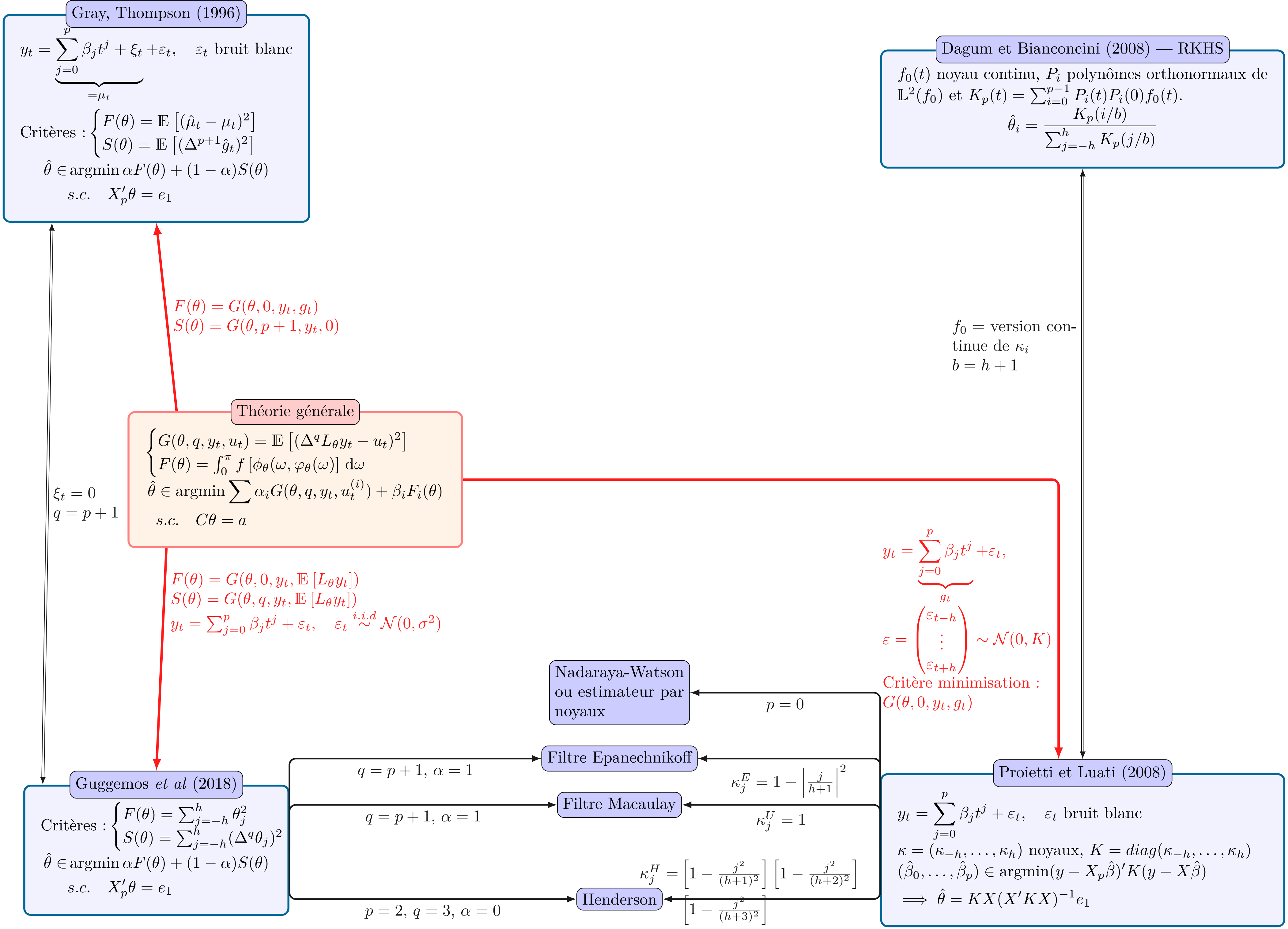

Gray, Thompson (1996)
$y_t = \underbrace{\sum_{j=0}^{p} \beta_j t^j + \xi_t}_{=\mu_t} + \varepsilon_t, \quad \varepsilon_t$ bruit blanc
Critères : $\begin{cases} F(\theta) = \mathbb{E}\left[(\hat{\mu}_t - \mu_t)^2\right] \\ S(\theta) = \mathbb{E}\left[(\Delta^{p+1}\hat{g}_t)^2\right] \end{cases}$
$\hat{\theta} \in \operatorname{argmin} \alpha F(\theta) + (1-\alpha) S(\theta)$
$s.c. \quad X_p'\theta = e_1$
Dagum et Bianconcini (2008) — RKHS
$f_0(t)$ noyau continu, P_i polynômes orthonormaux de $\mathbb{L}^2(f_0)$ et $K_p(t) = \sum_{i=0}^{p-1} P_i(t)P_i(0)f_0(t)$.
$\hat{\theta}_i = \frac{K_p(i/b)}{\sum_{j=-h}^{h} K_p(j/b)}$
$F(\theta) = G(\theta, 0, y_t, g_t)$
$S(\theta) = G(\theta, p+1, y_t, 0)$
$f_0 =$ version continue de κ_i
$b = h+1$
Théorie générale
$\begin{cases} G(\theta, q, y_t, u_t) = \mathbb{E}\left[(\Delta^q L_\theta y_t - u_t)^2\right] \\ F(\theta) = \int_0^\pi f\left[\phi_\theta(\omega, \varphi_\theta(\omega))\right] \mathrm{d}\omega \end{cases}$
$\hat{\theta} \in \operatorname{argmin} \sum \alpha_i G(\theta, q, y_t, u_t^{(i)}) + \beta_i F_i(\theta)$
$s.c. \quad C\theta = a$
$\xi_t = 0$
$q = p+1$
$F(\theta) = G(\theta, 0, y_t, \mathbb{E}\left[L_\theta y_t\right])$
$S(\theta) = G(\theta, q, y_t, \mathbb{E}\left[L_\theta y_t\right])$
$y_t = \sum_{j=0}^{p} \beta_j t^j + \varepsilon_t, \quad \varepsilon_t \overset{i.i.d}{\sim} \mathcal{N}(0, \sigma^2)$
$y_t = \underbrace{\sum_{j=0}^{p} \beta_j t^j}_{g_t} + \varepsilon_t,$
$\varepsilon = \begin{pmatrix} \varepsilon_{t-h} \\ \vdots \\ \varepsilon_{t+h} \end{pmatrix} \sim \mathcal{N}(0, K)$
Critère minimisation : $G(\theta, 0, y_t, g_t)$
Nadaraya-Watson ou estimateur par noyaux
$p = 0$
Filtre Epanechnikoff
$q = p+1, \ \alpha = 1$
$\kappa_j^E = 1 - \left|\frac{j}{h+1}\right|^2$
Filtre Macaulay
$q = p+1, \ \alpha = 1$
$\kappa_j^U = 1$
Henderson
$p = 2, \ q = 3, \ \alpha = 0$
$\kappa_j^H = \left[1 - \frac{j^2}{(h+1)^2}\right]\left[1 - \frac{j^2}{(h+2)^2}\right]\left[1 - \frac{j^2}{(h+3)^2}\right]$
Guggemos *et al* (2018)
Critères : $\begin{cases} F(\theta) = \sum_{j=-h}^{h} \theta_j^2 \\ S(\theta) = \sum_{j=-h}^{h} (\Delta^q \theta_j)^2 \end{cases}$
$\hat{\theta} \in \operatorname{argmin} \alpha F(\theta) + (1-\alpha) S(\theta)$
$s.c. \quad X_p'\theta = e_1$
Proietti et Luati (2008)
$y_t = \sum_{j=0}^{p} \beta_j t^j + \varepsilon_t, \quad \varepsilon_t$ bruit blanc
$\kappa = (\kappa_{-h}, \dots, \kappa_h)$ noyaux, $K = diag(\kappa_{-h}, \dots, \kappa_h)$
$(\hat{\beta}_0, \dots, \hat{\beta}_p) \in \operatorname{argmin} (y - X_p\hat{\beta})' K (y - X\hat{\beta})$
$\implies \hat{\theta} = KX(X'KX)^{-1}e_1$