red, orange, brown or beetle green shining chickens? You can create any match in your backyard. Fitting to the garden set, the style of the garden or the taste of the owner.
It's for a good reason that humans wanted to expand the assortment of common chicken colours offered by nature. You know you've got something special when you have a finely coloured chicken. The design of chickens has also known different fashions.

What was the pattern with which all started remains unknown. The oldest pictures show spangled and laced chickens. As far as we have learned, the first chickens were dressed in a 'jungle outfit' by the designer Bankiva. Whether or not by spontaneously occurred models or through ingredients borrowed from the feather suits of other wild chickens, more and more colours and patterns emerged.

Speckles
There is a wide variation of speckles on chickens, both in shape and colour. What they all have in common is their presence at the feather tip, viewed in the direction of the body of the chicken. Regardless to what could be considered more or less beautiful, so in strictly random order, there are white chickens with black or gray speckles; coloured chickens with black speckles; black chickens with white speckles or a combination of the two. These are the main versions, more or less.
Chicken speckles come in two varieties, the drip or half moon forms which are called spangles, these two are alike and can be mixed. Spangles in half moon shape are called 'toeps' in Dutch, say 'toops'. Just like spangles, they can be black or a dilution of black like blue or lavender or… white when dominant white is added to the chicken.

There are speckles which occur randomly and who are more or less subjected to fashion, like v-shaped, pearl or water drip shaped, or round with a pinch like the leave of a water-lily. These speckles are almost always white.

Right: Silver spangled hen.
Below left: Silver half moon shaped spangling, with some true spangles.

Spangles and pearls
It's indeed a festive outfit of those spangled and speckled chickens.
At first sight, regardless of the colour, there are speckles or mottles, but taking a closer look they aren't what they seem to be ….

Left: Golden neck or yellow white spangled, rooster from the hen in the next page.

First, let's take a look at the spangles. They are very precisely distributed on every single body feather. Some roosters have white or black tails and others have spangled tails, even when the tail has the same colour as the body. Most of these are white or silver chickens.

You could ask yourself how a spangle is created. For spangling there is a small amount of genes cooperating. The cooperation is called spangling and the trio of genes consists of a columbian acting gene, the pattern gene and a melanizing gene.
The columbian acting gene is called Db from dark brown (down colour of the chick carrying that gene). Db acts like the well known columbian but slightly

different, we'll just call it dark brown columbian - it pushes the black away from the middle of the chicken and also from the middle of the feather.
The next of the trio is the pattern gene Pg. That gene is also responsible for all kinds of lacings. It makes the black peppering form concentric circles around the feather quill.
The third is Ml from melanotic, a black enhancer, the black sheep of the chicken colours, it has no pattern without Ml because a pattern needs a lot of black.

Above: Golden neck or yellow white spangled on the continent is gold spangled by which the spangles became white by one dose of dominant white.

e-series
basic chicken colour genes

As the broth is the basis of soup, the chicken colours are based on the e-series. Just like different kinds of broth, the e-series consists of different basis with each one having its specific 'taste'. All standard colour varieties are based on one of these five e's.

They are as following:
E – Extended Black
ER – Birchen
e+ - Bankiva partridge (duckwing)
eb – Asiatic partridge
eWh – Wheaten
… in order of dominance.

How can one create a spangle on a feather? Take a chicken, add Pg, he or she will be pencilled or multiple laced, add Db and the lacings become an autosomal barring, add Ml and the barring will be pushed up and down on the feather which results on the top of the feather in a spangle.
Those are the genes that give roosters with black tails. You have to change the genetic make-up of a chicken to get roosters with patterned tails.
The Asiatic based (eb) chickens give roosters with black tails and the Birchen (ER) based chickens have roosters with patterned tails (see the box for basic chicken colours).
It has nothing to do with a golden or silver ground colour, no matter if the rooster has a patterned tail or not. Technically, nothing stands in your way, if you want to make a golden spangled rooster with patterned tail. It's just never done on Hamburgs, for example.
There are golden half moon spangled roosters with patterned tails though.

And now the white pearls or specks… they are just specks or mottles, all the same word for one gene. No festive trios who make together something beautiful. Specks, dots, white pearls or mottles are one gene.

That one gene is responsible for mille fleur, speckled like on the Sussex, any gay colour and even exchequer. Al these funny white mottles are caused by the gene ‘mo’. Guess the shortcut.

Left: Ancona cock. Mottled with the precision of a mille fleur, black mille fleur?

What’s the action of mo? Very simple: it prevents colour (regardless which). Actually mo is the equivalent of no-colour. When this gene is in a chicken, regardless what colour it has (brown, black, partridge, autosomal barred, red, buff etc), this gene tells the feather when its about to start to grow: “don’t put colour into it!”. The gene acts only shortly. When it has done its job the colour is restored and thus a white pearl or mottle is formed.
The ‘mo’ gene has a variable expression. The breeder determines by selection which expression he prefers. A wild gay jazzy randomly mottled bird? Or carefully placed white mottles, evenly spread? Or perhaps v-shaped ones? Everything is possible. Only, it takes quite some time to breed the geometrically spread mottling.

Below right: The random mottled Houdan is the same as the mottled Ancona?

Below left: Antwerp Bearded pullet. Mottled or random gay? Mottled.

Spangled tails of roosters are only possible if the chicken is based on ER. Only ER allowes ‘red’ or silver to be extended into the tail. The spangled colour varieties of which the rooster has a black tail, have an eb (Asiatic

partridge) basis. Asiatic partridge doesn't need to be pencilled or multiple laced at all. It's the perfect basis for feather patterns because the hen can be patterned on the breast as well. The difference in the tails of roosters between eb and ER is also present in the autosomal barred varieties. A Brakel has an ER basis and Frisian Fowl an eb basis.

Right: Mottled partridge on Game. In the fancy it's called spangled on OEGs but speckled on Sussex and on Belgian bantams mille fleur... hobby names are madness... so don't call an OEG a milly flor!

Mille fleur, or speckled or spangled - whatever name fits the breed - can be made on gold spangled with mottled (white pearls). That would look on a Hamburg, like in the picture below. For the 'gene freaks', the recipe of a gold spangled is eb/eb s+/s+ Mh/Mh Pg/Pg Db/Db Ml/Ml (melanized dark brown patterned mahogany gold asiatic partridge). The 'fake' mille fleur Hamburg has the same recipe only mo/mo is added to it by the computer in Photoshop.