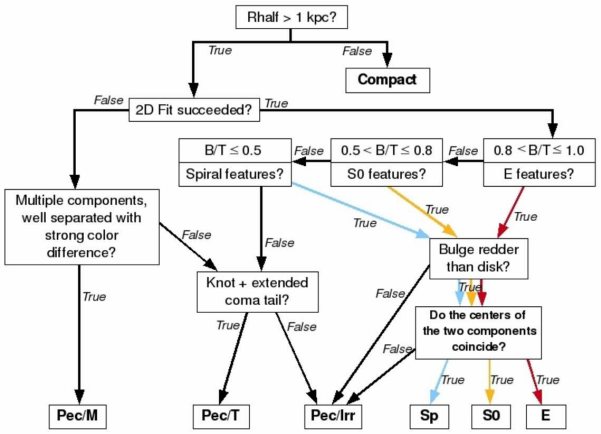

Fig. 1. Semi-automatic decision tree. Such a morphological analysis is in good agreement with the kinematic stage of the galaxies, make the reproducibility easier and restrict the classification subjectivity. This is not the case for the rest of morphological classifications.

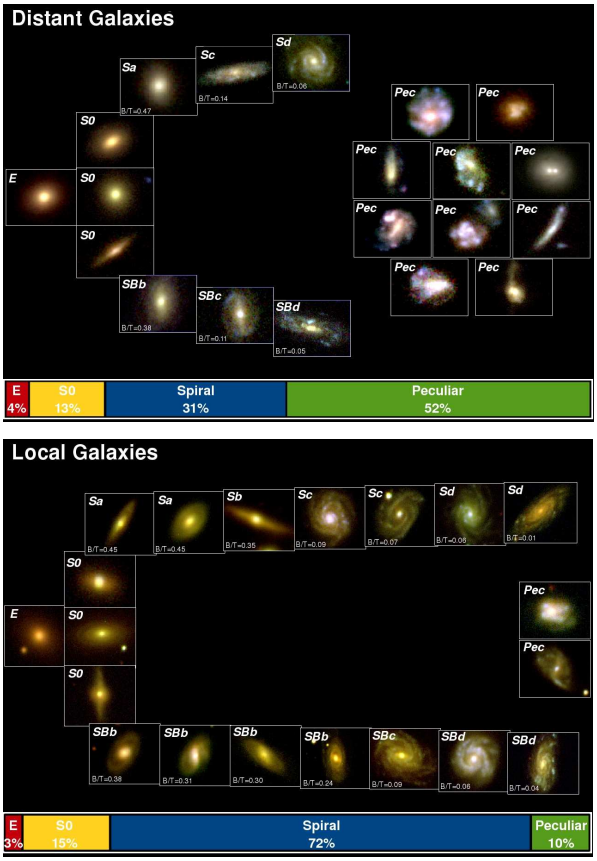

Fig. 2. In applying the same morphological classification method, we have been able to derive a past and a present Hubble sequence. In this figure, each galaxy image represents ∼5% of the whole galaxy population at each respective epoch.

in the CDFS field and observed by the HST/ACS. Both samples have been set up following one simple selection criterion: the absolute magnitude in J band brighter than −20.3. Furthermore, during the construction of our samples we have ensured that each galaxy have the information necessary for our analysis: good quality spectrum which includes the [OII]λ3727, and high resolution images in at least three optical bands. The first would allow us to distinguish between starburst and quiescent galaxies. The second, to construct color maps and three color images. In this way, we got a local sample of 116 galaxies, and a distant sample of 143 galaxies.

We show that both samples are representative of the galaxies at each respective epoch. To do so, we compare our samples with the luminosity functions obtained for local and distant galaxies. Kolmogorov-Smirnov tests indicate probabilities larger than 94% that our samples and the corresponding luminosity functions are drawn from the same distribution.

Our results show that, in the local Universe, $10 \pm 3\%$ of galaxies are peculiar, $72 \pm 8\%$ are spirals, $15 \pm 4\%$ are lenticulars, and $3 \pm 1\%$ are ellipticals. Respectively, in the distant Universe the percentages are $52 \pm 9\%$, $31 \pm 7\%$, $13 \pm 2\%$ and $4 \pm 1\%$ (see Figure 2). Moreover, we find that, in the local sample, 83% of galaxies are quiescent and 17% are starburst. In the distant sample 40% of galaxies are quiescent and 60% are starburst (Hammer et al. 1997).

The meticulous analysis shows that the comparison of the Distant and Local Hubble sequence is not affected by the selection criteria, k-correction, cosmological dimming, spatial resolution and instrument differences (see more details in Delgado-Serrano et al. 2010). This has allowed us to link the past Hubble sequence to the present one. Therefore, we do find that spiral galaxies were 2.3 time less abundant in the past, which is compensated exactly by the strong decrease by a factor 5 of peculiar galaxies, while the fraction number of elliptical and lenticular galaxies remains constant. This strongly suggests that more than half of the present-day spirals had peculiar morphologies, 6 Gyr ago.

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