

**GOING DUTCH: Symposium sponsored by the Museum van het Nederlandse Uurwerk
'FOR OPEN RESEARCH'**

A paper presented by Keith Piggott

In 2004, Fred Kats founded an *open-research* project for the Dutch *Horological Foundation*, the '*Compilation on the Coster-Fromanteel notarial act*'; published as edited submissions in '*Speculations on the historical backgrounds of the Coster-Fromanteel notarial act*'; leaving thorny issue of '*Conclusions*' unaddressed; open to new interpretations; and ongoing research. That forum included widely diverse contributors, the resulting body of evidence stands proud.

By pre-emption* Dutch horologist Berry van Lieshout's *Millennium Transcript* of the Akte, with our conclusions, did not appear among *Five Transcriptions*, but was the first circulated and first to decipher Coster's name in the '*secreet*' clause; that set us to re-examining the *split-going-barrel*, and *flying-stopwork*, also widening our *open research* to identify that '*secreet*'.

*In another context, I remarked on craftsmens' silences but academics' imperatives to publish.

Actually or vicariously, I revisited museum exhibits that deserve open-research; J.P.Treffler's 'Medici' pendulum, four Costers, three Oosterwijcks, early Visbaghs, Fromanteel's *roller-cage* clock, his *Equations and Tides* clock. I reviewed two of Bruce's historic lost '*sea-clocks*', and answered a referral from Zagreb to reveal unknown Anglo-Dutch workshop of '*A-Fromanteel Hage*'. Important clocks, not yet available to *open research*, include unrecorded masterpieces by Edward East; a pendulum timepiece-alarum with going-barrels; a small ebony longcase, in the manner of Ahasuerus Fromanteel; and a large wall-clock. Presently, I assist in research of 16th Century musical clock by John Vallin, earlier, larger, more original than iconic Nicolas? Vallin in the British Museum. Differentiating '*iron*' wheels ~ the learning-curve gets steeper!

Openness has the twin merits of testing knowledge and contributing to research in real-time, not the decades it takes to cover subjects alone. All must consider new evidence, also contrary opinions; I change my positions too; it is what scientific or historical research is about. Even with the best foundations and good intentions, '*Ivory Towers*' are often fragile structures.

Probably, each of **you** in this audience has a special knowledge or unique object not generally known, better shared to advance horological scholarship. It is a sad paradox, the most gifted complete horologist known to me will give freely of his vast knowledge, data-base and library but will not re-join the internet. Together, we seek evolutions of techniques, and components, to better understand the endeavours of those hidden by shadows of the more prominent, to the detriment of these also deserving. Alexander Bruce and Isaac Thuret had cause to protest their treatment by Christiaan Huygens; but I had never doubted that Simon Douw, most of all, long deserved proper recognition of his Patent Spring-Remontoir, and annulment of Huygens' false '*plagiarist*' tag for louche commercial ends, (**KP** '*A Royal Haagseklok*' (**RH**), *Appendix Four*).

Some of **you** may know horologists whose insights would never see light of day without **your** '*open research*'. Ernest Edwardes' co-author, Richard Dobson wrote his perceptive '*De slinger als tijdmetter*', ('*The pendulum as time-measurer*'). Richard would consider all new evidence, latterly he espoused Ahasuerus Fromanteel's unrecognised part in Coster-Huygens' pendulum; he even reversed his '*Dutch position*' on Huygens' libels against Simon Douw. He also gave me final drafts, on the *Akte* and *Horologium*, I seek consensus to publish these posthumously.

Open research is a new approach for '*A Royal Haagseklok*' (RH). We no longer judge clocks by external dateable fashions; *Evolutions*, parodied by cases, dials, shields, chapter-rings, and hands; though the Hans van den Endes' analysis of early dials offers a workable chronology, (*Tijdschrift*, nr.10/4, Dec. 2010). My turning point was seeing Tompion's Mostyn movement being cleaned. Then, and for the first time, I saw its extravagant case as a mere *accessory* to a craftsman's genius in purely mechanical-technical aspects of horology. The *function-evolution* is in the movement, its trains, wheels, all its parts. That is so true of 17th Century applications of the scientists' *free-pendulums* to proclaimed *inventions* of the pendulum-clock, by several, to Huygens' *ultimate* success. The pendulum reshaped the clock, *open research* seeks 'how'?

Scientist Dr Reinier Plomp pioneered study of *dimensions*; John Hooper with Dr Jeff Darken pioneered study of *trains*; I continue by collating further dimensions and trains, also *features*. Fred Kats suggested an *RH 'open-research' matrix*, so correlations might be discovered; he set down my first matrix; that I have adapted and expanded. Jürgen Ermert suggested adding *filters* to sort parameters, according to research; e.g. weight/spring drives, plate-sizes, wheel-trains, escape/contrate numbers, pendulum beats/min, motion-work, pillar-shapes, potence-types. Options are legion; a useful tool to determine evolutions and chronologies, or formulate and test hypotheses. *RH matrix*, on *Horological Foundation* and *British Horological Institute* websites, is open to all to use, adapt, contribute to. A powerful *data-base* could give it *wings*.

Features align to makers, or origins, even across nations. Or not! Of five "*Coster*" timepieces, all now being attributed to John Fromanteel, why *three different* trains? As to bringing wheels and castings from London, puzzling anomalies appear; all have different arbor-profiles, front-plate layouts, shapes and metals of bridges, cocks, steady-pins. One source? One assembler, even? I suggest not! (see *RH, MemoCosterD3*). Data shows early *Indicators*, and *Anomalies*;

Potence Types: Dutch/French principally use *short block* to a lower *strap* set on back-plate, having *short* verge. English principally use *strap* potence to a lower *post*, also on back-plate, having a *long* verge across the plates. Anomalies noted;
1. Oosterwijck's *Royal Haagseklok* has English *strap and post*, *long* verge.
2. Exhibit '*goudron*', block and strap potences on *front-plate*, *long* verge.
3. **Bruce #1/4**, the London sea-clock, straps on *front-plate*, *long* verge.
4. **Bruce #2/3** by Oosterwijck, straps (ex-post) on *front-plate*, *long* verge.

Wheel Types: Dutch, 3-Spokes, exceptions rare; English, 4-Crossings; French, 3 and 4.

Wheel Trains: : Early Dutch spring-clocks employ 4-wheel trains. Earliest 5-wheel trains *Fromanteel-1658*, B.J.Van Stryp, (nb. ratchets on **B/P**). Several Huygens' weight-designs have 3-wheel trains; [ditto the Hague '*goudron*' exhibit].

Upper-Pinions: Dutch, predominantly 5 leaf; English, 6-leaf; French, both 5 and 6 leaf.

Contrate Nrs: Coster's spring-clock contrates evolved from 64 teeth (early) to 60 (late). Oosterwijck and contemporaries, initially, drew on Coster trains D1-D4.

Escape Nrs: Huygens' *weight* clocks, have 15-17-25 teeth; [Hague '*goudron*' has 27]; Coster *spring* clocks, 25-27-29 teeth; Oosterwijck *RH* and D9, each 27. *Pendules Religieuses*: DeMire (HE#03) 31 teeth, Thuret (#327) with 35.

Ratchet-Work: *F/P*: Coster: D1 to D4; *Pendules*, Saudé F2, Gilbert F4, De Mire HE#03; *F/B*: Oosterwijck D9, *RH*; Coster D8 & D10; Visbach D18; Thuret #327. *B/P*: Coster D5; Fromanteel 1658; Oosterwijck 'Lieberge'; B.J.vanStryp.

Flying-Stop: *F/B*: Coster D1, D2, D5 (removed); Oosterwijck *RH* hidden under ratchet. *Not fitted*: Coster D3/D4, Relic, Oosterwijck D9; Visbach D18, East CC. *Data unrecorded*: Coster strikers D8, D10, [chronology hinges on data] *Pendules Religieuses*: no *flying-stop* yet recorded. Suggestive of *lineage*!

- Motion Work:** With rare exceptions, minute & reverse-minutes are equal small numbers; typically 30 or 32, having pinions of 6 to hour wheels of 72 (ratio 1:12). I record two French makers, Thuret, DeMire, using 5 to 60 (ratio 1:12). Anomaly: the English maker of **Bruce #4** (Hilderson?) uses idiosyncratic motion-work numbers, 35/70-12/72, to realise same solution (1:12 ratio).
- Strike Trains:** Oosterwijck's D9, **RH**, and a relic, have **10**-pins to **10**-leaf count-pinions. All *later* Hague strikers invariably have **12**-pins to **12**-leaf count-pinions.

Adding **your** data to the *open-research* matrix will increase its value, as its records grow to significant numbers. Anomalies may point to lost evolutions. Anachronisms are significant too, alerting researchers to false records, or suspect objects, by revealing or exposing;

- Prescient invention: features previously unrecorded and not taken up at the time; or,
 - Ill-advised reconstruction: errors usually made by practical 'jobbing' restorers; or,
 - Forgery: relies on *anticipation* exceeding *appreciation*, [Van Meegeren; Hitler Diaries].
- Antiquarians, horologists, collectors, dealers, restorers, even museums face these dilemmas.

'OPEN RESEARCH' SYMPOSIUM, AN INITIATIVE BY PUBLIC MUSEUMS
Re. "Jan van Call NEOMAGENS Fecit ~ Chr.Hugenius HAGAE Invenit ~ AD 1657"
References are to author's "*Royal 'Haagseklok'*". Presentation shows British Museum images.

This year, 13th October, the Science Museum (owner) and the British Museum (client) broke with museum secrecy, and tradition, to sponsor a public symposium. They disclosed forensic evidence, and scholarship, relating to this imposing pendulum weight-regulator, bearing joint names; championed by John Leopold, yet having a suspicion of fakery even before Sotheby's auction in October 1986. The museums' joint-symposium *-open research* at the highest level was remarkable for new forensic enlightenments, also for defensive entrenchments. We were told, because of wide controversy at its appearance, a raft of forensic scientific tests had been conducted, being still ongoing with improvements in new forensic tools; yet all are said to be *inconclusive!* It transpired that the agent-vendor even had faced a potential law-suit, yet never provided a documented provenance, nor credible family tradition, to fill vacuum of Centuries. [As I presented for Sir John Shaw's *Aristocratic*, now *Royal 'Haagseklok'* from **Charles II**]

After hearing all the evidence, I was disappointed by attitudes, *'it exists; therefore it is right'*. Even anomaly and anachronism in its *'pivotal'* pendulum were shrugged off as *'replacements'*; its improbable 1657 date shrugged off, *'not fabrication-date, only commemorative-date'*. Here we *might* agree! I offer my perspectives towards *open research* of a costly public acquisition.

Indeed, if this so called "*Call masterpiece*" was made in 1657, or even the 17th Century, then Huygens' intellectual input has to be implicit, or serious doubts appear. This clock purports to be associated with Huygens, an *experimental clock*, to empirically test the performance of his astronomers' suspended pendulum, as applied to clockwork; able to measure, then correct the newly observed phenomenon of *'circular error'* by micro-adjustable cheeks to the suspension of its pendulum. Huygens' position is well documented, by his designs; all are weight-driven time-pieces, all are on short and equal-trains, and all display unitary Seconds' in various ways. Some panellists expressed the view, "*Seconds, then, were not in general use*"; abandoning all claim to Huygens' part or any *scientific purpose!* Yet astronomers, Galileo, Riccioli, Hevelius, Ward, Huygens, all used *free-pendulums beating Seconds!* Even in 16th Century Tycho Brahe had Joost Burgi's famous *cross-beat clocks beating Seconds* with *Minute* and *Seconds'* hands.

Significantly, too, as Pier van Leeuwen confirmed, no known Huygens' *MS.* refers to any Jan van Call 'experimental clock'; and I give no credence to theses that Huygens would not have puffed this "Call's" spectacular pendulum test-bed, nor condemned its obvious failings. This "Call" neither has equal train nor unitary seconds; its 3-Minute disc is 'scribed to 5-seconds. Sebastian Whitestone rightly said, its long, inefficient, unequal train, without unitary Seconds' and simple pendulum, flies against all of Huygens' principles. Put into context, the purported 'raison d'être' of this "Call" is proclaimed by its dial inscriptions and profusion of adjustments for scientific testing of its pendulum's performance. It must stand or fall by that 'raison d'être'. Shall it stand, as a unique pendulum 'test-bed' of 1657? Or fall, with all its maker's *fantasies*?

Others will consider its massive gilded case; dial; fittings. I would remind them that Jan van Call's trade was *great-clocks*, not '*secular-clocks*'; I know of no '*secular*' clock by him. Call collaborated with turret-clockmakers; Juriaen Spraeckel; Batenburg; bell-maker Hemony and Simon Douw in 1662/3, to construct Rotterdam Grote Kerk's *carillon*, with *great-pendulum*. (*RH, Appendix Four*). My pre-examination of this magnificent museum artefact focused on its *too-complex* pendulum; '*too clever by half*'! I found anomalies, also fatal anachronisms, that deny its '*made in 1657 bona fides*', also any '*association*' with Huygens; which *facts* I put to the symposium - converting none of the *cognoscenti* defenders of its auction mythology.

Anomalies: This "Call" pendulum is suspended on a *Hook*. Whereas, Huygens' own drawings all show a *Pulley*. His little pulley holds apart his silk suspension threads flat against cheeks, so the pendulum always swings in one plane, allowing its suspension, evenly, to wrap to and along the curved cheeks, without twists or banking present with a hook in a loop. He regarded this part as desirable, if not essential; so why, *in 1657*, would the *real* Jan Van Call, instead, adopt this hook, purportedly under Huygens' nose? Even Oosterwijck's *RH* possessed the pulley, showing Huygens' inputs '*met privilege*' so notably absent in this, so called, "Call". I realise no extant Coster possesses Huygens' pulley, but their pendulums carry no *warranties* (D3/D8 replaced), nor pose as scientific clocks; all are secular-domestic. (see *RH, Part I, p.11, fig.16, Pendulum Pulley Bracket*). Further, its thick wheels depart from early *Hague* practice; and have English 4-crossings not Dutch 3-spokes; and lack *punched* or *scratched* registers, to cut the teeth; and movement slides into Lugs, so motion-work is *walked* into dial; and deeply-profiled **steel** (of pulley) is exceptional. Yet, *anomaly* alone need not be fatal to genuineness.

Anachronisms: This massive, highly engineered, *test-bed pendulum*, has a secondary cursor, Huygens' '*cnoop*', (*RH, Supplementary Views, Facsimiles, Cnoop*). Whereas Huygens' 16th June 1657 patent, († Benjamin Martin's woodcut, found by Andrew Crisford), lacks the second bob (*cnoop*); also absent in September 1658 *Horologium*. Then, he had not considered its need. Huygens only introduced a secondary *cnoop* in 1660, to find '*centre of oscillation of compound pendulums*' by experiment. His *cnoop* is first shown with his remontoir sea-clock (1664); then by the reworked 1657 woodcut† in *Horologium Oscillatorium* (1673), note the '*pre-cycloid*' 1657 cheeks at odds with '*cycloid proof*'! Huygens' *cnoop* should not be integral to a genuine 1657 pendulum, *unless Call had pre-empted Huygens*! It is a fatal anachronism! Furthermore, its reversible pendulum-cage, holding the Bob and Cnoop, has *six* independent adjustments; yet has no *absolute-scale* to fix compound-pendulum *length*; to regulate this *unequal-train*, unrelated to any Huygens' train of 1657,1658,1662,1664,1673. And, the cheeks even appear to be '*cycloids*'; individual micro-settings are flawed in concept; and do not meet at the suspension point. Yet Huygens did not realise his *empiric* cycloid-form until the end of 1659, nor formulate his geometrician's *proof* before 1660. Another fatal anachronism! So in Huygens' own hand, his pendulum, and this purported 1657 *Call pendulum*, are irreconcilable. So this pendulum is not of 1657, **Q.E.D.** VERBUM SAPIENTI SAT EST. *Open research of the extant 'Jan van Call' tower clocks would assist our English museums' ongoing "Call" investigations.*

NEW FINDS, RECENTLY BROUGHT INTO 'OPEN RESEARCH'.

1. UNKNOWN 'FROMANTEEL HAGE' WORKSHOP, FUSEE-CLOCK, SHOWING SECONDS BY 'TIC-TAC' ESCAPEMENT, c.1675/80: Images by courtesy of the Museum of Arts & Craft, Zagreb. I acknowledge Dr. Vesna Plantić and Hans Kreft as co-authors.

Gestations can be lengthy; I assisted Hans Kreft in his *'Fromanteel Story'* (*Tijdschrijft*, 2005). In 2010, Dr. Vesna Plantić, Ph.D., curator of Zagreb's Museum of Arts & Craft, sought Hans' opinion on an English spring-clock, signed 'A-Fromanteel' with an obscured address. Hans passed it to me, I had advised owners and him about an important 'sleeper' by John Ebsworth; (Hans Kreft, *'Een kijkje in de keuken. Zomaar een Engelse tafelklok?'*, *Tijdschrijft*, 2010).

Zagreb's Fromanteel appeared to be unrecorded in English bibliography. That turned out to be an understatement! Often, obliterations indicate a stolen object being disguised; one clock had its back-plate replaced, in vain attempt to hide its identity. Previously I have deciphered total obliteration in an exceptional London movement I revealed as *'Matthew Crockford at y^e Royal Exchange'*. Digital-techniques were applied to the address of Zagreb's *Fromanteel* movement. (see *RH, Supplementary Views, p.2., Curiosa, 'Matthew Crockford' deciphered*).

Fromanteel's unknown address: The task seemed simple, as the Fromanteels' only recorded workshops are London, Newcastle, and Amsterdam. What I revealed is unknown Fromanteel address, *'Hage'* - normally Latinised, as *'Hagae'*, or Dutch, *'Haghe'*, but used by Van Ceulen in skeletonised signatures. This workshop is unrecorded in the dynasty's long history, (*RH, Supplementary Views, Curiosa*). I reserve some questions about the floral engraving; I suspect the back-plate originally was plain, having only the early signature; later confined by a *Knibb-style* floral cartouche; finally, the *'Hage'* address was defaced by yet another engraver. Why?



RH, Supplementary Views, p.2, 'A Fromanteel Hage', being an hitherto unknown workshop.

Which *'A.Fromanteel'* had set up this unrecorded workshop in The Hague between 1675-80, as implied by Zagreb's movement? Not the *'Albertus Fromanteel London'* signed in later arch. Brian Loomes retraced the Fromanteel family travels; Ahasuerus I went to Holland in 1668-9; Abraham I joined his father in 1669; he went again in 1680 to set up business with John; was called back to London in September for his Freedom. Had Ahasuerus I with Abraham I set up a short-lived workshop in The Hague, around the time of John Fromanteel's relocation to Amsterdam with Ahasuerus II, in 1681? Did the Fromanteels make a failed attempt to break into the Hague's important pendulum market with a *physical* workshop; or merely *'badging'* this earlier 'stock-movement' with the Hague address? Perhaps the Fromanteels did *test* that market, but met opposition from local trade ~ as Rotterdam's Simon Douw had found in 1658.

Zagreb's little movement is the sole surviving evidence for an *unrecorded* venture. It assumes importance to horology far above its former status. Rare features raise that status still further.

Fromanteel's Dial: A diminutive 220 mm. (8.6") latched dial, *exceptionally* shows Seconds', much like Tompion's earlier weight-timepiece, (*'RH', Part II, The Seconds' Hiatus, p.29*). This has typical Fromanteel chapter-ring, early cherub spandrels, bold Clement-Fromanteel hands, and decorative ringing, (distorted by winder, due to worn Fusee pivot, now 'bumped'). Images reveal a curious group of four large filled holes down the **III** side; purpose presently unknown. The vertical edges have two small filled holes; for swivels that held the dial and its movement in its former *English* case. Knibb's spring-clocks also used a swivel fixing system.



Dial of a rare fusee-clock showing the Seconds, by 'A=Fromanteel Hage' a previously unknown Fromanteel address, (*KP*). The fine original hands are typical of the Fromanteel-Clement workshops. Distorted ring by wear at Fusee pivots- note 'bumped' pivot. The movement has Fromanteel's original pivoted-pendulum to early 'Tic-Tac' escapement with his knife-edge suspension and steel keeper, and having typical English Five-Wheel Trains on Fusees; circa 1680. (*RH, Part 2*. "The Seconds' Hiatus?" p.29).

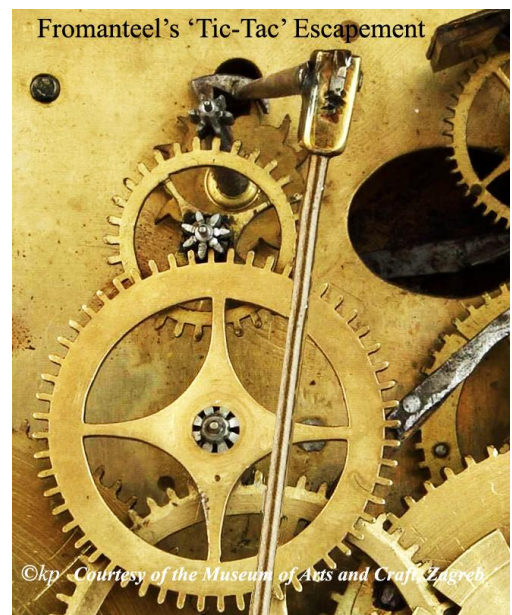
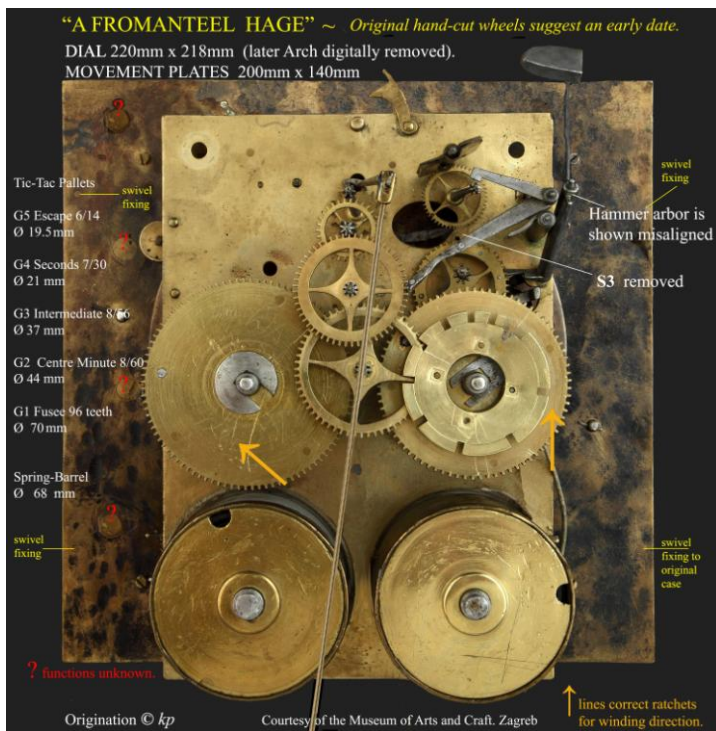
Fromanteel's typical layout: Bugle-latches; reversed ratchets and clicks (corrected by direction of line); scroll-feet to brass click-springs and long-cock for 'Tic-Tac' arbor; *Vesica* shaped bridge, integral steady-pins (2nd method); ID punches (*NL, 'tekens'*): lifting-piece with Strike re-set pull; passing half-hour strike; steel posts and port for *B&SMP* (Shutter set on Dial collet); shaped ports; Seconds' direct off 4th Wheel in Tic-Tac train.

Fromanteel's Front-Plate (200mm x 140mm): typical Fromanteel layout and components;

- Bridge wrought in vesica-shape, integral steel steady-pins, their 2nd method, Fromanteel's earliest method (1649) fixed steel steady-pins fast into the plate;
- Components have punched 'ID' marks (*NL, 'tekens'*), like their earliest clocks;
- Early 'bugle' latches to only 4 pillars, (Fromanteels' normally use 5, 6, plus);
- Scroll-foot to the long brass Pivot-Cock, (for the 'tic-tac' escape-pallet arbor);
- Elegantly shaped steelwork to the Strike Lifting-piece, (almost a trademark);
- Reversed Ratchets and Clicks, often seen in earlier London work (Crockford, Ebsworth); usually corrected by the gut-lines, so each fusee winds clockwise;
- Curiously shaped apertures for the strike-detents - typical thoughtful details;
- **III** side: 2 steel posts, and pivot hole, for Fromanteel's own '*Bolt and Shutter Maintaining Power*' (*B&SMP*). Nb. Dial-centre has a brass *grommet* for a rare dial-mounted pivoting Shutter, (c.f. *Cupid Fromanteel*, Bonham's July 2011).
- **IX** side: Strike Lifting-piece with a pull-chord, used for re-setting the hours by the 'count-wheel' controlled Strike. Note *half-hour passing-strike* just below.

Abraham Fromanteel's Fusee Trains; Rare 'Tic-Tac' Escapement, producing Seconds'.

Images of the front-plate show an early 'tic-tac', [derived from Ahasuerus Fromanteel's cross-beat, then pendulum-cross-beat]. In all of Huygens' early patent applications, all are weight-clocks, all are intended for scientific purposes, his short-trains always support a Seconds' dial. Whereas, in early spring-clocks, intended for secular use, a Seconds' dial is rare, but made by Johan Philip Treffler of Augsburg and Florence (1657/8); two by William Knottesford of London (1670s); one Johannes van Ceulen, The Hague (1690); and Pierre van Stryp of Rome ('tic-tac' c.1700). Zagreb's "A Fromanteel Hage" movement adds to that tiny corpus. Zagreb's first images gave impression of a verge-escapement, the seconds directly on Contrate. That is not so, as subsequent images prove; predicted by clockmaker-conservator Laurence Harvey. (RH, Part I, p.13 note; Supplementary Views, Curiosa; Fromanteel Hage; Tic-Tac; Seconds)



ZAGREB FROMANTEEL TIC-TAC — SECONDS "A=Fromanteel Hage" (probably Abraham I) c.1680					
Movement and wheel trains resemble Ahasuerus Fromanteel's circa 1670/75, but Back-plate engraving and Dial rings suggest the later date.					
TIC-TAC TRAIN (Nb. English wheels, 4-crossings)	Nr. Teeth	Pinion nr.	Beats per Minute	Turns per min	Turns per hour
5th. Wheel - Escape (Tic-Tac)	14	6	140	5	300
4th Wheel - Seconds (at Dialplate)	30	7	Pendulum cms	1	60
3rd. Wheel Intermediate	56	8	18.26 cms	0.125	7.5
2nd. Wheel Centre (Minutes)	60	8		0.016666667	1
1st. Fusee	96				

Abraham Fromanteel's original 'tic-tac' escapement, [evolved from 'pendulum-cross-beat'], has the dial Seconds' hand set directly on the 4th wheel-arbor of this advanced 5-wheel train.

(see RH, 'openresearch' matrix; sheet one, spring-clocks, row 44*). * rows may change.

Zagreb's Fromanteel Hague movement becomes of particular historical interest. Its possession of hand-cut wheel-trains with a radial escape-wheel and early "tic-tac" escapement, showing Seconds' on the dial, adds to its horological significance and historical import. These features, all suggest a date pre-1675. In 1672, Knibb used 'tic-tac' for James Gregory's 'Split-Seconds Timer' at St.Andrew's; Tompion was to use it later. However, the bold hands and ringed dial, also its floral back-plate, all post-date Knibb's clock, probably dating this to circa 1680. As far

as I am aware, this particular construction is unique among the Fromanteel's *oeuvre*; matched only by Pierre van Strijp, Rome, c.1700, (see **RH**, *The Seconds' Hiatus*). Zagreb's Fromanteel breaks the mould, to enlarge the known canon of this most important English clock dynasty.

Abraham's movement, clearly, is not of Dutch extraction, nor even Dutch influenced. Its fusee movement seems to be earlier than its floral back-plate, hands, and ringed dial-holes suggest, perhaps being pre-1675? Seeing importance of Zagreb's Hague Fromanteel, its case probably was important too, perhaps a large turn-table case in show-wood. But even this *apotheosis of English clocks* did not found a new clientele among the Hague's conservative thrifty burghers.

These findings and originations went to Hans Kreft and to Dr Vesna Lovrić Plantić at Zagreb, who kindly consents to my publishing these findings and originations; which the museum will use in their publications. I also made a plea, "Because of this unique Fromanteel movement's undoubted historical and technical importance, please display it without the later case or the added dial-arch (falsely dated '1661'). I realise my plea runs contrary to conservatorial views, but the arch and case are not culturally relevant, and are not 'bona-fide improvements', but in fact 'abuses'." I cited example of Florence's Museo Galileo's prominent display for *Treffler's* movement; hoping Zagreb Museum of Arts & Craft accepts this antiquarian's genuine plea.

This '*Fromanteel Story*', and *open research* it represents, is just beginning. As a long-standing Fromanteel enthusiast, I am well aware of the significance of this discovery; Ronald Lee, and Peter Gwynn too, would equally have been excited by revelations of an unknown Fromanteel workshop and their entry to the competitive Hague marketplace; later to found the first Dutch Clockmakers' Guild, in 1688, with Pieter Visbagh as first Master. Horologist pilgrims will make their ways to Zagreb to examine Abraham Fromanteel's movement for themselves. I too would be delighted to make his acquaintance. Here I acknowledge Dr. Plantić and Hans Kreft as co-authors in this first study, and I acknowledge the confidence shown by their referral.

Link <<http://www.antique-horology.org/Piggott/RH/Appendix9.pdf>>

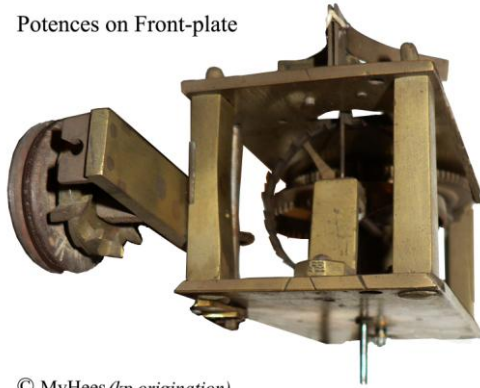
2. A DISGUISED, 'HAGUE', PENDULUM TIMEPIECE MADE IN HUYGENS' WAY, HAVING WEIGHT-DRIVE, circa 1658. I acknowledge collaboration of Michiel van Hees, finder and co-author, who arranged for its exhibition at MNU's symposium; I am grateful for his consent to speculate. (Michiel's images, modified by KP, courtesy University of Utrecht).

Huygens' preference for the weight-regulator, as seen in his 1657 patent, (†Benjamin Martin's woodcut, found by Andrew Crisford), is remarkable for the lack of surviving *Dutch* examples. Sebastian Whitestone and Jean Claude Sabrier describe one prototype Huygens' regulator, by Isaac Thuret of Paris, († see '*The Identification and Attribution of Christiaan Huygens' First Pendulum Clock*', Antiquarian Horology, Dec.2008, AHS). Where are the Hague equivalents?

A year ago at University of Utrecht, Michiel relocated a neglected weight-timepiece noted by Dr Reinier Plomp; a '*missing link*' ~ between Huygens' regulators and Coster's spring-clocks without seconds. The French? case opening at rear, having openings in base for weight-lines to train and alarum, (no long-pendulum); the repoussé shield signed '*Goudron(sic) AParis*'. Yet the movement, having early *square*-pillars and Huygens' suspended short-pendulum in cheeks, recognisably belongs to first **Coster-Fromanteel-Oosterwijck** canon; adding to corpus of early **Dutch** pendulums, and **Hague** pendulum *weight-clocks* in particular. I shall justify pre-1660 dating and attribution to *Severijn Oosterwijck*, even in *Salomon Coster's* workshop.

Movement: Small plates (116 x 52.5 mm); having four square pillars; pinned at back-plate, (*RH*, Plomp's *Characteristic Properties*, *P4*); being ported for *escape*, (*P3*). Michiel reports a rare and *original* 3-wheel train, having 3-spokes, the pinions of 6-leaves; the cheeks mounted like Oosterwijck's '*RH*'. The large hour-wheel canon, on a steel-post; driven by minute-pinion below (geared 12:1); the brass Minute/Quarter pointer, *anti-clockwise* off the main-wheel; no evidence for seconds. Dutch form potences, with Fromanteel flourishes, *exceptionally* set on frontplate (no *P5*) having long-verge across plates.

Potences on Front-plate

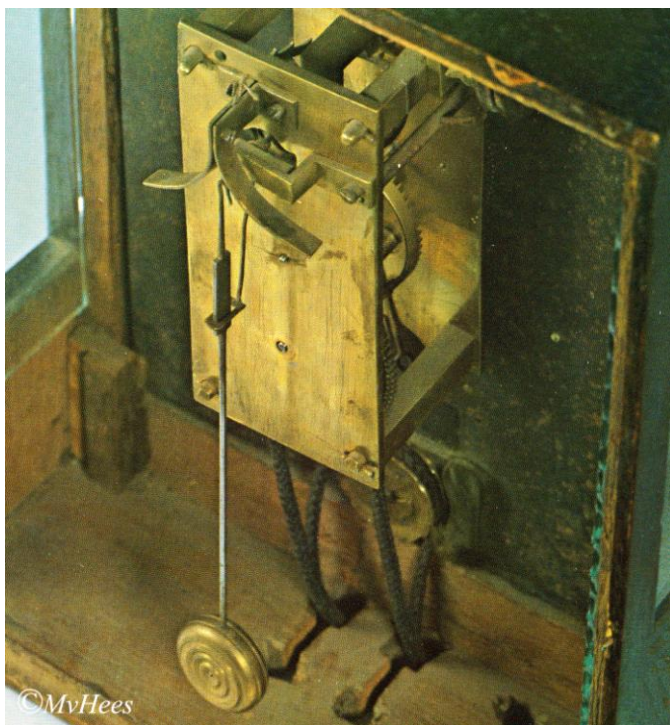


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G1 90, G2 6/66, G3 6/27 = 148.5 beats/min., requiring a nominal pendulum of 16.2 cm. (6.4"). (*RH*, '*openresearch*' matrix; Sheet Two, Row 13*).

Its unequal train cannot produce seconds except by Treffler's contrate reduction-gear; no consequence without a seconds' dial. Oosterwijck's potences to **Bruce #2/3** also are set on front-plate; making him most likely maker here, too; but 6-leaf pinions are common to the Fromanteels. *Rows may change.

The dial-mounted pulley to Huygens '*endless-rope maintaining power*', (1658). A *scalloped* front-plate suggests pulley was higher, before access hole was cut for this *short*-pendulum, (filled holes in dial match pulley-plate rivet spacings). Was the movement first intended to have a *long*-pendulum and different train giving *Seconds*? Weight-alarum on top pillar, *IX* side, *maybe original*; selector in hour-boss as *Zaanse* clocks.



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Movement slides into two 'Lugs'



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Mounting: *Exceptionally*, this plated movement is located in the upper dial-plate by two '*lugs*', fixed by a single dial-foot below. The upper corners are chamfered for the plate to slip up-and-under the dial-lugs, the movement then pivoted downwards to locate onto the single foot, and pinned to fix securely. The method is counter-intuitive; as plates usually are fitted '*square-on*' because of motion-work, but this only has a big hour-wheel and direct minutes; awkward maybe, yet it works. (see *RH*, *Supplementary Views*, p.2., *Curiosa*, *Lugged Mounts*). I only recall seeing a similar lugged-mounting in the contentious '*Jan van Call*', (see pages 3-4 and presentation slide #22); that Berry van Lieshout found exceptional in our 1986 preview; and would not bid, though commissioned by the most prestigious Dutch collection!

Dial: The rectangular (220 x 165mm) iron dial, decked out in old velvet, is fixed into the case by lower lugs and upper pins (or swivels); a superbly finished chapter-ring, (Ø144mm, ø104mm), fixed to dial by four rivets (*RP Characteristic Properties, P7*); having ordinal Roman hours, and half-hours marks, of comparable quality to Oosterwijck's engraver, (see *RH Patterns PCR4,6*). The subsidiary dial (ø42mm) riveted at VI, has concentric *anticlockwise* Minutes & Quarters with a brass-pointer; (compare, Ahasuerus Fromanteel's 'Tidal-dial', *RH, Appendix Seven*). The hour-hand has reverse-lobes like Coster *D5*, see Pattern *PH2*. (Coster *D1-D4*, have Pattern *PH1*; ditto *RH*). The unusual *Zaanse*-type alarum, to numbered hand boss, is curious. The associated, probably Dutch, repoussé 'shield', c.1660, (French cartouches are *cast*, Thuret #327 excepted); now riveted, it should hang on loops, with velvet cut for access to 'stop/start' this *short-pendulum*. Signature is unconvincing, in all respects; calligraphy, proportions, misspelled; uneven ground, with vestiges of name erased? (see *RH, Supplementary Views, see Oosterwijck patterns, see Matrix plate/dial sizes Rows 17 and 20 - c.f. Salomon Coster Rows 9-10, Claude Pascal Row 24*). **nb.** Row numbers may change!



We ascribe this rare Anglo-Hague *missing-link* weight timepiece to 1658 from Coster's Hague workshop, with *inputs* by John Fromanteel, and *surely* Oosterwijck; filling a gap in the known corpus of Huygens' experimental weight-clocks. Probably it was exported to France, adapted by a lesser maker [not *Gaudron*], re-named on an *associated* Dutch? repoussé shield, given a new French? case. It is an important find for *open research*, like the striker relic that came to MNU this week; both shall be published in more scholarly papers than this first note. Thanks to Michiel van Hees. [Link <http://www.antique-horology.org/Piggott/RH/Appendix8.pdf>](http://www.antique-horology.org/Piggott/RH/Appendix8.pdf)

SIGNIFICANT COMPONENTS: BEING SOUGHT FOR 'OPEN RESEARCH'.

'*Split-Barrels*': see *RH, Part I, 'Horologium'* (pp.16-17), also *Part II, §4, "Secret Construction"*. Burgi invented the split-barrel to drive two *strike* trains (1582); I argued for its '*secret*' first adaptation to drive *going* trains with pendulum control. We seek any *before RH*.

'*Flying-Stopwork*': see *RH, Part I, 'Horologium'*, (pp.17-19); associated with *secret*? Berry van Lieshout coined '*Flying Stop*', replacing static *Stackfreed*. We seek any *before RH*.

'*Curiosa*': see *RH, Supplementary Views, (p.2)*. We seek all *unusual* constructions. All approaches furthering *open research* are welcomed, and recommended to all antiquarian horologists, of whatever personal experience. Academic papers are best digested at leisure, not after lunch - as last speaker, so I may not stick to script, preferring extempore exchanges.

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