

## THE AUTHOR AND THE 'SCRIBE': CREATIVITY AND COMPUTERS IN PRIMO LEVI

Levi's double status - as survivor of the death camps, arbitrarily 'selected' to bear searingly first-hand witness, and also as a scientist, professionally subject to norms of objectivity and exactitude - has inevitably had a powerful, perhaps over-simplifying effect on how his writing<sup>1</sup> has been received both publicly and critically. Both categories of discourse, testimonial and scientific, are assumed to be predicated on a high 'truth' threshold, with an associated, legitimizing idea that the content closely (or even absolutely) governs the form. The author, in other words, is dictated to, almost literally, by the thrust of subject matter. This assumption has tended to obscure an important facet of Levi's activity as a writer (as opposed to mere recorder) - namely the complex process of rewriting and redrafting of his texts. As Giovanni Tesio has shown,<sup>2</sup> even Levi's very first novel, *Se questo è un uomo*, of 1947, supposedly written spontaneously and in great haste, shows signs of careful, painstaking revisions. The question of Levi's self editing is an important one, and clearly deserves a major, in-depth study in its own right.<sup>3</sup> The present study, however, attempts to highlight just one small, rather delayed aspect of this question, namely Levi's adaptation to the new kinds of continuous re-writing process inherent in using the word processor.

Levi came to the word processor relatively late in life. He acquired a

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<sup>1</sup> Unless otherwise indicated, all references to Levi's writings will use the volume / page numbers from Primo Levi, *Opere*, edited by Marco Belpoliti with an introduction by Daniele Del Giudice, (Turin, Einaudi), 1997.

<sup>2</sup> Cfr. Giovanni Tesio, *Per alcune aggiunte e varianti di "Se questo è un uomo"*, in "Studi Piemontesi", November 1977. However, Calvino at Einaudi was aware of some minor degree of re-writing between the 1947 and 1958 editions. In a letter to Giacomo Debenedetti of August 1958 he states: «Il Primo Levi [*Se questo è un uomo*] si può considerare una edizione rivista e corretta. Non che le correzioni siano gran cosa, ma qualcosa di cambiato rispetto all'edizione del '47 c'è.» (in Italo Calvino, *Lettere 1940-1985*, edited by Luca Baranelli with a foreword by Claudio Milanini, Milan, Mondadori, 2001, pp. 554-555).

<sup>3</sup> One of his poems in *Ad ora incerta, L'opera* (II, 568) talks revealingly about the urgent need to stop the *labor limae* before it becomes counterproductive. The problem for the writer tinkering with a work is, as he says, "come staccarsene?".

Macintosh 128k computer in September 1984,<sup>4</sup> just three years before his death. To place this 'conversion' in context, Calvino, who wrote presciently and extensively on the topic of machine intelligence and its relation to literature, was still not using a computer to write with when composing *Palomar*, which was published in 1983.<sup>5</sup> Levi's brand new computer, which clearly fascinated him,<sup>6</sup> and to which he even entrusted the beginnings of a personal chronology,<sup>7</sup> prompted a number of explicit statements about computer assisted writing which are interesting both for what they say about his quite sophisticated, self-conscious adaptation to a new technology, with all its attendant benefits and limitations, and for the wider insights they provide into Levi's personal theory of creativity.

But even before Levi actually owned a computer himself, certain possibilities of machine intelligence (or non-intelligence) as a textual operator are worth exploring in his fiction. Not surprisingly, these references first surface in his collection of science-fiction, *Storie naturali*, published by Einaudi with Calvino's enthusiastic encouragement,<sup>8</sup> under the pseudonym Damiano Malabaila in 1967. Two stories in particular concern us. In the collection they are juxtaposed, implying that the author himself (or certainly the editor) was conscious of the common subject matter, and wished his readers to be aware of their synergy. The first of these, in the form of a fictional report, is called *Censura in Bitinia* (I, 409 ff.). The second, which is in the form of a radio play (which was actually broadcast by RAI's Compagnia della prosa in October

<sup>4</sup> Judging from the description of the "bocca storta" (*Lo scriba*, II, 842), and the date of purchase, the model was likely to have been a Macintosh 128K, the first machine affordable by individuals to use a graphical User Interface and 400k 3.5" diskettes. It did not have a hard drive, however, and programs had to be loaded from a program diskette. At the time it sold for \$US 2495. For a photograph showing the 'bocca storta' and a list of the machine's specifications, visit the Apple History site (<http://www.apple-history.com/128k.html>). One wonders, however, whether Levi had seen Ridley Scott's infamous 60 second commercial for the computer, based on Orwell's *Nineteen-eighty-four*, containing disturbing imagery reminiscent of the Lager (the clip is available in a number of formats at <http://apple-history.com/gallery.html>).

<sup>5</sup> Though the work was the last to be published during the writer's lifetime, it did, however, undergo a long gestation, with some of the pieces antedating *Se una notte d'inverno*: see M. McLaughlin, *Italo Calvino* (Edinburgh U.P.), 1998, p. 129.

<sup>6</sup> He even composed the artwork for the cover of *L'altrui mestiere* using the Macintosh drawing program to produce a repeated image of an owl (his self portrait). The cover picture credit actually states that it is a: «composizione elaborata da Primo Levi sul computer Apple Macintosh».

<sup>7</sup> See the end-comment to the chronology drawn up by Ernesto Ferrero for the Einaudi edition of the *Opere*, p. I, ci: «Levi fu invitato a stendere lui stesso una cronologia, e si mise al lavoro sul computer Macintosh che utilizzava per scrivere. Dopo la sua scomparsa, i famigliari hanno potuto constatare che le annotazioni si fermavano all'inizio del 1975.»

<sup>8</sup> See Calvino's supportive letter to Levi of November 1961, now in Italo Calvino, *Lettere 1940-1985*, cit., p. 695.

1965, the producer being Massimo Scaglione), is called *Il versificatore* (I, 413 ff.). Between them they represent, with absolute symmetry, the functions of computers as substitutes first for readers then for writers. Though *Storie naturali* came out in 1967, the two stories were originally published in the newspaper "Il mondo", *Censura in Bitinia* in January 1961, and *Il Versificatore* in May 1960. They therefore constitute, in their original guise,<sup>9</sup> very early statements on computers and literature, far earlier than anything on the subject by Calvino, for instance.

*Censura in Bitinia* is concerned with the problems facing a repressive society which needs to streamline censorship in the face of an ever growing output of censurable material. In its ironic portrayal of gray, administrative anxiety at dealing with workload,<sup>10</sup> and its concern for the health of operatives menaced by tottering piles of unfinished business,<sup>11</sup> it clearly anticipates (or perhaps even informs) Calvino's romp with automated censorship in *Se una notte d'inverno* of 1979.<sup>12</sup> Amongst the first Bithynian attempts to increase productivity and to deal with a dangerous backlog is mechanisation, specifically by means of computer programs. Though the exact functioning of the software isn't specified, the algorithm essentially performs a kind of triage, based on a graduated threshold response:<sup>13</sup>

mi è stato detto che la loro memoria magnetica conteneva tre distinti elenchi di vocaboli, *hints*, *plots*, *topics*, e sagome di riferimento. Quelli del primo elenco, se riscontrati, venivano automaticamente elisi dall'opera in esame;

<sup>9</sup> In the case of *Censura in Bitinia*, the avian imprimatur was absent in the newspaper version. In the case of *Il versificatore* the newspaper version was in the form of a first person narrative, from the point of view of the poet. The autobiographical suggestion is, at least fictionally, all the stronger.

<sup>10</sup> Similar questions of bureaucratised violence, workload, and even an automated solution, occur in *Anagrafe*, a short story published in "La Stampa" in 1981 (II, 1162-1165), where an employee who works in the department of fate, dealing with how people die, objects to the arrival of a "randomizzatore" which renders his work excessively arbitrary.

<sup>11</sup> *Pratiche inevasse* is something of a Leitmotiv in Levi's description of the world of work, becoming the title of one of his late poems (II, 560), where the mass of dossiers pending are a metaphor for unfinished business in life.

<sup>12</sup> Calvino's description occurs in the Ataguitanian prison, where the very average Male Reader is used as a control sample to test the reactions of a mechanized censorship program (p. 218 of the original 1979 Einaudi edition). It is not unlikely that Calvino here was influenced by Levi's *Censura in Bitinia*, for he had a high regard for Levi's science fiction, basing his *Cosmicomiche* tales on Levi's 'Il sesto giorno' from *Storie naturali*.

<sup>13</sup> This isn't exactly binary logic of the kind used in computer programming. However, Levi as an industrial chemist working with synthetic varnishes would have been familiar with the control engineering used for temperature control and the like in batch processing. The mishaps of such processes are chronicled in *La chiave a stella*.

quelli del secondo comportavano il rifiuto integrale della medesima; quelli del terzo, l'immediato arresto ed impiccagione dell'autore e dell'editore. (I, 410)

The program relies on purely lexical analysis ('vocaboli') without any reference to other syntactic or semantic structures, a crude operation of the kind that would be famously carried out for real, as an experimental demonstration, by Mario Alinei on Calvino's *Il sentiero dei nidi di ragno*, and which, in turn, Calvino would himself parody in *Se una notte d'inverno*.<sup>14</sup> It is difficult, however, to see how Levi's three categories (if he was using the English terms correctly) could work at a uniquely lexical level. What might the reference profiles have been?<sup>15</sup> With the possible exception perhaps of the first category, the classification would have needed to be supra-lexical, or discourse-based. Perhaps the confusion is deliberate, so as to lay the fictional foundations for the interpretative disaster which follows:

I risultati furono ottimi per quanto riguarda la mole di lavoro che poteva essere svolto (in pochi giorni i locali degli uffici furono sgomberati), ma assai scadenti sotto l'aspetto qualitativo. Si ebbero casi di evasioni clamorose: "passò" e fu pubblicato, e fu venduto con strepitoso successo, il *Diario di una capinera*<sup>16</sup> di Claire Efrern, opera di valore letterario dubbio ed apertamente immorale, la cui autrice, con artifici assolutamente elementari e trasparenti, aveva mascherato mediante allusioni e perifrasi tutti i punti lesivi della morale del momento. (I, 410)

Here Levi is commenting on a perceived inability of machines to deal with inferred meanings, meanings requiring a context-conditioned step from primary significations to secondary intentions. Like some primitive translation programs today, Bithynia's computer behaves biblically, doggedly equating 'a word for a word'. Calvino in *Se una notte*, perhaps responding to the stimulus of Levi's discussion here,<sup>17</sup> includes in his Ataguitanian censorship scene the

<sup>14</sup> M. Alinei, *Spogli elettronici dell'italiano contemporaneo*, (Bologna, il Mulino), 1973; Calvino's 'revenge' occurs in the chapter of *Se una notte* where Lotaria, the female reader's sister, performs a frequency count operation on the text, confidently assessing its ideological content (p. 186 of the original Einaudi edition of 1979).

<sup>15</sup> The model Levi is implying here sounds more like a derivation of the kind of control engineering commonly used for inputs such as temperature control in batch production. For Levi's interest in control mechanisms and homeostasis as a metaphor, see *Il brutto potere*.

<sup>16</sup> The coincidence with Verga's *Storia di una capinera* (1871) is comically deliberate.

<sup>17</sup> The sequence of Calvino's and Levi's mutual influence with regard to questions of artificial intelligence deserves further study. It is highly probable, given the dating, that Levi's two computer stories from *Storie naturali* of 1967 share a common intellectual origin with Calvino's seminal essay *Cibernetica e fantasmi* of 1967. Calvino's essay can be found in

niggling doubt, on the part of the censors, that the machine can draw the correct conclusions.

La tecnologia moderna ci metterà presto in grado di disimpegnare questi compiti [di censura] con rapidità e efficienza. Abbiamo macchine in grado di leggere, analizzare, giudicare qualsiasi testo scritto. Ma è appunto sull'affidabilità degli strumenti che dobbiamo eseguire dei controlli. (*Se una notte*, p. 218)

Even within the restricted field of words, though, Levi's censorship program is plagued by a dependence on 'literal' exactitude. The machine comes across a misprint in a military memoir, 'reggipento' for 'reggimento', and, presumably part-matching the form to the word for brassiere, promptly initiates proceedings for obscenity which lead to the respectable author's execution at the scaffold.<sup>18</sup> Presumably, given the lethal outcome, this is a case of the computer being activated by finding one of the third category items, that of 'topics'. In these two examples, Levi's irony underlines the symmetry between real obscenity being hidden, and non-existent obscenity being 'discovered', both by reliance on mere words.

The stern application of logic, necessary for computer instructions, leads to absurd 'either-or' outcomes which do not reflect the fundamental fuzziness of human language. The machine, acting logically, produces counter-intuitive results. This in turn undermines confidence in the legitimacy of the process. The essentially moral problem of censorial aberrance is resolved by turning from computers, with their 'over-sophisticated' discriminatory criteria, to trained animals. If arbitrariness is what censorship is all about, then absolute arbitrariness, and its ideally unintelligent application, is what is needed. The machine is, indeed, only blameworthy if it claims to be intelligently discriminating, i.e. non-arbitrary. After experimentation on higher animals, such as dogs and monkeys, which prove unsuitable because of their vestiges of intelligence and sensitivity, the censors finally turn to chickens - cheap, not perturbed by memory or emotions, and endowed, by definition, with bird-brains. In a final irony, the report on censorship is itself passed for publication by one of the new avian censors, whose claw-like imprimatur graces the final "verificato per censura".

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Mario Barenghi's two-volume edition of the *Saggi* (Milan, Mondadori), 1995, p. 205-228. The mutual influence between the two writers was strong in the area of scientific fantasy: Calvino's *Cosmicomiche* were directly influenced by Levi's one-act play *Il sesto giorno* from *Storie naturali*. In turn, Levi's *Il fabbro di se stesso* is dedicated to Calvino as a homage to the *Cosmicomiche*.

<sup>18</sup> The reference to campaigns in the Caucasus makes one suspect that Levi is perhaps playfully referring to Buzzati's *Il deserto dei Tartari*. Certainly Buzzati is a major influence on Levi, who employs many Buzzatian ideas in his short stories.

Though the main focus of Levi's satire is the brutal stupidity and absurd arbitrariness of censorship as a general principle,<sup>19</sup> and the machines, like the chickens, are just a means for ridicule, it is revealing to see that even at this early date in the sixties he is able to imagine an application of machine intelligence to 'reading', and foresee its manifest shortcomings when faced with interpreting metaphorical discourse.

The second piece in *Storie naturali* turns from reading to writing. Though originally a first person narrative in its original newspaper guise,<sup>20</sup> 'Il versificatore' was later produced as a radio play (the version carried in the Einaudi volume), and it would be interesting to be able to listen to the rendition of the computer voice, even though the artistic decisions were clearly in the hands of RAI producers and technicians. The short, one act play is structured around three sections - a brief prologue, followed by the long main section in the form of a flashback, and finally a curt epilogue, returning to the present. The prologue introduces the poet and his secretary, who are about to begin a normal day's work expeditiously composing occasional verse with the aid of *Il Versificatore*. The machine has already been warmed up (a sign that Levi, perhaps for artistic reasons, still had in mind valve technology rather than transistors and printed circuits). The compositions required that day are amusing clashes between antiquated metrical forms and banal, present-day, philistine content - for instance: «un cantico per la vittoria del Milan, domenica scorsa» (I, 415). As the team gets down to work, the poet remarks to his secretary:

Se non ci fosse lui [il Versificatore]... E pensare che lei non ne voleva sapere!  
Ricorda due anni fa, che fatica, che lavoro sfibrante? (I, 415)

The flashback, the main part of the play, takes us to a moment when the poet is desperately trying to dictate a funeral ode for an amusingly named marchese, Sigmund von Ellenbogen.<sup>21</sup> The contract stipulates rhymed octaves. The dictates of rhyme force the poet into increasingly doomed verbal strategies, aided and abetted by frequent recourse to a conventionally-printed 'rimario'. Prevented from giving up by the terms of his contract, the poet puts through a telephone call to a business machine salesman, signor Simpson,<sup>22</sup> who is try-

<sup>19</sup> The protest was occasioned, Levi later revealed, by the anti-democratic attitude of the DC interior minister Mario Scelba.

<sup>20</sup> And a comparison between the two versions, as with the other examples of Levi's adaptation for radio, would be instructive for our general understanding of Levi's rewriting process.

<sup>21</sup> The first name is a dig at Freud. Ellenbogen (elbow) is a fairly common acquired surname in the Eastern European Jewish community, though never with the aristocratic "von..."

<sup>22</sup> A recurrent figure of 'progress' in the *Storie naturali*, a kind of technological messenger from the gods who brings enticing but problematic new devices to the protagonists of the stories.

ing to sell a new office model of poetry-processor, the 'Versificatore', made in the USA, but assembled and programmed for the Italian market in Olgiate Comasco.<sup>23</sup> The prospect of mechanisation worries the secretary, who justifiably sees her professional status at risk of downgrading. The heavy 'Versificatore' is wheeled in on a trolley and plugged in. Simpson explains that it is the basic office model, not the high-specification 'Troubadour',<sup>24</sup> which is capable of relentless creativity, at extremes of temperature, and even underwater or in a total vacuum. Just as he is about to explain the workings of the 'Versificatore', Simpson is called away to another client. He leaves the poet and his secretary to explore the versifier on their own.

The operating instructions are simple: four parameters have to be entered - subject-matter, register, metrical form and historical period. The first attempt, Dante's verse form *terza rima* transposed to the seventeenth century, goes astray, for the poet has forgotten to key in the most important parameter of all, subject-matter. Syllable count and rhyme are still perfect, but there is no content. The unwittingly abstract geometrical schema, coupled with the Dantesque associations is perhaps Levi's way of commenting satirically on the "Novissimi", and Sanguineti in particular.<sup>25</sup> A quick readjustment, a sequence of bleeps,<sup>26</sup> and the topic of 'The Limits of the Human Mind' fills the readied blank syllables with text:

Cérébro folle, a che pur l'arco tendi?  
A che pur, nel travaglio onde se' macro  
Consumi l'ore, e di notte intendi?  
Mentì, mentì chi ti descrisse sacro  
Il disio di seguire conoscenza  
e miele delicato il suo succo acro. (I, 424)

The poet comments this first test-piece, reading aloud the more memorable phrases. They aren't bad, he says, even though they are not the work of a genius. What he doesn't say is that much of it is directly attributable to the the

<sup>23</sup> Reference to this unlikely and resolutely non-industrial locality in the Brianza may well be a comic allusion to the arch verbal experimenter, Carlo Emilio Gadda. I am grateful to Diego Zancani and Federica Pedriali for spotting this possible allusion.

<sup>24</sup> This heavy-duty model would receive a brief airing in the newspaper version of *L'ordine a buon mercato* ("Il Giorno", 1964), where it is called by its Italian equivalent, the "trovatore", though the final text which appeared in *Storie naturali* eliminated it, in favour of concentrating on the duplicating machine, the Mimete.

<sup>25</sup> I am grateful to Emanuela Tandello for this intriguing suggestion.

<sup>26</sup> "Tre segnali brevi e uno lungo": it is the Morse code for 'V' (appropriate to a machine whose name begins with that letter) and the well-known motif from Beethoven's fifth symphony.

greatest of the Italian poets. For instance, the metaphorical expression 'tendere l'arco' is in fact an unmistakable paraphrase of Petrarch's comments on Cupid in *RVF* 270.104:

indarno tendi l'arco, a voito scocchi.

The irony is that Petrarch's remarks on Cupid's impotence, here re-applied to human ambition, are equally applicable to the mechanized poetic project Levi is describing.

However, the machine's propensity for quotations does not stop there. The rhyme 'macro' / 'sacro' is straight out of Dante (*Paradiso* 25.1-3). In itself it does not look all that important, but the coincidence is not accidental. This is the famous passage in Dante's poem where the poet sketches out the prospect of being crowned with poetic laurels at the baptismal font of Florence cathedral. The machine is therefore ambitious for cultural recognition, and clearly has a personality. Yet another not-quite-original sequence in the same lines also turns out to derive from Dante: "Il disio di seguire conoscenza" is part of Ulysses' self-justification before launching into the famous "orazion picciola" of *Inferno* XXVI. It goes without saying that Dante's message at this point is all about the divinely imposed 'limits of the human mind'. Levi had used this passage to remarkable effect in the "Canto d'Ulisse" chapter of *Se questo è un uomo*. Here, nevertheless, the *Versificatore* announces that Dante was wrong:

Mentì, mentì chi ti descrisse sacro  
Il disio di seguire conoscenza.<sup>27</sup>

The fun continues. After a brief experiment with poetic licence (one of the variables the machine is able to be calibrated for), taken to its extremes (reminiscent of some of the products of OULIPO), the machine is set to write a nineteenth century free verse poem on the subject of the Seven of Thebes. The machine performs its duty but leaves blanks where the names of the heroes should go. The spaces are exactly right, metrically, but the machine is reluctant to make choices about which of the heroes to insert. Finally it is the turn of the secretary to give the *Versificatore* a topic to write about. She chooses, almost certainly mischievously, *Tema libero*, the dreaded free composition of secondary school Italian classes. The computer, to the secretary's consternation, begins a poem about making physical love with a girl.<sup>28</sup> But the contrast between the machine's tender amorous intentions and hard, cold, angular exterior finally moves even the prudish secretary.

<sup>27</sup> "Mentì" is also probably a Dante reminiscence from the canto of the simonists: "Di parecchi anni mi mentì lo scritto" (*Inferno*, XIX.54).



After the return of the salesman, the *Versificatore* is given one final task, to write a commissioned sonnet for a businessman on the hackneyed theme of *Autunno in Liguria*. The parameters are punched in, with a chronological value of 'turn-of-the-century'. The initial lines of the composition are suitably conventional and deliciously banal, but suddenly the computer gets stuck on the unusual rhyme *-atti*. To begin with, this produces weird but still operative verse, including the self-referential «Siamo bloccati sulla rima in "atti"». But then the lines become increasingly desperate:<sup>29</sup> the cry for technical help (via a numerical diagnostic code) is distorted by the now imprisoning rhyme:

Signor Sinsone affrettati combatti  
 Vieni da me con gli strumenti adatti  
 Cambia i collegamenti designatti  
 Ottomilaseicentodiciasatti  
 Fai la riparazione. Tante gratti.

Simpson indicates that the technical problem had been one of electrical current fluctuation, 'tensione' in Italian. The term 'tensione' is deliberately ambiguous, and suggests at the physical level that the machine has 'blown a fuse'. The listener, however, can take this not just literally, but also metaphorically - presumably the machine has crashed mentally under the stress of having to produce sub-Pascolian verse to order.<sup>30</sup> The salesman is quick to turn a disaster into a sales-pitch. He remarks that amongst the poetic licences that the *Versificatore* has indulged in is one of having changed his name Simpson to Sinsone, creating an implicit link between Simpson the potential saviour of the machine and Samson, the historical saviour of the Israelites. This proof of the machine's capacity for associative discourse (claimed as the essence of poetry) decides the poet once and for all: he immediately enters into negotiations to buy the *Versificatore*. The brief epilogue returns us to the present, when the machine has not only shown its utility at composing occasional verse, but now deals with office accounts and correspondence, and is even attempting prose.

As with the final irony of *Censura in Bitinia*, where the article on cen-

<sup>28</sup> It is worth speculating whether Levi's ideas on passion in machine intelligence influenced Buzzati's disturbing *Il grande ritratto*, (Milan, Mondadori), 1972, where a vast computer becomes disastrously jealous of a human rival.

<sup>29</sup> There is a conscious parallelism here with the difficulties the human poet had faced with his earlier indiscriminate employment of a printed "rimario" (I, 417).

<sup>30</sup> A word search using the *Letteratura italiana Zanichelli* dbt program indicates that the lexis of the first part of *Autunno in Liguria* is heavily biased towards Pascolian, and to a lesser extent Carduccian, poetic vocabulary.

sorship has itself been censored by the new avian censors, so here in *Il Versificatore*, the final comment of the poet in the epilogue reveals: «Il testo che avete ascoltato, ad esempio, è opera sua». Aside from the considerable humour (and self-humour)<sup>31</sup> in Levi's radio-play, certain important details stand out. The first is that criteria for an artistically successful application of machine intelligence are essentially psychological not formalistic, for the formalistic elements are not really a challenge. Indeed it is not the *Versificatore*'s regularity with metre or rhyme, genre or period, that makes it stand out. It is instead the propensity for quirks, irregularities and what could loosely be called personality. That is why the most interesting composition is the 'tema libero', rather than the imposed subject matter constraints of the occasional verse. After it has performed its *cri de coeur*, the secretary remarks tellingly: «Sì, sì, è divertente. Simula bene... simula bene il comportamento umano.» (I, 428). It is a fictional response to the Turing test.<sup>32</sup>

The second element is the emphasis, in the radio play, on the cultural aspect of the machine's programming. It has been enabled to store a wide range of already structured material, ranging from factory-floor jargon, through familiarity with Dante and Petrarch, to a syllabic mastery of the names of Greek mythology and competence in biblical etymology. For Levi, it would seem to be associative access to this 'encyclopaedia', as opposed to a mere mechanical linkage to a 'dictionary' (as Umberto Eco defines them),<sup>33</sup> which marks out the truly appropriate machine application. Finally, though Levi does not explain how, the *Versificatore* seems to be capable of learning from experience. It is to that extent an early example of 'intelligent system', of the kind predicted by Turing.

The third issue concerns Levi's idea of creativity. For him, artistic impulse

<sup>31</sup> The poem which finally causes the computer to crash bears certain similarities to *Il testamento del vicecapolaboratorio* (I, 1366), which Levi composed in 1947 whilst working at the DUCO plant in Avigliana (for which see *Cromo* in *Il sistema periodico*). This comically versified letter of resignation includes similarly doubled consonants in the rhymes (Bussolotti / per. ind. Salotti), and contains a self-referential admission that he can't continue the mention of his colleague Compagnucci because of the syllable count.

<sup>32</sup> Alan Turing formulated his famous definition in an article in "Mind" 59, no. 236 (1950), 433-460, entitled *Computing Machinery and Intelligence*. Essentially it defines the success of machine intelligence in imitating human responses to the point where an uninformed human observer takes the machine for a human. Interestingly enough, one of the tasks Turing describes is that of setting the computer to write a sonnet.

<sup>33</sup> Eco in *Lector in fabula* posits the encyclopedia as a system of interlinked knowledge, characterised by relationships, whereas the dictionary consists merely of separate definitions. For the distinction between the rhizomatic nature of the encyclopedia compared with the "Porphyrian tree" model of the dictionary, see *Semiotics and the Philosophy of Language* (1984).

begins with poetry rather than prose.<sup>34</sup> In his own personal case as a writer this also seems to have been true, for the earliest of Levi's production to survive is verse. This creativity is firmly anchored in a model dependent on previous models. Rhyme, metre, intertextuality are all important elements, and rhyme (self-irony apart) particularly so. He sees such formal constraints as important drivers of creativity.<sup>35</sup> This is an important finding, for it certainly seems to contradict the conventional model of Levi as somebody dictated to by content, and merely finding form as the content urges him forward. Equally important seems to be the sense of occasion, rigorously external, as trigger for writing poetry. Levi implies here that pre-established purpose ('argomento') is the starting point for composition, rather than the pressure of specific content-material or obscure urges to record verbal flux. These latter elements are seen as mere filler, however culturally determined.

But Levi's own poetic inspiration, like the *Versificatore's* variable voltage and sensitive fuses, seems to have been intermittent and unreliable. Indeed, a number of instances where he talks about poetry, the jerky, mechanical side of things comes to the fore. In 'Calore verticoso' from *Lilit* (II, 100-103), a forty-year old bachelor, Ettore, discovers during the *ennui* of an interminable meeting that he is unable to prevent himself from doodling palindromes. Gradually these automatic phenomena take over his thought-processes, to the point where even his life seems to be reversible in direction. The physiological symptoms (apart from a worrying inversion - his beard receding rather than growing) involve a strange, almost electrical sensation: «Sentiva un disagio vago, come se il cervello gli friggessse dentro» (II, 102). The *Versificatore*, too, had emitted a 'ronzio', 'scariche' and 'disturbi' (I, 422-423).

This heightened tension, announcing the imminent arrival of inspiration, is most in evidence in another piece from *Lilit*, *La fuggitiva* (II, 121-125). There, Pasquale, an employee whose poetic impulses occur infrequently, is warned of their arrival by physiological signals:

Anche a Pasquale era successo poche volte, e sempre con la consapevolezza  
di avere una poesia in corpo, pronta ad essere acchiappata al volo e trafitta sul

<sup>34</sup> See *La rima alla riscossa* (II, 942-945): «è senza dubbio più antica della prosa, purché si intenda per poesia qualsiasi discorso, verbale o scritto, in cui la voce salga di tono, la tensione espressiva sia alta, e altrettanto alte siano l'attenzione al segno e la sua densità».

<sup>35</sup> In *La rima alla riscossa* (II, 942-945), Levi criticizes the current vogue for free verse, an excess he defines as "superofferta", and regrets the passing of formal discipline, especially rhyme, in poetry: «ha troppe virtù, è troppo bella per sparire». He explains that rhyme is important for the reader as an aid to memorization, but is equally important to the writer as a constraint which forces the language into unusual choices, in other words difficulty encourages innovation.

foglio come una farfalla, era stata accompagnata in lui da una sensazione curiosa, da un'aura come quella che precede gli attacchi epilettici: ogni volta, aveva sentito un leggero fischio agli orecchi, un brivido di solletico che lo aveva percorso dalla testa ai piedi. (II, 121)

The whistling and tingling become especially intense. This time the inspiration, radiating out evenly from a "verso chiave", delivers «la poesia più bella che Pasquale avesse mai scritto» (II, 122). It is entitled *Annunciazione*, and true to its name, its arrival seems to be a mysteriously granted privilege. It appears to him as if projected on the wall, or inside his skull, and it is not clear how it ends up on the paper in front of him. When it does, he sees that it has been written without second thoughts or corrections.<sup>36</sup> Pasquale leaves the sheet of paper in his office drawer overnight. The next morning it has disappeared. Over the next few days, the poem performs a disappearing act, and begins to show some strange characteristics. The reverse side of the paper is starting to grow microscopic legs, like a millipede's, from the sharp extremities of the letters. The description of Pasquale taking a lens and examining the emergent 'pelini' is almost exactly the same as the scene in *La grande mutazione* where the parents examine their daughter's back for wing-buds with the aid of a magnifying glass (II, 868).

Eventually the text's strange mobility is explained: its miniscule feet allow it to escape from the clutches of its author. Pasquale reacts by pasting the poem to a piece of plywood. This imprisonment of the text is disastrous, for the poem, literally and metaphorically torn between enforced stasis and continued development, auto-destructs irrevocably. All Pasquale's subsequent attempts to reproduce the poem end in disappointment, and needless to say the strange physiological precursors of inspiration no longer make their visitation.

This allegory of the fleeting perfection of text and the dangers of retentiveness is to be read alongside Levi's highly autobiographical poem from *Ad ora incerta*, *L'opera* composed in 1983 (II, 568), which is worth quoting in its entirety:

Ecco, è finito: non si tocca più.  
 Quanto mi pesa la penna in mano!  
 Era così leggera poco prima,  
 viva come l'argento vivo:  
 Non avevo che da seguirla,  
 Lei mi guidava la mano  
 Come un veggente che guidi un cieco,  
 Come una dama che ti guidi a danza.  
 Ora basta, il lavoro è finito,  
 Rifinito, sferico.  
 Se gli togliessi ancora una parola

Sarebbe un buco che trasuda siero.  
 Se una ne aggiungessi  
 Sporgerebbe come una brutta verruca.  
 Se una ne cambiassi stonerebbe  
 Come un cane che latra in un concerto.  
 Che fare, adesso? Come staccarsene?  
 Ad ogni opera nata muori un poco.

Notice that here, too, creativity is regarded as some externally inspirational, that is to say non-voluntary, process. The hand is guided, almost as in *écriture automatique*. The problem for the poem occurs when the writer becomes possessive, and is unwilling to relinquish control: further editing work will lead to a loss of perfection.

The time has come to look at Levi's explicit pronouncements about writing and computers, which concentrate exactly on these issues of inspiration, form, editing and finishing. Two pieces of writing deal with this subject directly. One is *Lo scriba*, which is included in *L'altrui mestiere* (II, 841-844), and the other is a reply to a question in the January issue of the magazine, *Genius*, of 1985, 'La poesia può andare d'accordo con il computer?' (II, 1264-1267).

The first of these essays begins with Levi's admission of apprehension faced with a technology, and especially a technical vocabulary, which belong to a younger generation. The problem with the latter is that the terms may be familiar - 'open', 'close' etc., but their meanings are not. Once Levi begins to examine the hardware itself, inserting the program diskette, he is immediately struck by its analogy with the earthen robot of Jewish folklore, the Golem,<sup>37</sup> which only comes to life when a scroll containing sacred text from the Torah was placed in its mouth, and becomes lifeless when the scroll is removed. The Apple Mac, too:

ha proprio una bocca, storta, socchiusa in una smorfia meccanica. Finché non vi introduco il disco-programma, l'elaboratore non elabora nulla, è un e-sanime scatola metallica; però, quando accendo l'interruttore, sul piccolo schermo compare un garbato segnale luminoso: questo, nel linguaggio del mio Golem personale, vuol dire che esso è avido di trangugiare il dischetto. (II, 842)

In mentioning the Golem, Levi does not mention that he himself has written on the same subject elsewhere.<sup>38</sup> In Levi's account, the Golem, activated by the rabbi, selflessly performs its servile functions, chopping wood and carry-

<sup>38</sup> See the short story *Il servo*, in *Vizio di forma*.

ing things, until asked to work on the Sabbath. A conflict in codes ensues, as in a computer program, for the Golem is torn between obeying its maker, the rabbi demanding work, and its animator, the Godhead, prohibiting it. The automaton loses control, performing its herculean tasks on anything, chopping not just firewood but all the furnishings and fabric of the rabbi's house. None of this negativity or loss of control, significantly, appears in Levi's reprise of the Golem image in *Lo scriba*. Instead, when Levi has inserted the 'sacred' diskette:

ronza somnesso, facendo le fusa come un gatto contento, diventa vivo, e subito mette in luce il suo carattere: è alacre, severo coi miei errori, testardo, e capace di molti miracoli che ancora non conosco e che mi intrigano. (II, 842-843)

This anthropomorphism and/or zoomorphism of machines is a constant in Levi, right from the all-devouring steam excavator in *Se questo è un uomo* to the steel erecting work carried out by Faussone in *La chiave a stella*.<sup>39</sup> Levi then leaves off describing the machine's 'life' and proceeds to list what it can do. Though it can perform many tasks, such as stock control, data-base management,<sup>40</sup> elaboration of graphs and even chess, he is most taken by its art program, MacDraw. He admits: «Devo far violenza a me stesso per "uscire" dal programma-disegno e riprendere a scrivere.» (II, 843). His claim not to have drawn since elementary school, however, is disingenuous. There are spirited examples of his cartoon work related to his student experience in mountaineering, and to his enforced domicile in a Milanese 'commune' during the early war years.

On the specifically verbal front, Levi is worried that the facility with which he can write using the word processor may lead to prolixity. The sheer labour of epigraphy in stone produced the 'lapidary' style, characterised by brevity. With the machine's ease of use, only the word-counter, frequently consulted, provides any kind of control on output, avoiding what Levi calls "lo spreco di parole" (II, 843). Levi's argument then proceeds dialectically. If over-production is a risk, then so too is over-elimination. The loss of paper as a medium, the entrusting of text to the invisible space of magnetic memory, causes anxiety. Levi practices using copied texts, which he calls "falsi testi" (II, 843). Whilst the desire not to ruin or lose material is understandable, it is interesting

<sup>39</sup> See J. Usher, *Levi's Science-Fiction and the Humanoid*, "Journal of the Institute of Romance Studies", 4 (1996), 199-216.

<sup>40</sup> Similar in bureaucratic scope to some of the tasks mentioned presciently in the epilogue of *Il Versificatore*: «mi tiene la contabilità e le paghe, mi avvisa delle scadenze, e mi fa anche la corrispondenza» (I, 433).

to see here Levi's implied hierarchy of writing. 'Real' writing is what is being worked on first-hand, creatively. 'False' writing is what is merely a dead sequence of characters, with a purely external, superficial relationship to actual writing.

Levi remarks that the writers of the computer program (whom he calls "g-nomi geniali") have made deleting text deliberately difficult, explicitly warning the user that the text is about to be lost irrevocably. Here, however, Levi is a little free with language, and in rather a sinister way. He says that the program warns: *Bada, stai per suicidarti* (II, 843). From what I have been able to ascertain from users of MacWrite in this period, this was definitely *not* the screen warning supplied with the program.

At this point, having already implicitly referred, via the mention of the Golem, to one of his short stories, *Il servo*, Levi now explicitly mentions *Il Versificatore*, published some seventeen years previously, but, as he points out (no doubt to increase the idea of pre-history), actually written a quarter of a century before *Lo scriba*. Now he compares the functions his Apple Macintosh is capable of with those of the *Versificatore*. His Macintosh still cannot do as much in terms of creativity, but it can be very useful to its human user for the mechanical aspects of writing verse:

perché mi permette innumerevoli ritocchi senza che la pagina appaia sporca o disordinata, e riduce al minimo la fatica manuale della stesura: "Così s'osserva in me lo contrappasso". (II, 844)

The quotation comes from the last line of canto 28 of *Inferno*, where Bertrand de Born, one of the sowers of discord, uses his severed head as a lantern. Levi's interest in this canto (in the edition illustrated by Gustave Doré) is proved by his reference to Dante's Mahomet in *La ricerca delle radici*.<sup>41</sup> However, the quote's relation to the passage before in Levi, given the punctuation, is not entirely clear. Dante's full period reads:

Perch'io partii così giunte persone,  
partito porto il mio cerebro, lasso!  
dal suo principio ch'è in questo troncone;  
così s'osserva in me lo contrappasso. (28.139-142)

Dante is saying that Bertrand's punishment for separating people is to

<sup>41</sup> The reference is used autobiographically: the act of self revelation in terms of reading is compared to Mahomet's display of his innards. Levi showing his "viscera" is like: «Maometto nella nona bolgia e nell'illustrazione del Doré, in cui del resto il compiacimento masochistico del dannato è vistoso» (II, 1362).

have his head ('cerebro') separated from his heart ('principio'). Perhaps what Levi is intimating here with this quote is that the creative process has been overly divorced from its manual, instinctive origins, and now suffers from detached cerebrality. Another possibility (not necessarily mutually exclusive) is that Levi, too, is guilty of having blithely separated text which naturally belongs together, moving it about by facile recourse to cut, copy, and paste. Now he has to suffer the consequences. A final possibility, not to be discounted, given Levi's willful attribution of human physiognomy to the Apple Mac, is that the integrated screen and CPU, with its 'bocca storta' of a floppy disk drive, the 'brain' or head, has been severed from the remainder, essentially the keyboard.

The next point Levi makes, or reports, is startlingly prescient, and should be inscribed over the virtual portals of all digital archives:

Un mio amico letterato mi obietta che così va perduta la nobile gioia del filologo intento a ricostruire, attraverso le successive cancellature e correzioni, l'itinerario che conduce alla perfezione dell'*Infinito*: ha ragione, ma non si può aver tutto. (II, 844)

It would be interesting to know the filing strategy Levi actually adopted when writing with his Macintosh. As there was no automatic back-up, any previous version of a file would be inevitably written over, unless renamed. Did he rename files consistently, or was he content to let successive versions erase their former selves? Did he set out to make back-up disks? What is again interesting in this statement (and one wonders who the "amico letterato" was)<sup>42</sup> is that the example of *labor limae* is again verse, and from the most famous poem of one of Levi's favorite writers, Leopardi.<sup>43</sup>

The second piece of writing, *La poesia può andare d'accordo con il computer?*, is a briefer piece, more concerned with the future than the past. Levi traces the enormous progress in computing power over the forty years of development: now the processor can guide extraterrestrial flight:

pilota le astronavi alla ricerca di "invidiosi veri" (II, 1265)

This announcement, apparently chronicling scientific achievement, is another barbed Dante quote, from the heaven of the sun, for the "invidiosi veri" are the philosophical embarrassments to theological orthodoxy which Siger of Brabant was syllogizing at Paris (*Paradiso* 10, 138). Such ironic

<sup>42</sup> Could it have been Cesare Cases, the philologist and critic? Or even Italo Calvino, still wedded to pen and paper?



celebration of progress only serves to announce that though artificial intelligence is good at formal tasks, including metre and rhyme (he mentions the *hendecasyllable* specifically, further proof of his conservatism), it would only ever produce a 'parodistica rassomiglianza alla poesia umana' (II, 1266). Instead, the true essence of poetry is to be found in associative operations, via analogy and memory. The piece ends with a postscript: perhaps, its author states, he has been too Luddite, worried that computers might usurp his profession. He counters by saying that if the computer finally develops into a tool which can offer the kind of associative creativity he regards as the essence of poetry, then he will not hesitate to find the down-payment to buy one. It is an exact replica of the stance of the poet in 'Il versificatore', who eventually succumbs to the temptation of owning the NATCA verse-processor not because of its facility with hendecasyllables or ottava rima, but because it has shown that is capable of associative discourse. But the parallel with the early work from *Storie naturali* does not stop there: as a final *envoi* Levi declares that he will only buy the machine if his (electronic) lawyer assures him that he the poet can sign the results as his own work. This recursive recourse to the object in question is the same device Levi had used at the end of *Censura in Bitinia* (the chicken had approved publication of the tale) and *Il versificatore* (written by the Versificatore itself).

The last item in the catalogue of Levi's interaction between poetry and computers concerns an actual poem, which remained unpublished in his lifetime. In 1984 the photographer Mario Monge took a picture of Levi in front of his brand new Apple Macintosh 128k. The author is looking intently at the monitor, on which can be made out some fifteen lines of poetry, the transcribed text of which is now included as an appendix to *Ad ora incerta* in the Levi *Opere* (II, 1553). The poem, strong in its imagery but perhaps not one of Levi's best, is entitled *Soldato*, and Marco Belpoliti describes it thus: «La poesia non è finita, ma continua nella schermata successiva». One presumes, therefore, that the transcription comes from analysis of the photograph, and not from consulting any continuation on the original floppy disk. Certainly fifteen lines or so was approximately a 'schermata' for that generation of computer with its tiny screen. However, a puzzle remains: the version of the poem carried in *Opere* contains, next to its title the posthumous date '25/6/1986'. One wonders what this two-year divergence between the date of the photograph and the date inscribed on the transcript means.<sup>44</sup> One can only concur with Levi's plea from beyond the grave, in *Lo*

<sup>44</sup> The genesis of Leopardi's poem is imaginatively recreated by Levi in *Dialogo di un poeta e di un medico* in *Lilit* (II, 114)

*scriba*, that the rigours of philological investigation into the processes of composition and creativity do not succumb to loss of memory in the digital age. If Levi's diskettes still survive, they deserve to be electronically archived and analysed, with respect. The recent case of Douglas Adams' hard drive is a lesson to us all.

Jonathan Usher

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<sup>44</sup> Though an online catalogue of Turin photography, published by the Beni culturali, implies that the photograph itself was released in 1986: see at the following address: <http://www.grafica.arti.beniculturali.it/sguardi%20immagini/opere%20in%20mostra.htm#monge> The photograph appears, in much reduced format, on the cover to the Einaudi paperback *Primo Levi: Conversazioni e interviste*, a cura di M. Belpoliti, Turin, Einaudi, 1997.

## IL LUNGO E APPASSIONATO DIALOGO CON GLI STUDENTI. LE TESI DI LAUREA (UN PRIMO ELENCO)

Il lungo, costante e intenso rapporto di Giuseppe Gigliozi con gli studenti della Facoltà di Lettere, poi Facoltà di Scienze Umanistiche, dell'Università degli Studi di Roma "La Sapienza" e della Facoltà di Lettere e Filosofia dell'Università degli Studi di Roma "Tor Vergata", è testimoniato, oltre alle tante altre forme, anche dalle numerose tesi di laurea che raccontano la passione del dialogo di Gigliozi con i suoi allievi. La catalogazione, ancora provvisoria e lacunosa, della sua lunga attività di relatore e correlatore, documentata con maggiore sistematicità solo a partire dagli anni Novanta, rivela alcuni percorsi critico-interpretativi che, confrontati con la bibliografia di Myriam Trevisan, dimostrano la reciprocità e la condivisione degli interessi fra il docente e gli studenti. Tesi proposte, assegnate, suggerite, concordate, accolte confluiscono tutte a dimostrare passioni sollecitate anche dall'impegno didattico nella trasmissione di saperi conoscitivi nuovi.

Sicuramente gli argomenti delle tesi intrecciano, con approcci pluridisciplinari, l'interesse per la modernità letteraria con quello per le nuove tecnologie, attraverso due principali filoni di ricerca: da un lato quello dell'analisi informatizzata di testi narrativi e poetici, dall'altro quello dell'attraversamento di ipertesti narrativi o di testi letterari in Internet. La novità degli argomenti è suggerita sin dai titoli, che presentano spesso termini come «un esperimento», «un'ipotesi», delineando i confini di un territorio di ricerca sperimentale e sempre in movimento. Accanto al piano teorico-metodologico che vede intrecciate l'informatica con la critica letteraria novecentesca, si prefigura il lavoro su alcuni generi letterari (come il romanzo poliziesco), sulle riviste ("Primato"; "Pegaso"; le riviste del secondo dopoguerra) e su numerosi autori della letteratura moderna e contemporanea: Cavacchioli, Tarchetti, De Roberto, Pascoli, Palazzeschi, Pirandello, Svevo, Alvaro, Vittorini, Gadda, Saba, Flaiano, Bassani, Tozzi, Pasolini, Ogetti, Morante, Volponi, Bernari, Tobino, fino ai contemporanei Tabucchi, Benni e Ammaniti.

La parzialità delle informazioni raccolte, la frammentarietà delle notizie, la difficoltà di reperire i dati rendono tuttavia questo primo elenco largamente incompleto (non solo per ragioni conservative: molte tesi, specie quelle seguite